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CHAOS AND ORDER IN NATURE/CREATION: A READING OF GENESIS 1-2:4a IN DIALOGUE WITH SCIENCE AND PHILOSOPHY

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With inspiration from post-modern scientific theories (complexity theory, chaos theory, relativity theory, uncertainty theory, no-singularity/boundary theory), and from philosophical understandings of nature (ecstatic naturalism and Taoism), the author offers an innovative reading of the Genesis creation stories, focusing on the concepts of order and chaos. While criticizing the dichotomous dualism that underpins the human ordering system, she connects these rich meanings and wisdom signified by nature with theological discourse through a discussion of the infinity of God, the abjection of origin, the autonomy of creatures, and nature's complex and fluid manifestations.

The expanding universe: this is the place where discourse about the mystery of nature has its beginning in the language of science, philosophy, and religion. It is the place where nature becomes subject, object, and metaphor. The universe, however, does not fully reveal itself to human query and longing for its depths and boundaries, because as the universe expands, the unfathomable abyss also expands its elusive scope and enfolding. Nature's boundless womb is the locus where everything originates and evolves while its products stay within the gravity of nature. The sustenance of life, from a human perspective, is a manifestation of nature's grace. But humans also view nature as manifesting negative aspects, which have been interpreted as chaotic and demonic. Therefore, the long history of a battle between order and chaos has emerged in discourses focusing on binary aspects of nature. But is nature's bipolarity the only possible representation? Should nature be confined within an anthropocentric interpretation and signification? Are there any alternatives that would shatter this underlying dualism?

Despite nature's protean and complex manifestations, the dualistic understanding

of nature has overwhelmingly enveloped Western discourse. Nature has often been disdained as a domain of "mere matter" displaying decay, corruption, and even evil, in contrast to the transcendental, divine, spiritual realm of no-nature, beyond-nature, or nothingness. Nature has been plunged into a fissure that wedges its complexity, ubiquity, creativity, and fecundity into a unified, determined, non-dynamic system of equilibrium. This creates a paradigm of antagonistic dualism in which the domination of order over chaos strains our entire understanding of the whole picture of the universe. Is this strained and unbalanced picture a sheer fabrication of human psychology that abjects our spawning ground, although a longing for a lost origin is not completely eliminated in it? Or, is it nature itself that is exhibiting a striking providence, which then anchors to the shore of religion? Can a scientific probe of nature eradicate a religious embellishment of nature as a dichotomy of chaos and order?

With regard to these questions, I would like to read Genesis 1-2:4a in the contexts of post-modern scientific theories, ecstatic naturalism, and philosophical Taoism. I believe the implication of these scientific and metaphysical cosmologies for the reading of

Genesis can germinate better interpretations by which to envision a more hopeful relationship between God and the whole creation. What is meant by the significant of order and chaos in these cosmologies, therefore, transforms interpretations by agitating the boundaries of theological dogmatism and adding richer meanings for understanding nature/creation.

In the beginning.

In the classical Christian doctrine of creation, the concepts of time and space are entwined with notions of order and chaos. Since the idea of linear time, and the related idea that an omnipotent, infinite God created finitude at a definite moment in time, are crucial aspects of the traditional doctrine of creation, the biblical phrase, "in the beginning," has understandably been loaded with interpretations not true to its original Hebrew meaning. According to the doctrine of *creatio ex nihilo*, there were no time and space before God's creation. Beliefs about God's infinity and absolute power have become convolved with the linear time concept that presumes a chronological beginning and end to the finite. Finitude appears bounded in its processes of decay, decline, and death, all of which must be transcended through humanity's relationship with God. In this paradigm, comprehending the order of creation is an assurance to humans that the omnipotent God will conquer chaos, freeing us from our imprisonment in finitude.

Absolute nothingness resonates with the "singularity theorem" that assumes "a point of infinite density and infinite curvature of space-time;" thus, time begins only at the big bang.¹ But what if the universe has no singularity, as Stephen Hawking argues? Hawking refuses the idea of a singularity, claiming another view in which "the universe would be completely self-contained and not affected by anything outside itself;" thus, "it would neither be created nor destroyed," but "it would just be."² This theory negates the idea of *ex nihilo* while also blur-

ring the linear sequence of chaos to order. Hawking's "no boundary" theory explains the continual increase of disorder in the same direction of time as that in which the universe expands. He shows how the "three arrows" of time dissolve the deterministic and mechanistic relation of time and order.

[The three arrows of time] are the thermodynamic arrow, the direction of time in which disorder increases; the psychological arrow, the direction of time in which we remember the past and not the future; and the cosmological arrow, the direction of time in which the universe expands rather than contracts.... The no boundary proposal for the universe predicts the existence of a well-defined thermodynamic arrow of time because the universe must start off in a smooth and ordered state. And the reason we observe this thermodynamic arrow to agree with the cosmological arrow is that intelligent beings can exist only in the expanding phase.³

In the expanding universe, therefore, order and chaos are not split in the sense that they are increasing in opposite directions of time.

Relativity theory shatters the notion of absolute time, as there are different measures of time depending upon the observers' relative state of motion or velocity. The idea of fixed time is meaningless since time has its dynamic interrelation with space in which the curvature of space and time is flexible and complex. The problematic idea about time and space in the traditional doctrine of creation is that time and order are viewed as parallel to divine characteristics, while space and chaos are viewed as parallel to creaturely manifestations. Time and order, thus, take superior images over space and chaos. This kind of thinking builds a hierarchical and dichotomous dualism that undermines the dynamic interactions of space-time and chaos-order. In that way, the understanding of the universe loses its luminous blaze radiated from nature's

beauty. The innumerable interdynamics of cosmic processes are, however, the locus of God's interaction with the world. There is chaos, spawning potentiality, and maternal gestation from which creation emerges. The birthing processes of nature in innumerable modes of fecundity still create nuclei, electrons, stars, molecules, plants, animals, etc. The expanding universe, in a "large-scale map-making," is isotropic and homogeneous, and that would presume cosmic order, if order means stability and smoothness. But does chaos completely disappear into order?

Chaos/order

The dogma of *creatio ex nihilo* rejects the preexistence of chaos. The substitution of chaos with absolute nothingness is woven into the omnipotent image of God; however, this contradicts the Hebrew Scripture, which portrays repeated battles between God and chaos. The first word of Genesis, *bereshit*, is the construct-form in Hebrew grammar, not the absolute form, which suggests the

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preexistence of chaos, *têhôm*.⁴ *Têhôm*—abyss, deep, ocean, the primordial waters—is an indispensable catalyst for the burgeoning of creation. If *ex nihilo* eliminates chaos—and there are many biblical sources that demonize chaos—then this demonization inevitably requires the birth of a heroic warrior God to have battle with chaos, as, for example in the story of the sea monster Leviathan.⁵ The conquest of chaos is not a once-and-for-all-time battle, but rather a

constant struggle, alluding to nature's ceaseless cycles. Does this mean that nature is the evil chaos that must be conquered or at least controlled by God for the sake of humanity?

The tutelary image of God intrudes into the trajectory of a human limit. The imagery of this elliptical orbit of God held by the gravity of the human world collides with the integrative relationship of God and the whole creation. If nature is seen as an evil power that threatens human life, then where does God's blessing upon the whole of creation fit? And how can the omnipotence of God allow the evil power to exist, considering it pre-excludes the creation of evil? Although chaos indicates the formless and the pre-spatial, it still illuminates a spatial image since it is not nothingness, but a potentiality that has not yet been actualized. Chaos and space are, thus, mingled images that have been disdained in much theological discourse, especially through a kind of negative feminization. The materiality of the primordial chaos is the spawning potentiality from

which creation is unfolded. Thus, this womb-like chaos connotes the mammalian birthing process. Why, then, does chaos evoke an evil image, tainted with sinful corruption? Is there a cryptic code hidden in human psychology that causes us to fear the unfathomable depth, the primordial *hystera*, the lost origin?

The philosophical perspective of ecstatic naturalism links the abject unconscious of the self with the unconscious of nature. In this connection of depth psychology with semiotic ontology, Robert S. Conington proposes that "the unconscious is the primary means by and through which the sign-using self becomes open to the heart of nature in its self-fissuring."⁶ According to him, just as the self has a cleft from which an ontological wound/difference emerges, so too

nature is split into *nature naturing*—the potencies of nature (or nature creating nature), and *nature natured*—the emerging orders of nature. *Nature naturing* consists of pretemporal/prespatial potencies from which all forms of signification emerge into semiotic orders. The transitional process of nature, from potencies to orders, is analogous with the human “selving process” that denies and fears maternal chaos:

Finite human consciousness stands to its own unconscious in the same way that *nature natured* stands to *nature naturing*. In both cases primal chaos is conquered so that an ordered (or at least partially ordered) domain can emerge and prevail against that very chaos. For finite consciousness to survive and emerge intact from the waters of the maternal it must push away its spawning ground and see it as a devouring threat. To return to the unconscious (qua birthing ground) would be to lose all light and all order, to be dismembered by the uncanny power that lies in the whence.⁷

So, a parallel abjection may be seen in human psychology, which is a fear of nature’s ubiquitous phenomena that are incomprehensible, uncertain, non-deterministic, turbulent, and paradoxical. Yet it is nature that manifests all those ambiguous and complex interminglings of order and chaos. Those complexities, moreover, are where/how life evolves. This can be imagined as the *rūah* hovering over *têhôm*.

When life evolves...

The ceaseless movement of nature in its life process is complex and chaotic. Although the classical worldview posits nature in determinist, mechanist, and reductionist modes, the truth is that there are many uncertain or indeterminate traits in nature. Quantum mechanics discloses the discontinuous processes of microcosms. Werner Heisenberg’s uncertainty principle represents the uncertainty of the position and velocity of an individual particle and only the probabilities of possible outcomes. It suggests the randomness and unpredict-

ability of nature, which are often experienced in the field of chemistry. The concept of chance, thus, signals a non-deterministic world. Giorgio Careri properly indicates this point:

[C]hance plays a decisive role in the choice of new structures, by taking the system farther and farther away from equilibrium in an unpredictable direction. Thus the forced evolution of the system from one new structure to another must in part have a “historical” character because of the influence of the preceding situation, but it also has a “nondeterministic” character caused by the series of bifurcations it must come across. . . . This gives the system several alternative possibilities of evolution that cannot be predicted because each branch of bifurcation is selected at random at the moment of instability.⁸

The non-linear dynamics of nature are often hinted at in the turbulent parameters of “strange attractors.” A strange attractor is not like a simple and limited motion of “fixed point attractor” and a “periodic attractor” that representing the behavior of movement that reaches to a rest state or repeats in a cyclic path in phase space. A strange attractor manifests much larger phase space that has infinite modes, infinite degrees of freedom, and infinite dimensions.⁹ Turbulent chaos, however, does not refer to sheer disorder, but rather to the wholeness of an order that is too complex to be comprehended, as shown in the Mandelbrot’s fractal shapes. According to chaos theory, the simple-appearing orders actually undergo multifarious bifurcations in vastly fluctuating processes which are far from exhibiting equilibrium.¹⁰ To my understanding, this complex chaos is the maternal ground for creativity.

Does the hovering *rūah* over the *têhôm* connote a fluid movement inciting creation? If creative evolution requires movement, then the wind-like *rūah* is parallel to God’s creative activity, from which it follows that it is not rigid mastery over chaos but ceaseless rhythmic spontaneity. As

Terence E. Fretheim states, this “involves a process of action and interaction with what has been created.”¹¹ More significantly, “let” or “let there be,” which precedes the telling of each act of creation, symbolizes the possible flexibility of creation’s own agency. Fretheim’s commentary is convincing:

God’s speech reveals divine vulnerability, for God’s speaking does not occur in isolation or function as command. The use of the jussive “let there be” leaves room for creaturely response.... God’s way of speaking creation communicates with others, makes room for others, with the attendant risks. God no longer chooses to be alone.¹²

In this regard, creation can be conceived as the avatar (incarnation) of love. Despite the human attempt to sublimate God into the image of the transcendental master, the spiritual interaction with creation, as depicted in Genesis 1, manifests a divine love that respects creaturely freedom, these creatures having their own creative and complex agency.

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Stuart Kauffman’s own version of complexity theory is valuable for envisioning creatures’ autonomous dimensions. Kauffman proposes “complexity theory” to explain that the crystallizations of catalyzed reactions take place “at the edge of chaos.”¹³ He argues that the order arising at the edge of chaos is not an system at equilibrium; rather, it suggests an order “full of flexibility and surprise,” which he calls “complexity.”¹⁴ The evolution of a life-system that displays order is the result of spontaneous self-organization, which occurs at what

Kauffman calls the “phase transition.” Additionally, he explains that life is constituted by a vast web of crystallizations, by which he means that life emerges collectively as a whole:

Life is an emergent phenomenon arising as the molecular diversity of a prebiotic chemical system increases beyond a threshold of complexity. If true, then life is not located in the property of any single molecule—in the details—but is a collective property of systems of interacting molecules. Life, in this view, emerged whole and has always remained whole. Life, in this view, is not to be located in its parts, but in the collective emergent properties of the whole they create.¹⁵

The “phase transition”—the spontaneous interaction of chaos and order—is necessary for life’s emerging process. And this evolution of life is augmented by its collective interactions as a whole.

This view is very congenial to the expression of “let...bring forth” in Genesis 1:20 and 1:24, which illuminate life’s self-organization and its flexible processes in the

open and dynamic field of creation. If “let there be” reflects a divine love that encourages creatures’ autonomy, “let...bring forth” perhaps more specifically associates with the quickening process of life. With the patriarchal contempt for space and chaos in relation to matter and flux, it is interesting that “let...bring forth” is applied only to earth and water, which can be understood as the maternal grounds of life. The rigid reading of Genesis found in this patriarchal pragmatism is absurd in this case. The beauty of creation abides precisely in its unconstrained mobility, when it is attuned to the whole. God’s rejoicing of *tob*, which means “good” and was expressed by God during the creation, refers to a core of divine love that signifies nonjudgmental gratification, and the final “very good” after the creation denotes that

creation ought to be comprehended as a whole. The controlling valuation of the physical world is incompatible with the lure of God. God's response and relation to creation cannot be constrained to the human order system. The blessing of God, "be fruitful and multiply and fill the earth," therefore, is not meant for the abundance of human economy, but for nature's enhancement. And this enhancement is truly possible only in open creativity with the fluidity of nature. Nature's ceaseless flux is the essential notion of philosophical Taoism.

What Taoism illuminates is that nature's binary aspects never create a splintering that distracts from the harmonious continuum of nature's deeper condition. Order and chaos are not opposite aspects of nature; rather, they imply the subtleness of the depth-harmony.

The "how" of nature

In Taoism, the "how" of nature is the "how" of Tao. Taoism posits nature's spontaneity and the dynamic interactions at its core. Although it recognizes the bipolarity of natural phenomena, Taoism does not simplify nature's ubiquity into the dichotomous dualism that connotes the hierarchical value judgment. Rather, it contemplates nature's recondite fusion and disclosure without differentiating its value. In Taoist cosmology, nature freely flows into the incompatible horizons of order and chaos without friction. What Taoism illuminates is that nature's binary aspects never create a splintering that distracts from the harmonious continuum of nature's deeper condition. Order and chaos are not opposite aspects of nature; rather,

they imply the subtleness of the depth-harmony. Nature is Tao itself, and, at the same time, the manifestation of Tao from which everything flows is the way of Tao. Although the Tao signifies infinity, this should not be perceived as being identical to a notion of theistic infinity. Tao stays within nature, not beyond it. Tao is the ground of nature that mysteriously dwells within nature while at the same time exhibiting nature's potentiality and possibility in both orderly and chaotic manners. The inexhaustible abyss of nature is like an eternal void filled with infinite potentialities that sprout infinite worlds.

Tao, therefore, does not differentiate good and evil and does not try to overcome the chaotic and demonic aspects of nature. Tao is manifested in *yin-yang* dynamics, which consist of the movement of nature's polarity. Despite the opposite-symbolism of *yin* and *yang*, such as dark and light, passivity and activity, and female and male, what is signified is not separable substances, *yin-yang* rather

than *yin* and *yang*. It is a notion of a complementarity, symbolizing a paradoxical, interrelational polarity. Life evolves by the interplay of *yin-yang* dynamics, which represents the reciprocal process by which the current of nature flows as ceaseless change. Change is the heart of nature, leading to constant creativity and transformation in order to achieve harmony. Harmony, nevertheless, is not a unified order fixed in a utopian idealization. The process of transformation does not have a teleological directionality; rather, it lets things be themselves, creative, and flowing continually without artificiality and coercion.

The Tao, however, does have a nurturing principle, which is well described in the *Tao Te Ching*:

The Tao gives birth to all beings,
nourishes them, maintains them,
cares for them, comforts them, protects
them,
takes them back to itself,
creating without possessing,
acting without expecting,
guiding without interfering.
That is why love of the Tao
is in the very nature of things.¹⁶

As this passage shows, nurturing is somewhat different from intentional protection, nurturing emerges from "letting be," since there is no sheer quintessence in nature, but boundless flux. Taoist cosmology, thus, leads one away from an initial portrayal of nature, however orderly or chaotic it may look, to a more vast understanding of nature. It does this by helping us to see the oscillations and transgressions of the boundaries of order and chaos.

As mentioned above, the "how" of nature in ecstatic naturalism is situated at a fundamental divide in nature. Nature is all there is, and obtains as the availability of orders, orders that have no location. Yet within nature "betweenness" relations obtains. The potencies of *nature naturing* are pretemporal powers, emerging into the complex intersections of the world of *nature natured*. The pretemporal is, thus, "in no sense the eternal, as the pretemporal domain has absolutely no awareness of the temporality of the foundlings of *nature natured*;" rather, it can be understood as "the not yet temporal."¹⁷ On the other hand, the orders of the world are infinite, as nature is constituted by an infinite series of "signs" and "interpretants (new signs)," which are surrounded by open infinities. These open infinities are inexhaustible, since *nature natured* is the mobile space within which semiotic orders unfold. As the fissure between *nature naturing* and *nature natured* can be brought to human awareness through the unconscious, the sacred is ejected from *nature naturing* into the location of *nature natured*, carrying a fragment of the ultimate origin from *nature naturing* into

the world of semiosis. Nature's sacred folds, says Corrington,

have no collective integrity, nor do they embody a common teleological pattern [because] they are prior to the emergence of good and evil traits within the human order.¹⁸

The sacred is manifest in four ways: sacred folds, sacred intervals, the unruly ground, and providingness. "Sacred folds" are epiphanies of power within nature, representing an increase in semiotic scope and density. However, there is no "ultimate" sacred fold. "Sacred intervals" emerge from the fissure of divided nature, they surround intense semiotic fields by encountering the sacred folds as an equal vector-force to dampen semiotic power. Therefore, if the folds emerge from a fragmented origin, the intervals move toward fragmented goals. The "unruly ground" is the non-located source for the world of orders; it is unconditional and incomprehensible in the depth of mystery.

[It contains both] demonic and salvific seeds, [which provide] both actualities and possibilities, goods and absences, life and death, space/time and thing in space/time, infinitesimals and points, form and chaos, growth and decay, movement and stasis, meanings and surds, invitations and closures, and innumerable complexes for which humans have no categories, and presumably never will.¹⁹

Finally, there is "providingness" that is always present within nature, but not as a conscious agent to sustain human desire.

Nature, for both Taoism and ecstatic naturalism, is what it is. Both cosmologies recognize that the infinite world of nature is beyond human control and boundaries. Whatsoever emerges in/from nature always resides within nature, not beyond. There is an inexhaustible abyss in nature that ceaselessly unfolds both order and chaos in a complex interdynamic that may and may not be pertinent to human sustenance, since nature is not a conscious agent that always patronizes its offspring. Nature, neverthe-

less, has a nurturing aspect or natural grace that can be an anchor for the existence of living organisms. These two metaphysical disciplines, Taoism and ecstatic naturalism, are also, in many aspects, congruent with the theories of science just explored. This congruence may be seen in regard to the notions of order and chaos, which some scientific theories portray as vital manifestations of nature spawning and sustaining life. Likewise, in ecstatic naturalism and Taoism, the subtleness of order and chaos engulfs human conscious into the swirling abyss of mystery of nature beyond human intelligibility, a mystery that radiates power, thereby becomes holy and demonic, depending on human projections and frameworks. Taoism and ecstatic naturalism, however, do not deny the sacredness of nature, believing this is not a hollow projection but the real of nature.

What these metaphysics provide for theological discourse is, firstly, that nature has a dimension beyond human intelligibility, which may look at times to be chaotic and demonic, but which should not be made abject by human defiance and fear, since this mysterious dimension is where everything originates. Secondly, the myriad complexities of natural phenomena should not be strained into a dichotomous simplicity, since there is no creativity or life without complexity. When nature is degraded in the human paradigm to "mere matter" to be manipulated and disdained, we lose our ability to perceive nature's dynamic currents and luminous beauty. Theologically speaking, nature's beauty is bestowed from God and respected by God. And God abides within nature in the form of love/spirit, which stimulates creativity, immanently interacting with the world's vital flow.

God blessed the seventh day and hallowed it

God's blessing on the seventh day signifies a meaning slightly different from the blessing of nature's abundance, which appeared on previous days. The seventh day does not indicate the completion or perfection of creation; the focus, rather, is on divine rest. If divine creative activity occurs

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as the hovering *ruah*, luring actualization from potentiality, the divine rest fuses with the subsequent transition phase from which the whole creation flows from its own fluid processes. The divine rest, therefore, does not refer to divine withdrawal from creation in order to be in solitude. The blessing assures this point. If God's rest was divine recession, what would be the meaning of the blessing? A more reasonable way to perceive the blessing is that God inspires the enhancement of creativity of the whole creation by fusing into it; in other words, God becomes fully immanent in the world. However, the real significance comes after the blessing. God "hallowed it"! Thus, the blessing may signify God's disdain for the human insistence on dominating nature rather than revering it. While in Genesis God hallows the whole creation, today human beings destroy it, as if the creation exists only for human purposes. The dichotomous dualism underlying the doctrine of creation ravages the deep wisdom of nature.

The depth dimension of nature continually emits rich significations into the human world. Some of these significations radiate

divinity, which in turn evokes human-constructed religious significations. Problems arise at the juncture of the sheerly religious significations of nature with human order systems, and because of that, religious significations inevitably encompass socio-cultural milieus. As has been shown, patriarchal and hierarchical strategies in the reading of Genesis shroud and splinter nature's divine significations. Nature's fertile soil and depth have been exploited and desolated by those human order systems inclining toward power rather than wisdom. Human vulnerability--both physical and psychological--often yields power through systems of oppression and domination, affecting not only nature but also other human beings. A fixed notion of order against chaos is dangerous to any kind of justice. The ecological crisis, therefore, requires a more judicious consciousness that would attempt to heal the human estrangement from its origin, the spawning ground of nature. The abjection of the abysmal origin, the delusion of human superiority, the compulsive logic to simplify nature's complexity, the eulogization of the omnipotent God: all of these escalate the ecological tragedy. The treacherous logic of the human order-system shatters the interconnectedness and interdependence of human sustenance on nature. The reverence of nature—not romanticization of nature—is the fundamentally required sensitivity.

How we conceive of nature inevitably underpins how we read Genesis. Insofar as the classic doctrine of creation emphasizes static order over fluid chaos, we are kept from comprehending nature's dynamic creativity and beauty. Despite human efforts to apply human systems upon nature's currents, nature continues to flow through its own streams beyond human power. De-

monic natural phenomena (from the human perspective), which include the ecological crisis, are also part of nature's vast power. Nature is not an object simply for human "use," but has a metaphorical subjectivity manifesting its own dynamic movements, even though this is far different from human conscious subjectivity.²⁰ There are, however, chaotic open spaces in nature that metaphorically and unconsciously permeate, with deep

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wisdom, through the boundaries of human order systems. The expanding universe: a conception that this is the place where theological discourse intertwines with philosophy and science to augment nature's rich wisdom. The veiled mystery of the universe remains too chaotic, incomprehensible, and unpredictable for human understanding to grasp completely. And this is partly because the universe is still creating and expanding, not only in its physical dimensions but also in its horizons of meaning, where veneration may emerge.

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Endnotes:

1. Hawking, p. 138.
2. Ibid., 141.
3. Ibid., 156.
4. E. A. Speiser suggests that "At the beginning of..." or "When" instead of "In/At the beginning" are proper ways of interpretation for *bereshit*. See Speiser, p. 12. Terence E. Fretheim also proposes that "the word beginning probably does not refer to the absolute beginning of all things, but to the beginning of the ordered creation, including the temporal order;" thus, "God's creative work in this chapter begins with something already there." See Fretheim, p. 342.
5. The combat paradigm between God and chaos is often found in the Old Testament, such as Psalms 89 and 93, and Isaiah 51.
6. Corrington, *Nature's Self*, p. 4.
7. Corrington, *Nature's Religion*, p.129.
8. Careri, p.109. Quotation from Ahmed, p. 259. Emphasis in the original.
9. See Gleick. See also Briggs and Peat.
10. Briggs and Peat.
11. Fretheim, p. 344.
12. Ibid., p. 343.
13. See Kauffman.
14. Ibid., p. 26.
15. Ibid., p. 24.

16. *Tao Te Ching*, ch. 51.

17. Corrington, *Nature's Religion*, p. 123.

18. *Ibid.*, pp. 61, 135.

19. *Ibid.*, p. 102.

20. Sallie McFague proposes a "subject-subject" model, instead of "subject-object," for the human relationship to nature. See McFague, pp. 7-8. Jürgen Moltmann mentions nature's independent history that has subjectivity, by following Ernst Bloch's assumption. See Moltmann, p. 42. Korean theologian, Sang Sung Lee, also argues that nature has subjectivity in the sense that it has the ability to resist human exploitation. See Lee, pp. 171-175.

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