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A Complex God?

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Just over one hundred years ago Teilhard de Chardin proposed a radical revision of how we view God's existence. Traditional Christian ontology of God was one of substance and attribute, derived from the form and matter ontology of Plato and Aristotle and inherited over hundreds of years. However de Chardin derived his ontology from a combination of his faith and science at a time when science was rapidly developing and systematically overturning traditional perspectives of matter and the universe. Since then science has continued to expand our understanding of the universe, and today we know we live in a universe that is much bigger and far more complicated than that dreamed of by Plato more than two thousand years ago or even by Christian theologians hundreds of years ago. Consequently the traditional Western ontological categories, pretty much fixed after Aquinas, are no longer sufficient to describe the universe as we know it now. They are, therefore, also no longer sufficient upon which to base our explanation of God.

Theories of God's existence have always derived from how the universe was understood to exist at the time the theories were developed, and new understanding will require developing a new theory. De Chardin's thought embodied some of the core views developed by science in the nineteenth century, but science has changed almost completely throughout the twentieth century under the twin auspices of Relativity and Quantum Mechanics. However, his theory, which uses neither, is still prescient in that it presages the fledgling science of complexity. I believe that the science of complexity and its view of emergence is the most promising basis upon which to develop a view of God (and spirit world), and leads to a God that, as in the title of Nancy Ellen Abrams book, is *A God that could be Real*. That is, it provides an explanation for God's existence that is compatible with our contemporary ontological understanding rather than the understanding of perhaps seven hundred years ago. We get a view of God that could be real in the context of today's thought.

To begin let us examine de Chardin's ontology, which when combined with the ontology of Divine Principle and views of complexity can provide a powerful platform for religious explanation. We will also examine Abrams' thought presented in her book. Abrams' work is interesting because she comes to an almost identical conclusion about God to de Chardin, though working solely from her science rather than her faith. She also adds some important additional considerations resulting from the contemporary science of cosmology. In the process I would like to offer some insights from my work in Unification Thought.

Teilhard de Chardin

I believe that any system of thought, however abstract, is conditioned at its root by an ontology. This may be explicit, as in Divine Principle, or implicit, as in much of Western theology and philosophy. Further, in order to fully understand the thought, the ontology itself must first be understood. Everything else connects from that point if the thought is self-consistent. This is true of de Chardin's work. Here I have found his core ontological principles most clearly delineated in an essay entitled "Centrology" [1] that appears in the compilation of his writings *The Activation of Energy* published after his death. His ontology begins from a particle based understanding of all things:

> In the swarming multiplicity of living elements (monocellular and polycellular) which make up the biosphere, we find an authentic continuation of the granular (atomic, molecular) structure of the universe. In consequence, if the human body is restored to its position in the cosmic corpuscular series, it is simply a 'super-molecule': once we see it in this light, we are in the happy position of being able to distinguish in that super-molecule, the properties, in a 'magnified' state, of every molecule. [2]

It is difficult to underestimate the importance of this ontological basis in particles. It is the key to understanding his whole ontology. It is exactly here, at the ground of existence in particles, that he makes the break with traditional Christian ontology and connects to science. This is what allows his ontology to unite science and religion into one conceptual framework. Arguably one of the most profound shifts in the understanding of existence derived from science is the development of a particle-based understanding of existing beings. Mechanics developed in the nineteenth century through an understanding of particles and forces. Chemistry likewise begins from particles in Dalton's atomic theory developed at the beginning of that century.

Thermodynamics takes a statistical approach to explain macroscopic heat flow from the microscopic behavior of the constituent particles. Quantum mechanics even describes forces as operating through an exchange of particles. This particle view of existence culminates in the contemporary Standard Model of particle physics, which provides our current best scientific understanding of existing beings. De Chardin's ontology thus fits neatly into this scientific worldview that was developing throughout the nineteenth century. He even extends this granular understanding into spirit, and provides perhaps the first particle-based attempt to explain spirit. His fundamental "particle" of spirit is the individual human consciousness. [3]

Each existing particle is seen to have a "within" that represents consciousness in the particle. I believe this "within" closely, but not exactly, corresponds to what we would call sungsang in Unificationism. Thus, in Unification terminology, each particle is considered a center of both sungsang and hyungsang. De Chardin writes:

> At every degree of size and complexity, cosmic particles or grains are not simply, as physics has recognized, centres of universal dynamic radiation: all of them, in addition (rather like man), have and represent a small 'within' (however diffuse or even fragmentary it may be), in which is reflected, at a more or less rudimentary stage, a particular representation of the world: in relation to themselves they are psychic centres—and at the same time they are infinitesimal psychic centres of the universe. In other words, consciousness is a universal molecular property; and the molecular state of the world is a manifestation of the pluralized state of some potentiality of universal consciousness. [4]

As we can see here, de Chardin also recognizes the "principle of resemblance" found in Divine Principle, where all things reflect to differing degrees the structure present in God. Here, however, he also acknowledges the particle/molecular states of complex compound entities, up to and including God.

The consciousness present in all things is seen to grow deeper with an increase in the organized complexity of a being. In non-living things it is fragmentary, and they only contain a partial psychic curvature. Non-living things present only partial psychic centers and are said to be pre-centric. In living things the partial curvatures combine to form a closed center, a "phyletic" center. The level of complexity at which these closed centers form represents the transition to life. At this stage the closed the center is still diffuse, yet it has a distinct radius. The phyletic evolution of living things leads to greater complexity and a reduction in the radius of the center, until in human beings it becomes pointlike, or "eu-centric." At this level of complexity there is a second transition, a transition of reflection, and these pointlike eu-centers become the basis for further development of complexity.

Complexity therefore provides a system to classify all existing beings in de Chardin's thought and allows him to develop a symbolic representation of the universe based on it. In this representation, all the particles in the universe with a similar complexity are seen to lie on a spherical surface, called an isosphere, representing a similarity of consciousness. I believe that the surface area of the isosphere is proportional to the number of particles. In other words the radius of the isosphere generally depends on the square root of the number of particles that comprise it. The simplest particles are the most numerous and so reside on the largest isosphere. More complex particles are composite particles that combine and unify the simpler particles into a more complex whole. Hence there must be fewer of these more complex particles, and the radius of their isospheres will be correspondingly smaller. The system of isospheres, then, is a series of concentric spheres where the radial direction represents an increasing complexity toward the center. The single point at the center of all the isospheres is the Omega point, which is the final unification of all the existing particles in the universe and represents God. God is therefore the single most complex being that integrates all existing things. Further each particle is a smaller representation of the whole. A human being, for example, can similarly be represented by a series of concentric spheres of the particles organized by complexity within the individual.

More than just a representation of things as they exist now, however, this system of isospheres evolves and changes with time. In particular the passage of time leads to an increasing "centro-complexification," both within the individual and in the system of isospheres as a whole.

> If the universe is observed in its true and essential movement through time, it represents a system which is in process of internal 'centro-complexification.' Evolution does not exactly correspond, as Spencer maintained, to a transition from the homogeneous to the

> heterogeneous—but to a transition from a dispersed heterogeneous (lacking unity) to an organic (unified) heterogeneous—or, to put it still more clearly, to a transition from a lower to a higher state of centro-complexity. [5]

Evolution, for de Chardin, is thus most essentially a radial motion through the isospheres toward the Omega point, God. That is, evolution is the successive appearance of more complex beings that increasingly unify and organize the preceding isospheres. Importantly, it does not just apply to living things. Up to the development of life in the biosphere, matter too participated in this overall evolutionary process, and after the appearance of human beings, evolution continues in the development of consciousness in the noosphere. De Chardin thus provides a general theory of evolution that incorporates biological evolution as just one component of a larger process. This, I believe, is also an essential point for a Unification view of evolution and the relationship of Unification Thought to science.

God, the Omega point, as the final unity of the noosphere, has yet to arise. However its future existence provides an attractive "force" to all particles such that their random motion in space is overlaid with a net pressure radially inward through the isospheres:

> Not, it is true, like atoms that move restlessly in every direction indifferently, but like a swarm that is attracted towards the light, the 'centred' cosmic particles exert pressure in every way and from every angle—always, however, with a positive radial effect—on the containing wall of their isosphere. This they continue to do until a crack is found, through which they crowd, to spread out over the next isosphere. [6]

This neatly accounts for both the randomness that appears in scientific theory and the teleology that appears in religious theory. Accounting for both requires a particle-based approach to understanding ontology.

Finally, de Chardin has an interesting take on spirit:

> If matter and spirit are regarded as synonyms, the former of multi-plicity and the latter of unity, then they are not two heterogeneous or antagonistic things, coupled together by accident or force. In virtue of the genetic relationship (centrogenesis) which causes centricity (unity) to depend on complexity (the multiple), the two aspects, spiritual and material, of the real necessarily and complementarily call for one another, like two sides of one and the same object—or, rather, like the two terms 'a quo' and 'ad quem' of one and the same movement. In the field of cosmic evolution, the one chrono-logically presupposes, and structurally integrates, the multiple… [7]

This too is a break from traditional ontology that makes the theory more compatible with science. As two sides of one thing, like sungsang and hyungsang in Divine Principle, spirit and matter are not distinct and separated substances such as found in traditional thought. Spirit effectively becomes a unity that arises from the multiplicity.

Complexity

After rooting his thought in an understanding of existing things as particles rather than form and matter, or substance and attribute, de Chardin's next key insight is one of the importance of complexity. Complexity is one of those slippery concepts that we can see with ease but find difficult to define and quantify precisely. Yet, it is a key concept in redefining our concept of God. De Chardin himself describes three components to complexity: a complexity arising from the sheer number of particles, a hierarchical complexity in the variety of combinations of particles, and a complexity in their relationships as they function together. [8] He does not give much further explanation or suggestions on how to quantify complexity, but we can note that his three components to complexity derive from the understanding of existing things in terms of particles.

Today there is a growing interest in complexity, as it is potentially applicable to a wide variety of phenomena. There is, however, a major problem in the field. Complexity theorists do not have one agreed upon definition of complexity. They, like de Chardin, recognize its importance but still struggle to supply a unified understanding of what it is and how it works. Melanie Mitchell in her book *Complexity: A Guided Tour* discusses some of the more important contemporary ideas. Recognizing that her list is not exhaustive, she suggests there are upwards of forty different measures of complexity, which she variously describes as: size, entropy, algorithmic information content, logical depth, thermodynamic depth, computational capacity, statistical complexity, fractal dimension, and degree of hierarchy. [9] Each definition has its own strengths, weaknesses and area of applicability. These definitions do not unfortunately have a lot of overlap, so there is no one overarching framework of

explanation.

One of the more important concepts to develop from complexity studies is the idea of emergence in complex systems. Mitchell defines a complex system in the following way:

> [It is] a system in which large networks of components with no central control and simple rules of operation give rise to complex collective behavior, sophisticated information processing, and adaption via learning or evolution. [10]

Emergence, then, refers to this macroscopic "complex collective behavior" that arises in complex systems. She then restates the definition more simply as "a system that exhibits nontrivial emergent and self-organizing behaviors." [11] The complex system is composed of discrete components, or in keeping with the previous discussion, discrete particles, that spontaneously generate a collective behavior that "emerges" in the system between the constituent particles. This emergent behavior can be seen in diverse phenomena, such as the behavior of ant and bee colonies, evolution, or even the emergence of mind itself.

Though emergence is a more recent concept than de Chardin had available to work with, I believe it closely captures the intent of what he is trying to describe in his system of isospheres. Each isosphere is emergent from the preceding isosphere, the noosphere emerges from the biosphere, and the Omega point emerges from the noosphere. God is thus the final emergent property or being of the complex system of the whole universe. Since this emergence is spontaneous when a system passes a certain threshold of complexity, it also accounts for the radial "pressure" toward the Omega point that de Chardin describes (see below).

Nancy Ellen Abrams

Contemporary science has extended our understanding of the universe to far smaller and far larger scales than what was understood when de Chardin was developing his theory. At first sight it seems that we can easily accommodate these expanded scales just by increasing the number of isospheres along the radial axis of complexity. Though this is indeed the simpler approach, when we turn to a consideration of consciousness at larger scales we run afoul of relativity. Abrams clearly delineates this problem in her book *A God That Could be Real*.

This book is remarkable. Like de Chardin, Abrams works from science. She has a science background herself and is married to one of the foremost cosmologists (a branch of astrophysics) in the world, Joel Primack, and so is privy to a lot of discussion on the cutting edge of this field. However, unlike de Chardin she did not start from a position of faith, but came to it from personal life experience in a twelve step program. Her discussion is, therefore, derived just from the science without the historical weight of received tradition. Nevertheless, working solely from her science, she comes independently to a general conclusion remarkably similar to that of de Chardin—that God is a complex being that emerges from the complex system of all human beings and human experience. She also presents a central organizing principle.

Rather than a radial axis of complexity in the system of isospheres, however, she describes an axis of scale. That axis goes from the Planck scale at 10^{-25} cm to the visible universe at 10^{30} cm, covering almost sixty orders of magnitude. Also, rather than represent that axis as a straight line she represents it as a cosmic Uroboros, [12] the great worm or dragon eating its own tail (Figure 1). Where the smallest scale (tail) is "eaten" by the largest scale (head) as they come together would be the grand unified theory (GUT) that is yet to be discovered.

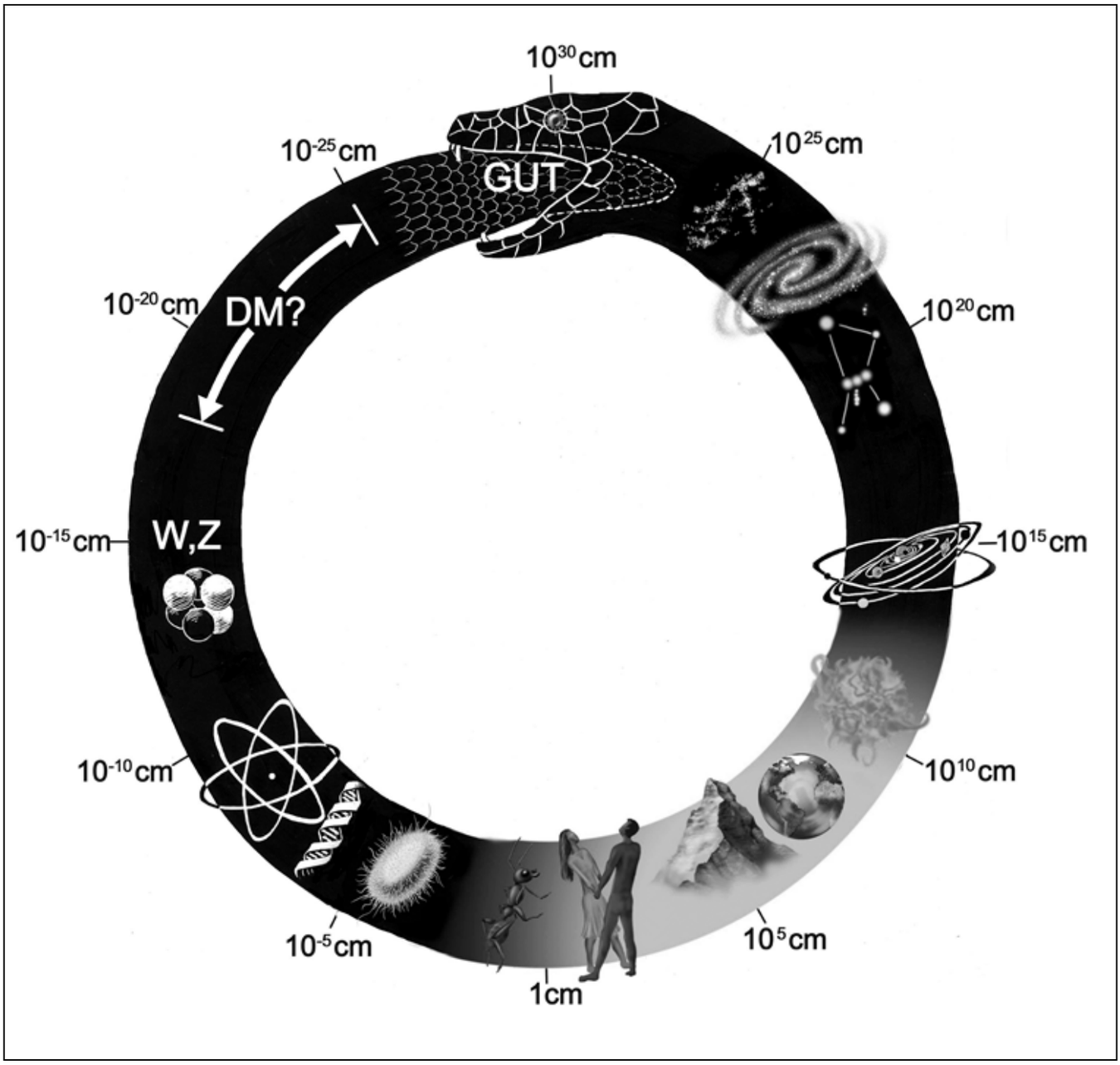

Figure 1. Abrams' "Cosmic Uroboros"

Abrams points out that relativity poses a fundamental limiting factor for an emergent consciousness. [13] In part this is because relativity posits an absolute speed limit for the transmission of information in the universe. This maximum speed is the speed of light. Though quantum effects appear to be instantaneous between entangled particles over large distances, they still do not transmit information itself faster than the speed of light. Hence, as the scale increases and spatial distances become larger, the speed of light becomes more significant for an emergent consciousness. Abrams suggests that this sets an upper limit for the scales where consciousness can emerge. She places this upper limit at about the scale of our sun. [14] At larger scales the time for different parts of a being to communicate with each other at the speed of light would preclude a consciousness emerging.

She also sets a lower limit for the emergence of consciousness at a little smaller than a human being, because anything smaller could not have the requisite complexity for consciousness. The result is that Abrams proposes two fundamental constraints on an emergent consciousness. First is a requirement of sufficient complexity in its parts, and second is that it can only be a local phenomenon at scales of less than the sun. [15] This limits consciousness to a "Midgard" region of scale (1 cm to 10^{10} cm) in Abrams framework. Any existing thing at scales outside this Midgard region she regards as spirit because we do not perceive them directly with our senses.

This is a radical departure from how mind is viewed in Western religious thought. There, mind-consciousness is not differentiated from spirit, which itself is viewed as "quality" without spatial extension and that can exist independently of matter. So traditionally mind could be regarded as immaterial and point-like. In this view mind, and hence God too, must be simple, indivisible, without structure, and independent of matter. De Chardin retains some of this traditional thinking when he emphasizes the point-like nature of the human mind in the eu-centric point:

> It is the transition from this diffuse state to one that is strictly punctiform… which defines the great phenomenon of hominization. Just as, at the origin of the phyletic, it was the closing-up on itself of a chain of segments (centration) that determined the first appearance of

> living centres, so here again it is in virtue of the arrival at zero of its centric diameter (reflection) that the living centre, in its turn, attains the condition and dignity of a ‘grain of thought.’ Thus, by passing through a new critical point, an isosphere of a fundamentally new type is produced: the isosphere of spirit, the noosphere. [16]

and

> To the extent that the grain of consciousness is personalized, it becomes released from its material support in the phylum. When detached from its matrix of complexity, which falls back towards the multiple, the reflective centre can at last, finally unified upon itself, meet the ultimate pole of all convergence. [17]

That is, de Chardin tries to retain the traditional view of the human mind as a simple and indivisible point that is separate to matter.

However, emergence does not imply that mind can separate from the particles of the system it arises in. In Divine Principle sungsang is not separate from hyungsang. In this regard de Chardin has not carried through the implications of a particle ontology all the way through to the end as Abrams does, and he still retains some remnants of Platonism. Abrams’ view is thus the more correct in this instance. The complex system of particles that mind emerges in occupies a definite volume of space, which according to Abrams’ understanding of relativity, can be no larger than about the volume of our sun. Mind is thus not point-like or separated from the particles of its complex system. Further, since the only life we know is currently confined to earth, we are specifically talking about a planetary level of consciousness for the complex system in which God emerges.

Divine Principle and Unification Thought

With the addition of Abrams’ thought updating de Chardin’s ontology, we are moving in a very specific direction from the starting point of an ontology based in particles. There are a number of additional insights and observations that arise from Divine Principle and Unification Thought. The first of these is simply support for the type of approach taken here.

One of the very first principles in the first chapter of Divine Principle is a “principle of resemblance,” which I mentioned above in the section on de Chardin. Since we cannot observe God directly, the best we can do is infer things about God’s existence from our observation of common characteristics of things that we can observe. We ascribe to God that which can be observed in all things. Divine Principle thus supports the view that scientific observation should inform our understanding of God. This is also understood in both de Chardin’s thought and Abrams’ book. The first sections of her book trace the historical changes in our understanding of God that have accompanied our changing understanding of the universe. She correctly points out that the changes in understanding wrought by science ought to also be accompanied by a change in how we understand God. I believe that since this has mostly not happened, even in Unificationist interpretation of Divine Principle, it consequently results in one of the key problems between science and religion. Unificationism too has not yet bridged the gap to science in a way comparable to de Chardin and Abrams.

The next, and crucial issue, is that Divine Principle also presents an ontology that is rooted in particles. [18]

> When [subatomic] particles join with each other through the recipro-cal relationships of their dual characteristics, they form an atom. Atoms, in turn, display either a positive or a negative valence. When the dual characteristics within one atom enter into reciprocal relationships with those in another atom, they form a molecule. Molecules formed in this manner engage in further reciprocal relationships between their dual characteristics to eventually become nourishment fit for consumption by plants and animals. [19]

This basic view of existence has a direct correspondence to de Chardin’s system of isospheres. However, it adds something not explicitly found in de Chardin’s or Abrams’ thought. What it adds to the basic picture is the importance and structure of relationship within and between the particles.

De Chardin offers no concrete explanation for the connection between the different isospheres, but that missing piece is supplied by the concept of relationship, particularly the identity-maintaining quadruple base as found in Unification Thought. To see how this develops let us examine the above quote in more detail. Though it is still a simplification, and there are more levels involved than outlined, the essential features of a particle-relational existence are present. The basic picture presented is that, other than elementary particles, existing beings are compound beings with levels of relationship within them (Figure 2).

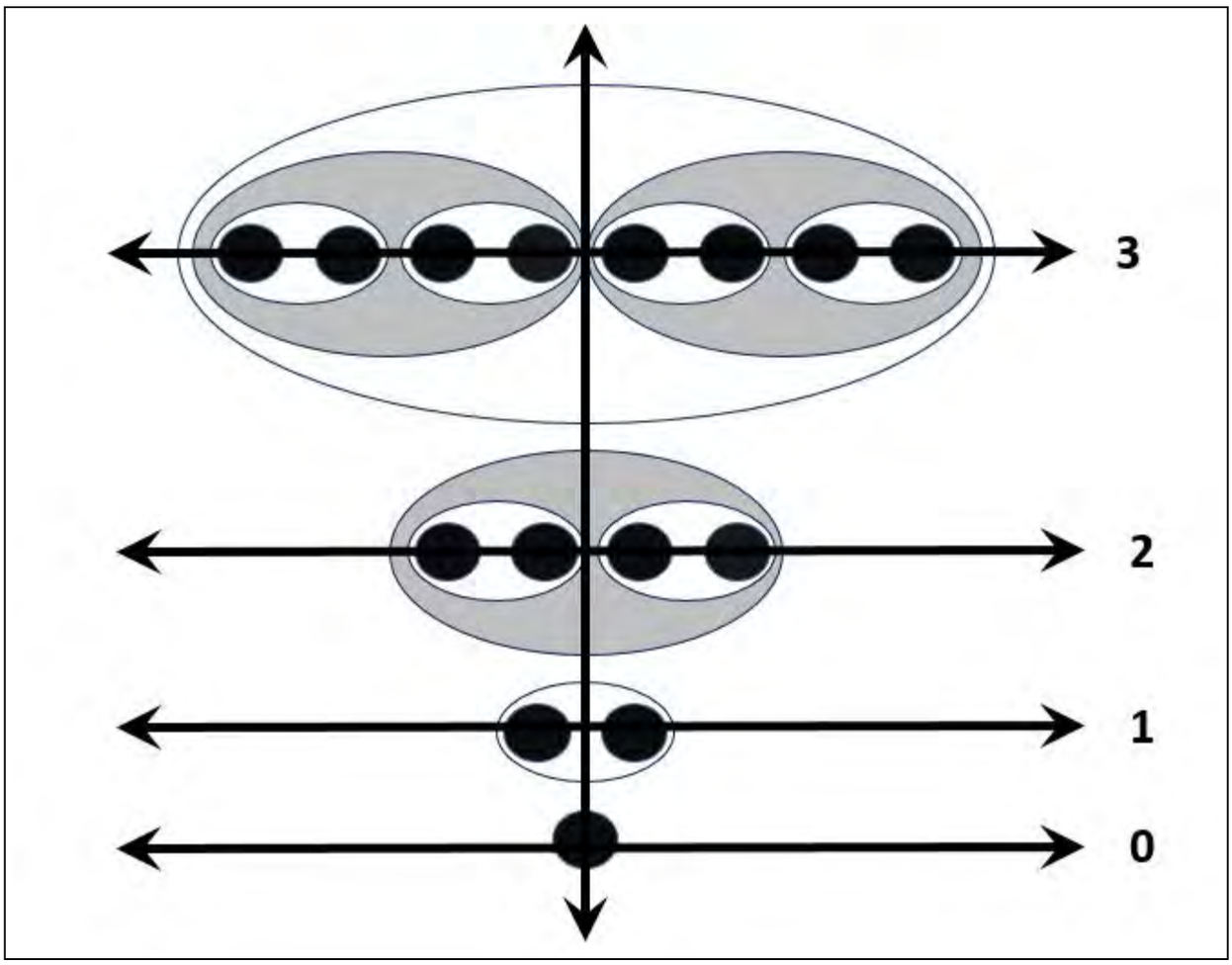

Figure 2. Simplified structure of a composite being showing levels of relationship along with vertical and horizontal order within the being

In this figure we can see how structure, as presented in this quote from Divine Principle, develops. At the lowest level, level 0, we find elementary particles. These elementary particles are considered structureless and dimensionless points in the Standard Model of particle physics. [20] Relationship among these elementary particles results in atoms at level 1. Further relationship between atoms leads in turn to chemical compounds and molecules at level 2. Molecules then engage in relationship to develop larger compound beings in level 3, and so on. The result is that any existing being can be considered to be the final unity of multiple levels of relationship within it, and the more levels within a being the more complex it is. This also closely corresponds to one of the definitions of complexity described by Mitchell, that of Herbert Simon's "hierarchical complexity":

> Simon proposed that the complexity of a system can be characterized by its degree of hierarchy: "the complex system being composed of subsystems that, in turn, have their own subsystems, and so on"… e.g., the body is composed of organs, which are in turn composed of cells, which are in turn composed of cellular subsystems… [21]

We can illustrate this further by looking at ourselves. My body results from relationship between its constituent organs and tissues. These, in turn, are composed of cells. Cells exist through their constituent organelles that are composed of molecules, which are composed of atoms, and at their root we find elementary particles. Semi-quantitatively speaking, my body exists at level 6 in this simplified hierarchy of levels of relationship within myself. Each level would directly correspond to an isosphere in de Chardin's thought, and we can call the vertical axis in Figure 2 an axis of relational depth, where increasing relational depth corresponds to the axial direction in the system of isospheres. My body therefore has a relational depth of 6, molecules a relational depth of 2, and life in my cells a relational depth of 4. Further, each particle of similar relational depth lies on a horizontal axis that is comparable to the surface of an isosphere. The view of existence presented in Divine Principle thus directly agrees with de Chardin's system of isospheres and contemporary concepts of hierarchical complexity.

Relationship also allows us to define a more general concept of emergence than that given by Mitchell. Atoms, for example, exhibit behavior and properties not found directly in elementary particles. They are the sum of their elementary particles plus the relationships between them. The properties of atoms are thus emergent from the relationships between elementary particles. In general, therefore, the union in any identity maintaining relationship will exhibit emergent properties, so we can regard the union itself to be emergent. Each level of relationship within a being, each isosphere, emerges from the relationship of particles at the next lower level. It is relationship that connects each isosphere to the next, and the whole system into one unified whole. Further,

the emergent behavior observed in “cloud like” or “fluidic” complex systems, such as the ant colony or a flock of starlings as described by Mitchell, would be just one subset of a more general theory of emergence in relationship derived from the identity maintaining quadruple base of Unification Thought.

From Figure 2 we can understand that in addition to the vertical axis of relational depth there is also a horizontal direction comprising particles of similar relational depth within any being. In the isospheres there is a radial direction and also a surface. If relational depth describes a vertical component of complexity, we should therefore also postulate a horizontal component of complexity. Here, horizontally, existing beings of the same relational depth can be similar or quite distinct (Figure 3, below), and there is a complexity in the variation of types of being. The size and number of beings in a system would also be factors in this horizontal complexity and could greatly affect the possible interactions between the beings.

There are a number of possible biological contexts for understanding this figure. One example is to consider the primary structure of a protein. The primary structure of a protein is simply a sequence of amino acids joined by peptide links. If all the amino acids in the chain are the same, as in Figure 3a, then it would be a very simple protein. However, if the chain involves different amino acids, as in Figure 3b, then it would be more complex, even without considering the overall shape of the protein or the additional relational depth resulting from the secondary and tertiary protein structure. We could also think about the cells in a developing embryo. At the beginning all the cells are the same and the complexity is low, as in (a). As the embryo develops the cells begin to differentiate into different types, and even just at the level of the cells there is increasing complexity, horizontal complexity, in the diversity of types, as in (b).

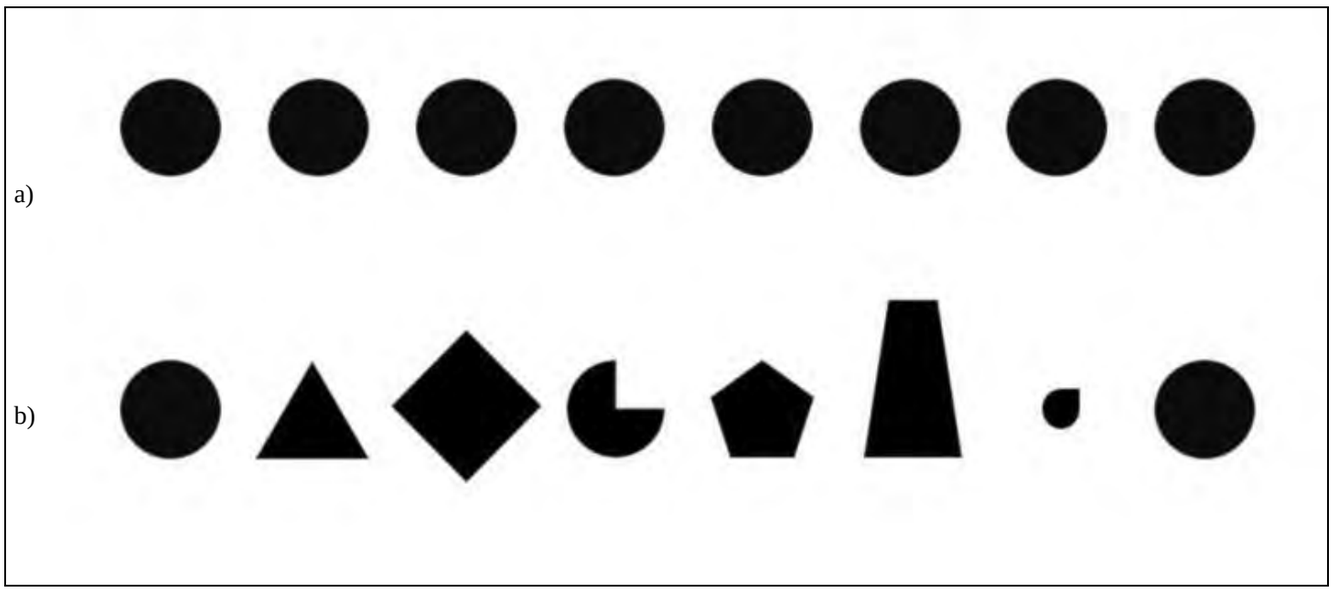

Figure 3. Horizontal complexity in an a) simple system; b) complex system.

Another way of looking at the figure is in terms of information content. Seth Lloyd defines algorithmic information in the following way:

> Algorithmic information is a measure of how hard it is to represent a text or a bit string using a computer. The algorithmic information content of a text or a bit string is equal to the length, in bits, of the shortest computer program that produces that text of bit string as output. [22]

The simpler output of all the same shapes in (a) would therefore contain less algorithmic information because the program to generate it would only need information for one shape and how many times it is repeated. The more complex output in (b) contains multiple shapes and a non-repeating pattern, and so would contain greater algorithmic information content as the program to generate this pattern would be longer. Algorithmic information and probably the majority of the definitions of complexity described by Mitchell are, I would say, variations on this concept of horizontal complexity, and a unified framework for complexity will need to acknowledge and incorporate both vertical and horizontal directions.

Evolution

Complexity theory is also intimately tied to evolution, and for de Chardin this is an integral part of his theory. Most essentially he sees evolution in terms of radial movement toward the center of the isospheres, the Omega point. If we apply the concepts of vertical and horizontal complexity derived from relationship as presented above, then we should also infer vertical and horizontal dimensions to evolution as well. Thus we can identify two components of the evolutionary process: first, an increase

in horizontal complexity or variation in things of similar relational depth, and second, an increase in relational depth itself. It is this increase in relational depth over time that is perhaps the most difficult aspect of evolution to explain. How does an eye become an eye, with all its complex structures and specialized cells, from a patch of light-sensitive skin with undiffer-entiated cells?

Mitchell, discussing Stuart Kaufman's work, says:

> In Kauffman's view, the evolution of complex organisms is due in part to this self-organization and in part to natural selection, and perhaps self-organization is really what predominates, severely limiting the possibilities for selection to act on. [23]

Interestingly, here also in Kaufman's work there are two components to evolution such that it is likely we can correlate self-organization with relational depth. In other words, when horizontal complexity passes a certain critical threshold an additional level of relational depth automatically arises. This self-organization would then be what de Chardin calls radial "pressure" in the isospheres toward the Omega Point. Looking back at the history of the universe we can discern many thresholds of vertical complexity, some of which correspond to phase changes in the universe. Examples include when protons and neutrons condensed out of a "sea" of quarks and gluons, and when the first atomic nuclei formed from the protons and neutrons.

Consciousness, then, becomes a spontaneous natural outcome when a particular threshold of complexity, both vertical and horizontal, is reached in a local system and an additional level of relational depth appears. For both de Chardin and Abrams, God is the final, most complex, entity that emerges from relationship among human beings, who themselves are sufficiently complex to maintain consciousness. For de Chardin that final most complex entity has yet to arise, and so is the culmination of evolution, but for Abrams God is already present. For Abrams, every person participates in God and with God. God therefore is not static and unchanging, but rather is dynamic and evolving together with us as we evolve.

Conclusion

Teilhard de Chardin's ontology provides us with a much needed revision of the basic ontology underpinning western religion. He provides us with the conceptual bridge needed to bring science and religion together into one unified system of thought, which also is one of the goals of Divine Principle. Moreover Divine Principle itself is completely compatible with his thought in its particle-relational understanding of existing beings. This bridge arises naturally from a conception of existing beings as complex composite beings based on many levels of relationships between particles within a being. When updated with Abrams' thought and the developing science of complexity, we have a powerful platform from which to develop Divine Principle as a religious thought that can speak to the contemporary mindset.

Though speculative, this type of thinking gives us a very different view of God. We find a complex and intimate God composed of many parts and inextricably connected to us and all things, where we participate together with God regardless of race, gender, or even religion. Participation does not even depend on belief.

One drawback of limiting our explanation to current science is that we limit the emergence of consciousness, and God, to a planetary scale. However science is not at an end. It is entirely possible that this planetary level of consciousness participates in the emergence of consciousness at still larger levels though scientific principles we do not yet know about.

Notes

[1] Pierre Teilhard de Chardin, "Centrology," *The Activation of Energy*, trans. Rene Hague (New York: Harcourt Brace Jovanovich, 1971), pp. 97-127.

[2] Ibid., p. 101.

[3] More details of this point appear in his essay "The Atomism of Spirit" that appears earlier in the book. De Chardin, *Activation*, pp. 21-57.

[4] De Chardin, "Centrology," p. 101.

[5] Ibid., p. 103.

[6] Ibid., p. 124.

[7] Ibid., p. 126

[8] De Chardin, “Atomism,” p. 27.

[9] Melanie Mitchell, *Complexity: A Guided Tour* (New York: Oxford University Press, 2009), pp. 94-111.

[10] Ibid., p. 13.

[11] Ibid.

[12] Nancy Ellen Abrams, *A God that Could Be Real* (Boston: Beacon Press, 2015), p. 67.

[13] Abrams does not explicitly distinguish between human consciousness and lower forms of consciousness as found in animals, or higher forms in God. In general too I will not make this distinction, and I also loosely use mind and consciousness as interchangeable. Though the distinction is important for de Chardin’s work it does not affect the conclusions drawn here.

[14] Abrams, *Real*, p. 70.

[15] So in principle the implication is that sungsang in general would then only be a local phenomenon with no one sungsang for the whole universe. The parts would be too far apart for a larger unity to emerge.

[16] De Chardin, “Centrology,” p. 109.

[17] Ibid., p. 122.

[18] Though Unification Thought does not.

[19] *Exposition of the Divine Principle* (Seoul: Seonghwa, 1996), p. 31.

[20] Elementary particles do, however, have both information and energy, which I regard as the basis of sungsang and hyungsang respectively. Consequently, sungsang and hyungsang both emerge together in relationship.

[21] Mitchell, *Complexity*, p. 109.

[22] Seth Lloyd, *Programming the Universe* (New York: Alfred A. Knopf, 2006), p. 180.

[23] Mitchell, *Complexity*, p. 286.