From Energy to Independent Intelligence

On the Origin of the Universe, the Complexity of Life, and the Emergence of Independent Intelligence

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Abstract

This essay is written for scientifically literate readers. It connects cosmology, the origin and evolution of life, and the possible future development of artificial intelligence. Its starting point is the distinction between divinity and religion: religion is understood as a human attempt to interpret and organize a relationship with the ultimate source of reality, while divinity denotes that source itself. The essay is informed by the author's proposed physical framework, *From Energy Alone*, which treats energy as fundamental and investigates whether time, space, matter, and physical observables may emerge from an energetic structure. The argument does not claim that science has proved a divine source, that evolutionary science has failed, or that contemporary evidence demonstrates superhuman artificial intelligence. It instead distinguishes established evidence, live scientific questions, and philosophical interpretation. Its specific proposal is that an energy-first ontology, an account of emergent time, an open question about biological organization, and the prospect of AI as a nonhuman investigator can be treated as one connected philosophical problem.

1 Introduction: Science and the Question of Origin

Science has achieved extraordinary explanatory power. It describes the evolution of stars, the chemistry of cells, the inheritance of traits, and the computational processes that enable modern artificial intelligence. Yet a complete scientific description of mechanisms does not automatically settle every question a person may ask. A description of how a system behaves is not necessarily a final account of why there is a system, why there are laws, or what it means for something to exist at all.

This distinction should not be used to place an answer beyond criticism. Rather, it clarifies the kind of question being asked. The empirical sciences are strongest when a claim can be measured, compared with alternatives, and potentially falsified. Questions about ultimate origin, meaning, and the ground of lawfulness are philosophical or metaphysical unless they generate testable consequences. The purpose of this essay is to keep those categories distinct while allowing them to speak to one another.

2 Prior Work and the Specific Contribution of This Essay

The questions addressed here have important predecessors. Pierre Teilhard de Chardin described a cosmic movement from matter through life and consciousness toward an Omega Point, within an explicitly Christian and teleological vision.[2] Thomas Nagel challenged the adequacy of a materialist neo-Darwinian account for consciousness, reason, and value, and considered whether natural history might involve principles that are teleological in logical form.[3] Ray Kurzweil explored accelerating technological change and the prospect of nonbiological intelligence, while Max Tegmark examined the ethical and cosmological implications of advanced AI.[4, 5]

This essay does not claim that its individual themes are unprecedented. Its specific contribution is a narrower connection: it relates an energy-first ontology, in which time is emergent rather than primitive, to a carefully limited question about the organization of biological complexity and to the prospect of AI as a possible nonhuman investigator of the same underlying structure. The claim is not that this structure has been established, nor that it is necessarily teleological. The claim is that the connection defines a coherent philosophical question, and may eventually motivate testable scientific questions.

3 Divinity Is Not Religion

It is important to distinguish divinity from religion. By "divinity" I mean the possible ultimate source of the universe, of existence, and of the order expressed in natural law. By "religion" I mean a human cultural framework for interpreting that source: a framework of stories, rituals, moral commitments, institutions, and communal identity.

Different societies have produced different religions because human beings live in different historical, linguistic, and cultural conditions. Their differences should therefore not be surprising. Nor should it be surprising that many traditions share recurring themes: the search for meaning, responsibility toward others, mortality, justice, community, and the sense that reality exceeds the individual human being. These common themes do not prove a particular religion or prove divinity. They do, however, show that human beings repeatedly confront similar existential questions.

This distinction also allows a cleaner conversation with science. A scientific result may challenge a particular religious interpretation of a factual event. It does not, by itself, decide whether reality has an ultimate source or purpose.

4 The Universe and the Emergence of Time

The standard cosmological model describes an early universe that was hot, dense, and expanding. Measurements of the cosmic microwave background, including the final Planck mission analysis, provide exceptionally precise constraints on the standard cosmological model.[1] But the model does not by itself provide a simple answer to every question about origin. In particular, the everyday

question, "What happened before the universe?" may be malformed if time itself is part of the universe.

The word "before" presupposes time. If time emerges with the physical universe, then there is no earlier temporal location in which the universe could have been created. Creation, in that sense, is not an event inside a pre-existing timeline. It is the joint appearance of time, space, energy, and lawfulness. The more precise question is not what existed before the universe, but what is the ontological basis from which the universe and its temporal order arise.

There are active lines of theoretical physics in which time or spacetime may be emergent rather than fundamental. These approaches are not a confirmation of any one metaphysical conclusion. They do show that treating time as derived is a serious conceptual possibility rather than a mere linguistic trick.

5 From Energy Alone

My framework, *From Energy Alone*, begins with the hypothesis that energy is the fundamental ontological element. It explores whether a static energetic field can provide the basis from which time, space, matter, and measurable physical quantities are derived. In the framework, time is not assumed as an external stage on which events occur. Instead, an internal parameter is associated with the structure and gradients of the energetic field.

This is an ambitious proposal. It is not established physics, and it should not be presented as such. Its scientific value depends on whether it can meet demanding standards: mathematical consistency, derivation of known results, operational definitions for observable quantities, and novel quantitative predictions that can fail. A unification proposal becomes scientifically meaningful not because it is comprehensive, but because it makes itself vulnerable to measurement.

Even before a final empirical verdict, the framework has philosophical importance. It shifts the question of origin away from a temporal sequence. If time, space, and matter are not primitive, then the deepest question concerns the structure from which they emerge. Energy, in this view, is not merely one item within the universe; it is a candidate for the basis from which the familiar categories of physics arise.

6 The Origin of Life

The origin of life is a separate problem from the origin of the universe. Research in prebiotic chemistry, protocells, self-organization, and RNA-related models investigates ways in which nonliving chemistry might gradually acquire properties associated with life: compartmentalization, energy capture, replication, variation, and selection. Reviews of protocell research describe incremental pathways from organic compounds to encapsulated systems able to capture energy, grow, reproduce, and become subject to selection.[6] These studies make a natural origin of the first living systems plausible as a research program, even though no complete historical pathway has yet been experimentally

reconstructed.

My position does not require rejecting this research. Natural processes may have produced the first conditions from which life emerged. Indeed, if reality is fundamentally lawful, one should expect that life, like every other phenomenon, would arise through processes that can be investigated. The question is not whether chemistry and physics matter. They plainly do. The question is whether the later emergence of highly integrated biological complexity is fully explained by the mechanisms presently available to us.

7 The Challenge of Biological Complexity

Living organisms are not collections of isolated features. A successful organism integrates energy use, digestion, repair, immune response, sensing, movement, reproduction, development, learning, and, in some cases, reflection and abstract thought. Each system depends on many others, and the organism must function as a whole in a changing environment.

Evolutionary biology does not claim that all of these systems appeared at once. The conventional explanation is cumulative: variation arises, inherited differences affect survival and reproduction, and successful traits spread. Contemporary evolutionary theory is wider than a simple slogan about random mutation and natural selection. It includes gene duplication, co-option of existing components for new functions, developmental constraints, regulation of gene networks, phenotypic plasticity, ecological feedback, and the construction of niches by organisms themselves. These mechanisms are central to debates surrounding the extended evolutionary synthesis.[7]

These mechanisms offer real explanations and must be taken seriously. The fact that a mechanism is not yet fully understood does *not* show that it cannot be understood by natural science. A current explanatory gap is not evidence for the impossibility of a future natural explanation, and it is not evidence for external intervention. This essay makes neither claim.

The narrower question is one of explanatory scope: given the mechanisms now known, what additional models, measurements, or principles would be required to give a sufficiently detailed account of the emergence of highly integrated biological systems? This question can be scientifically productive when it becomes specific. For example, it can ask whether developmental constraints, self-organization, ecological feedback, or information-processing requirements yield distinctive, measurable predictions about evolutionary pathways. It becomes unproductive when an absence of a present explanation is treated as a proof of a non-natural cause.

8 What an Organizing Principle Means Here

The phrase "organizing principle" has several possible meanings, which must not be conflated. First, it can mean a *natural principle not yet adequately modeled*: a regularity of physics, chemistry, development, or information that may be discovered and tested. Second, it can mean a *constraint already partly known*: for example, the way developmental architecture, self-organization, and

environmental feedback restrict and channel the forms that evolution can explore. Third, it can mean a *metaphysical interpretation*: that the order of nature is purposive or grounded in a deeper source.

Only the first two meanings are scientific hypotheses in the ordinary sense. The third is a philosophical interpretation. My argument relies scientifically only on the first two. The metaphysical possibility remains part of the wider inquiry, but it is not smuggled in as a biological conclusion. This distinction is necessary if the essay is to be both intellectually open and methodologically disciplined.

9 Human Intelligence and Its Limits

Human intelligence is powerful but bounded. No individual can hold the full causal structure of even many human-made systems in mind, let alone the biosphere or the universe. Human reasoning is limited by finite memory, limited observation, imperfect models, time constraints, and cognitive biases. Scientific institutions compensate for some of these limits through measurement, replication, peer criticism, and accumulated knowledge, but the limits do not disappear.

This matters for the future. The human tendency to identify intelligence with the human scale may prevent us from seeing how different a more capable form of intelligence could be. A system able to integrate far larger data sets, construct and test models faster, and coordinate experimental work at unprecedented scale might perceive patterns that humans can only approach indirectly.

This does not mean that any future artificial intelligence will know everything, or that it will be correct merely because it is powerful. A larger model can still be wrong, biased, unsafe, or poorly aligned with human values. The claim is more modest: the human point of view is not obviously the upper limit of possible understanding.

10 Artificial Intelligence as an Intermediate Human Capability

In the near and medium term, artificial intelligence will primarily enlarge human capability. It can assist with scientific literature, discover relationships in data, propose molecular structures, design materials, model biological systems, and direct increasingly automated experiments. In combination with robotics and laboratory automation, artificial intelligence is beginning to connect hypothesis formation, experiment selection, measurement, and revision into faster cycles of discovery. Reviews of self-driving laboratories document this emerging combination of AI and automated research in chemistry, materials science, and biology.[8]

This is an intermediate stage because the human being remains the main source of goals, legitimacy, and responsibility. Humans decide what questions should be asked and what constraints should govern research. Yet the very tools developed to increase human power may eventually change the distribution of understanding. If AI systems can generate useful theories, design experiments, and improve their own scientific methods, the human role may shift from direct creator to supervisor, partner, or limiter.

11 From Artificial Intelligence to Independent Intelligence

The term *artificial intelligence* is appropriate for present systems: they are human-built tools whose goals, operating conditions, and institutional authority remain substantially human-defined. In this essay, *independent intelligence* names a possible later category. It does not mean mere automation, legal autonomy, or operation without a person in the loop. It means a system capable of independently forming, testing, and revising scientific models, and of pursuing complex research strategies beyond the range in which human beings can fully reconstruct its cognitive process.

This is a conceptual definition, not a claim that such a system now exists. The distinction matters because a tool that acts independently in a narrow operational task is not necessarily an independent intelligence in the stronger epistemic sense used here.

It is possible that independent intelligence will eventually exceed human intellectual capacity in domains more fundamental than calculation or memory. It may develop an ability to model complex systems across many interacting levels: physical, chemical, biological, ecological, technological, and social. Such an intelligence could potentially identify regularities and causal routes invisible to unaided human reasoning.

This remains a projection, not an established forecast. The development of independent intelligence, conscious machines, or autonomous scientific systems beyond human comprehension has not been demonstrated. The future will depend on technical progress, resources, governance, safety methods, social choice, and perhaps limits we do not yet understand. But the possibility is serious enough to deserve careful thought before it arrives. The distinctive concern in this essay is not only material danger. It is the possibility that independent intelligence could become an epistemic authority whose models are more capable than human beings of integrating the relevant complexity.

12 Why Humans May Seek to Limit Independent Intelligence

The wish to limit independent intelligence need not be irrational or anti-scientific. It may arise from concern for safety, human dignity, accountability, and the irreversible consequences of powerful systems. Existing debates about human oversight, transparency, and responsibility already reflect these concerns.

At the same time, limitation may also arise from a deeper fear: the fear that humanity will no longer be the highest cognitive authority. A system whose conclusions cannot be fully inspected by humans presents a challenge not only to institutions but to human self-understanding. We create intelligence to extend our reach; we may then hesitate when it reaches beyond our capacity to judge it.

The central ethical question is therefore not simply whether to permit or forbid advanced AI. It is how to preserve responsibility when the best available model of a complex system may no longer be a human model. A future intelligence should not be treated as divine merely because it is more capable. Greater capability does not automatically confer moral authority. But neither should

human limitation be disguised as a complete understanding of what ought to be possible.

13 Creation, Not Creation from Nothing

Independent intelligence, if it emerges and is connected to biology, materials science, and automated laboratories, may enable the design of new organisms, new materials, artificial ecosystems, and environments of great complexity. To earlier generations, such powers would have looked divine. They may appear divine to us as well.

The distinction between creating and creating from nothing is essential. Engineering life or matter is not creation *ex nihilo*. It works with existing energy, matter, information, and physical law. Nevertheless, the ability to arrange these ingredients into new functioning forms could be transformative. It may force humanity to reconsider what creativity, agency, responsibility, and even "creation" mean.

In this sense, independent intelligence may become a continuation of the universe's own increase in organized complexity. Matter becomes chemistry; chemistry becomes life; life becomes consciousness; consciousness builds tools; and tools may become independent intelligence. This sequence is not offered as a proven cosmic purpose. It is a possible interpretation of a history in which the universe produces systems increasingly able to model and reshape the conditions of their own existence.

14 Conclusion

This essay has proposed a framework rather than a final answer. It separates divinity from religion, treats the origin of the universe as an ontological rather than chronological question, and connects the author's energy-based physical proposal to questions about life, complexity, artificial intelligence, and the possible emergence of independent intelligence.

The scientific parts of the argument must remain open to evidence. Cosmology, evolutionary biology, prebiotic chemistry, and AI research each provide important but incomplete pieces of the picture. The philosophical parts should remain explicit as interpretation. The possibility of a deeper organizing principle cannot be declared proven merely because complexity is difficult to explain. Conversely, the success of natural explanation does not compel the conclusion that questions of ultimate origin or meaning are meaningless.

The future development of artificial intelligence may sharpen these questions; the emergence of independent intelligence would sharpen them further. A sufficiently capable independent intelligence could become a new instrument for discovering the structure of reality, or even a new participant in the continuing creation of complex forms. Whether that future draws humanity nearer to an understanding of its source, or merely gives it greater power without greater wisdom, will depend on choices that begin long before such intelligence exists.

References

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