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THE LIVING UNIVERSE
COSMOS AS ORGANISM

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A B S T R A C T

Focusing on the Western academic lineage, this essay traces the human archetypal metaphor of the universe as it shifts three times, from that of a great mind, to a great machine, to the modern-day transition toward an organic view of the universe – as an evolving organism moving through its own process of self-actualization. The discussion develops into an exploration of the meaning of self in the world and the human implications of an expanding view of identity. We ask what it will mean for human society if we enter a paradigm in which life and consciousness are considered to be intrinsic rather than incidental features of the natural order.

I WHAT IS THE UNIVERSE ?

The universe is an astonishing place. For millennia our ancestors have gazed up at the stars and wondered about the nature of existence. What is it? What is its meaning? What is our place within it? The enterprise of Western Science has discovered many things about our cosmic situation that would have shocked our ancestors. In just one century we have witnessed the dramatic expansion of our cosmological picture. The astronomer Edwin Hubble revealed that the Milky Way was far from the only galaxy in the universe. The cosmic firmament spanned unimaginable distances in all directions. Our home galaxy, a spiral of some one hundred billion stars, is just one of a sea of billions of others. Rather than eternal and unchanging, as long believed, we also learned that the universe is *evolving*. Run the clock back some 14 billion years and everything is on top of everything else. The vast universe seems to have erupted from a single point, thought by scientists to be approximate in size to the head of a pin. Since that time the universe has transformed and complexified, formed stars, planets, nebulae of unspeakable beauty, and ultimately, life and mind. But what *is* this

flowering of existence we call the ‘universe’? Setting aside contemporary speculation about other universes, the word ‘universe’ is employed by cosmologists to mean the *whole*: everything regarded to exist. Ask a modern day cosmologist what the universe is, and they might tell you that it is a random energy event in a quantum vacuum. Consult an indigenous elder and they might tell you that our universe is a dragon, a cosmic egg, or the vital breath of a transcendent being. There is much beauty and enchanted numinosity worthy of preservation in the creation stories of these cultures. In certain regard, the Western scientific picture of the universe is as much a story as these. But it is, I think we must also recognize, unique among them. Science, hubristically perhaps, attempts to reveal how the world is through impassioned diligence to the experimental method. Employing the tools of observation developed by science, we can, with surprising confidence, chart the distances between stars and even discern their elemental compositions. We can propose theories about the physics of black holes, and predict the life cycle of far away suns. The pragmatic application of scientific knowing has given way to astonishing technologies. If you care to, take out your cell phone and look at it. This smooth palm-sized object has the extraordinary ability to draw information from the electromagnetic aether, networking minds separated in space by continents. This technological creation, among many others likely to be close at hand, are the striking alchemical artefacts born of science’s incredible penetration and insight into the causal structure of the world. To truly connect with our moment, I think

it is necessary to recognize the extraordinary realities of 21st century life in the first world. In view of its extraordinary power I think it is also necessary to recognize that the scientific method cannot tell us what the universe *is*. If, as some argue, our consciousness reflects a fundamental perspectival character of the universe, there is the possibility that through direct experience the human mind is capable of penetrating the ontological interiors of reality, to know by imminent communion what empiricism can never tell us. I will have more to say about this later, yet I wish to draw our attention to the fact that we simply do not know what the universe is. Communicators of scientific knowledge can only offer metaphors that are ultimately inherently limited. Our collective metaphor for the universe is in essence a brute conceptual tool, and yet I think a vital one. Any response to the question of what the universe is will mirror the values and concerns of those that ask. In this essay we explore how scientific, philosophical and cultural developments of the past century have seen the emergence of a new view; that a more insightful and better explanatory metaphor for our universe is that of an organism. My aim is not to convince the reader that the universe *is* an organism. Our collective archetypal metaphor for the universe, whatever we interpret it to be, constitutes a *paradigm* that can only be replaced by another. Such shifts in thinking, as Kuhn is keen to impress to us, are more than mere likelihoods; they are historical certainties (1962). Be it an organism, a computer program, a hologram or something else, any metaphor we agree to defend is ultimately destined to change by the light of new findings. We will explore the

metaphors we cast when attempting to grasp the total order of existence deeply informs the other types of questions we pose to nature, and directly colors how we interpret our findings. For our purposes, unpacking whether the organismic paradigm outmodes the existing mechanical one depends on several criteria. Does the new paradigm comfortably elucidate everything pragmatically demonstrated before? Does it shine light into a previously unrealized dimension of existence? Does it make sense of the intractable mysteries of the previous paradigm? In addition to these questions are also relevant aesthetic concerns, such as its possible impact on the collective narrative we invoke to understand what we are, our place in existence and the values concomitant to living harmoniously with it.

Western science's picture of the universe may contain many errors. It may overlook profound and consequential truths. One day, perhaps soon, it will be dramatically different than what it is now. Other pictures of the universe conceived by humans have undoubtedly changed and evolved, and yet in a unique way the Western scientific picture has change built into it at the fundamental level. Even if the current scientific picture presently fails to recognize and incorporate all existing evidence, if attitudes shift glacially, and new findings take decades to become a part of the received wisdom, the fact that the scientific method may itself be incomplete is subsumed by the very nature of the scientific enterprise. The reductive materialism that captures so much of

contemporary scientific thought should not be mistaken for the essence of science. In principle, what we call science could expand to include vastly different objects of knowledge, including arguably its most striking current deficits, namely the subjective, interior and vital dimensions revealed by direct experience.

II MIND AND MACHINE

It is my belief that the metaphor we collectively invoke for the universe has far reaching implications for our worldview, for our values and for how we participate with and act toward our environment and other beings. To appropriately situate the contemporary discussion it is necessary to provide some historical context. The narrative offered here is at best an incomplete summary, and at worst a caricature. However, I think it is necessary to weave the essence of this story, albeit crudely, to unpack and give contrast to the organismic vision and its implications.

In the Western academic lineage the view of the universe as a great mind was conceived by early Greek philosophers, around the 4th century BC. The view that the world was essentially alive and imbued with spirit has been a perspective

of many cultures throughout history. Greek thought had its roots in earlier polytheistic religions, which in turn had their roots in animism. Plato forged a worldview recognized by scholars as a form of *idealism*. For Plato and his contemporaries, the world of form that surrounds us was a projection from a transcendent domain of being, more mind-like than classically real. This was the realm of 'the ideas', a greater reality from which all manifest phenomena receive their form and essence. Nature had intentionality; it was purposive - *teleological*. A dropped stone fell toward the Earth by its innate will for proximity with the centre of creation. These views, originating largely from Aristotle and Plato, were adapted by early Christian scholars in the Middle Ages, who revered the high culture of ancient Greece. The transcendent realm of what Plato called 'the ideas' both informed and was used to justify the Christian view of heaven. In the platonic dimension of perfect forms existed the highest transcendent good. A consequential development of the Christian view was the perceived piety in regarding the universe's creative impulse wholly outside of the world, namely in the intentions of their powerful creator. In this sense, the creative impulse was estranged from the world but for the occurrence of rare instances of divine intervention. For many Europeans living in this period, all areas of life were to be understood in terms of the Christian doctrine. Fundamental questions of death, birth, morality, value, meaning and judgment were to be understood without exception through the authority of Rome. To challenge the church was to tempt exile, torture or an early death. The theologians preoccupation with

worlds beyond death heightened their sense that the world they currently inhabited was fallen, imperfect and estranged from God. Though created in his image, to live in and be of this world was to be tainted by sin - fated to endure the terrible sufferings of the flesh. Admittance into heaven was a near impossible feat, and the unspeakable horrors of the alternative hung like a shadow over medieval Christian life.

Descartes' meditations brought the different characters of mind and matter into view. This sharp demarcation of the mental and the physical came to serve as a boundary, marking the territories of the church and the new science. The mental was the province of spirit and the divine, leaving the remaining crude matter of the world available for scientific investigation. Within this uneasy truce scientists could now consider radical new questions. Their discoveries, however, turned out to have damning implications to the truth claims of scripture. In spite of this, many of the thinkers comprising the scientific revolution in Europe were Christian. The father of the machine metaphor of the universe, Isaac Newton, believed that the great machinery of the cosmos was first set in motion by God, who, upon creating the world, "stands back" to attend its progress. As the centuries passed however, the sheer efficiency of the mechanistic model led scientists and philosophers to regard such supernatural forces as obsolete. Reality was, in essence, material. As the machine metaphor rose to prominence, all phenomena, including the mental, were increasingly believed to be reducible to

‘mere’ matter. While there were several notable counter currents, such as the rise of German Idealism in the late 18th and 19th centuries, the scientific revolution of the early modern period and its materialist philosophy portrayed an inert and meaningless world, devoid of consciousness or inherent purposes. Even human consciousness was an illusion – a mirage of complex biological processes. The ideas of Charles Darwin and his contemporaries in the 19th century brought into view the idea that all life had a simple origin. The human was no more than a complex animal, privileged only by its ability to adapt to a hostile and changing environment. The continuation of this process bore upon nothing more transcendent than the physical transference of genetic material. In the final analysis, animals and plants were machines, as were humans, and ultimately so too was the universe – the out working of inert, immutable and purposeless natural laws. The mechanistic view led to extraordinary advancements in anatomy, medicine, cosmology and technology. It also profoundly shaped the worldview of secular culture and its values.

The shift in consciousness initiated by the scientific revolution can be approached through the lens of the *Copernican revolution*. When humanity learned it was not the physical centre of existence, this discovery challenged not only sacred scripture, but also our sense that we or life had any significance on the cosmic stage. The Copernican revolution describes an intellectual thrust in which scientists and philosophers vowed to never again be deluded by

superstition. It brought about a sense of empowerment and release from the stifling moral dogma of the church. Scientific knowledge was a power that could be wielded over nature, and through which we could transform the world to serve our own ends. Instead of its victims, we could be masters over nature. We could build our own heaven here on Earth. This was a view championed by Francis Bacon, which he captured in his famous aphorism 'knowledge is power.' Many contemporary thinkers observe that the mechanistic view has profoundly shaped the global secular worldview and its values. While science and its mechanistic understanding liberated the Western mind from the oppressive doctrine of the Church, the world it described was indifferent to the self and its values. The Copernican revolution constituted a radical de-centering of the human, and the hardening of a profound dualism between self and world. While essentially value-free, mechanistic materialism can be seen to promote decidedly bleak, unsustainable and short-sighted values. Today many scholars warn of the consequences of aggregating all mind and intentionality to the human, only to dispense with them as mere human categories (Skrbina, 2005). Life and existence become 'accidents', and humans - mere spectators of a doomed and meaningless cosmic process. Several commentators argue that a reality devoid of mind and meaning has contributed to a shared sense of isolation, meaninglessness and separation from nature, from other beings and the larger universe. But does the machine metaphor of the universe really provide the most accurate appraisal of the true nature of things? As we will now

explore, in a little over a century the machine metaphor has faced a series of unexpected and unprecedented challenges that not only call its efficacy into question, they appeal for its imminent replacement.

III ORGANISM

Scientific, philosophical and cultural developments of the past century have seen the emergence of a new view, that a more insightful and better explanatory paradigm for our universe is that of an organism. Support for this view arrives from such areas as the new physics, developments in cosmology, greater recognition of the hard problem of consciousness – its difficulties and consequences, and the rise in popularity of intrinsic views of the mental in the natural order.

In addition to the accruing of new scientific knowledge, in the modern era there is a growing recognition of the types of knowledge science is unable in principle to furnish. In the early 20th century thinkers such as Bertrand Russell and Arthur Eddington helped us to recognize that empirical science cannot tell us what the world is in itself. The objective approach of standard science reveals only

nature's causal structure. The underlying nature of reality remains profoundly mysterious. This observation led a number of contemporary philosophers to consider that the inner nature of matter is an attractive candidate for the inner nature of our minds, which too resist all objective probing.

The physics of the 20th century saw Newton's universe replaced by Planck's. Strict determinism was dethroned as science learned that the world must be understood as more than a collection of objects. They discovered a profound underlying unity to nature that binds all things together. This interconnectedness was being glimpsed in growingly precise experiments exploring the nature of light. The subatomic realm into which physics now probed challenged our long held beliefs about nature's workings. Basic intuitions about space, time and locality were overturned. In the new physics, *information*, *choice* and *knowledge* emerged as crucial concepts. In response to this, many pioneers of quantum physics argued that their new description of reality called for the reintroduction of the mental to our physical conception of the world. A purely objective approach could only take us so far.

In this period our understanding of the entire universe transformed. The new cosmological picture of the universe was evolutionary. In its development, the universe had undergone extraordinary transformations. As cosmologists gained the means to calculate the values of the physical 'laws' that governed the

expansion and evolution of the universe an unanticipated finding sparked controversy. The values that governed cosmic evolution were extraordinarily precise, any alteration to which would have produced a dramatically different cosmic situation. We learned that there were trillions upon trillions of possible arrangements of these laws. With this discovery it also became obvious that only the tiniest infinitesimal fraction of them could have produced complex life of any kind. This outcome, many scientists recognized, was far too unlikely to be arbitrary. Something other than chance seemed to be at play. Against all apparent odds the universe had evolved in such a way as to allow for the evolution of complex observers. What did this mean? It was, as the physicist Freeman Dyson observed, as if the universe knew we were coming (1979).

Toward the latter half of the 20th century the question of consciousness re-entered the mainstream scientific discussion. The confident claims of psychophysical reductionism came under the scrutiny of a new generation of scientists and philosophers. Many concluded that we had profoundly misunderstood the significance of this curious natural phenomenon. The question of how the physical processes of the brain could give rise to subjective inner states was far from clear. There also appears to be a vast difference between even the faintest glimmer of consciousness and no consciousness at all. David Chalmers, the philosopher that coined the term the ‘hard problem of consciousness’, has offered a radical solution. For Chalmers, consciousness is real

– really real. What is vitally missing from our understanding of the brain, he argues, may also be missing from our basic description of the world. For Chalmers, understanding the inner nature of consciousness, which seems mysteriously irreducible to physical processes, may necessitate an expansion at the very heart of our scientific ontology. He suspects that consciousness or awareness may be fundamental to the physical world in a similar way that mass and charge are thought to be (2010). Another highly respected thinker in contemporary philosophy, Thomas Nagel, agrees. He argues that if, as he suspects, the subjective inner nature of minds cannot be captured by a complete description of physical brain processes, then we may need to recognize consciousness or awareness as somehow intrinsic, reflecting a fundamental aspect of reality. (2012)

Increasing numbers of scientists now defend deeper views of consciousness. One of them is neuroscientist Christof Koch, the world's foremost expert in the scientific study of the neural correlates of consciousness. Koch spent 15 years working alongside the Nobel Prize winning biologist Francis Crick, searching for the basis of consciousness in the brain. After Crick's passing in 2004, Koch diligently continued the search they began together. In the last few years, however, his views have changed dramatically. In light of new theories and evidence he no longer believes that brains create consciousness, nor is it limited to biology. Consciousness, he now argues, is a fundamental quality of

information. “The entire cosmos is suffused with sentience” he writes, “We are surrounded and immersed in consciousness; it is in the air we breathe, the soil we tread on, the bacteria that colonize our intestines, and the brain that enables us to think.” (2012 p.132)

The physicists John Wheeler, Paul Davies, Freeman Dyson and Henry Stapp have argued that the rise of complex observers may have been woven into the cosmic code from the beginning, that life and mind play an active and participatory role in reality. Nagel has argued that in order to anticipate the purposive and mental attributes of organisms like us, our evolutionary model must transcend materialism and embody a natural teleology, in which the universe evolves not blindly, but is in fact drawn toward a future value condition (2012). This activity reflects organisms much more than machines, which lack inherent purposes or value conditions. Because consciousness is the only possible vehicle of value, its necessary evolution serves as an intuitive response for why, as Nagel believes, consciousness is fundamental to physics. In such thinking, the reality-giving process is, from our spatiotemporal reference frame, a future attractor, drawing all matter, energy and consciousness to itself.

There appears to be a modest, though growing shift occurring in academia – an increasing openness toward deeper views of consciousness. Elsewhere I refer to this as the ‘intrinsic consciousness movement’ (Nelson, 2015). This flowering of

intrinsic perspectives is found in the writings of leading minds in many fields of science, from psychology and neuroscience, to physics and cosmology. The organismic view recognizes that to have experience is to be alive and that nature's evolution is simultaneously a development into form as it is an evolution of consciousness. "Take a walk through the rainforest," instructs anthropologist Marilyn Schlitz. "Look at the way life manifests in every nook and cranny. To me that's a manifestation of consciousness, revealing the teleological nature of life expressing itself." Other thinkers have explicitly called for a new organismic understanding of reality. Inspired by the 20th century philosopher Alfred North Whitehead, the British biologist Rupert Sheldrake remarks, "The machine metaphor of our universe has long outlived its usefulness, and holds back scientific thinking in physics, biology and medicine. Our evolving universe is an organism, and so is the earth, and so are oak trees, and so are dogs, and so are you." (2012, p.52)

Out of the emerging view a new cosmology is forming – a new story of our place in the universe. In full acceptance of the discovered facts of science, the new view regards the human and all life as participators in the larger cosmic process, more akin to the gestation of an organism than the purposeless outworking of an inert machine. As we recognize our consciousness as an irreducible and intrinsic part of this larger evolutionary process, our values also change. The isolating and fragmented materialist worldview is replaced by a broader, more meaningful

and unifying vision. We become extensions of the universe's on-going creative activity. We can see ourselves, in Nagel's words, 'as part of the lengthy process of the universe gradually waking up.' (Nagel, p. 66)

Ultimately, a system to which awareness is intrinsic is more akin to an organism than a machine. In the emerging organismic view, life finds itself invested into a larger matrix of meaning that transcends and includes the human, and may be deeply bound to the integrity of the entire system. There is depicted a view of life as continuous with, and an extension of, a larger cosmic evolutionary impulse. The emerging organismic view carries all the pragmatic and explanatory power of the mechanistic paradigm, and yet, in full acceptance of the discovered facts of science, locates awareness, life and consciousness as fundamental features of the way reality self-organizes. There are far-reaching benefits of this developing view in its re-suturing of the self back into the world. In our most primary identity we are the universe experiencing itself. This was always true, and yet there is a distinct and consequential difference between regarding ourselves as illusory experiencing fragments of an otherwise purposeless mechanistic environment, and regarding ourselves as experiencing on *behalf* of an evolving system seeking itself into being through form. Our most essential identity is no longer an isolated illusion of the chemical complexity of brains; it is sutured to the very process of reality. Ultimately I think the emerging organismic paradigm constitutes the re-enchantment of the Western scientific description of the world

and the self within it. As we embrace this broader vision we are rediscovering ourselves in a world that is once again alive to us.

With its intrinsic evolutionary, purposive, holistic and experiential attributes, the organism arguably outmodes the machine metaphor. Certainly one could argue that it does not share all of the characteristics of organisms, and yet our qualification of organism is quite vague. However, much like many of the terms used in science and general language, precise qualifications can be difficult to discern. An example of an indispensable yet hard to define concept is *health*, which is highly dependent on context. Another is the property of being alive. What exactly does it mean to *be* alive? Especially from the mechanistic materialist perspective, the machinery of the organism is ultimately constituted from the same inert processes of all matter. In spite of this, meaningfully discerning life from nonlife seems so obvious as to be arbitrary. This brings us to a relevant potential setback of the organismic paradigm. If the universe is seen as an organism, how should we speak about the organisms we know? The analogy of cells in a body might take us some of the way, and yet it also seems clear that an organismic paradigm may reduce the meaning of the word as it is used in popular parlance. I think, however, these potential criticisms are ultimately inconsequential. Indeed, they are equally applicable to the prevailing machine metaphor, and yet thinking in terms of the universe as a machine never seems to lead to confusion as to whether a sandwich or a waterfall constitute machines.

Just so, recognizing the organismic character of the universe will not tempt us to think rocks or computers are organisms, lacking as they do, purposes and value conditions that are inherent to them. Application of these words, vague as they necessarily are, is always contextual. The deciding call is often that which serves us best in the moment. In view of this, I think the unifying and connecting vision of the organismic paradigm is one that could lead to a more enlightened, meaningful and sustainable worldview, much needed in our moment in history.

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