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# Swarm Theology

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*Deborah J. Pope-Lance*

*After showing the unsuitability of continuing to use some earlier models of divine action, the author examines the implications for God's involvement in the world suggested by the current understanding of the behavior of complex systems.*

To the problem of God, Henry Nelson Wieman responds, "whatever the word God may mean, it is a term used to designate that Something upon which human life is most dependent for its security, welfare and increasing abundance. That there is Something cannot be doubted. The mere fact that human life happens, and continues to happen, proves this Something, however unknown, does certainly exist."<sup>1</sup>

Life happens. God is what makes life happen and continue to happen. How does life happen? All theology is cosmology--a theory about the origins, process and structure of the universe. Theologies and cosmologies outline how the universe happened, how it works and how it continues to happen.

Consider how the Medieval world worked, according to both theologians and scientists. The universe was a three-story apartment building. Heaven on the penthouse, full of stars and God. Earth on the middle floor, housing people and animals and plants. And in the basement, Hell, residence of the devil and the damned. From the penthouse, God watched humanity. God controlled and directed everything. Humanity prayed for God's mercy and salvation.

Lately, in the last 500 years or so, beginning about the time Copernicus discovered that the sun did not move around the earth, this view changed. Scientists no longer generally agreed with theologians about the nature of the universe. Theologians still look for God in heaven but scientists report God has moved. Scientists since Copernicus observe that the earth and

the people on it are in motion. And that the earth is just one of many planets that move, and not the center of anything at all. No longer residing in heaven, watching and directing human life, God became a remote, uninvolved creator. Humanity, no longer the center of God's attention, managed the best it could.

Two interesting spiritual developments occurred as a result of this changed view. One was that humanity began to accept responsibility for the quality of life in the universe. Humanity could not manage God's scale of control, of course. But neither could we simply sit back and expect a free ride. Humanity had a partnership with God. A second spiritual development was acknowledgment of the human person as individual and unique, especially in perspective. Diversity was born. When God controlled everything, there were no individual opinions; just heresy. In the God-Human partnership, a variety of viewpoints are understood as valid and useful.

In contemporary formal scientific discourse, God rarely appears. But in private conversations, scientists sometimes acknowledge a reverence for the designer of this vast, complicatedly wondrous cosmos. More technical than theological, more watchmaker than loving parent, science's designer God amounts to necessary preconditions or operating structures. A designer God is theology as pure cosmology. God is how the universe is and how it works. One cosmology widely accepted by contemporary scientists is interdependence.

Based on biological models, interdependence states that all of life, humanity as well as all living organisms and systems, operates by an interdependence of various internal processes and within an interdependence of external processes. The universe is an interdependent web of existence.<sup>2</sup> The prosperity or survival of any life form is interdependent on all life forms. The universe is a big boat; we are all in the boat together.

This view is vastly different from the cosmology forwarded in the Book of Genesis. "Be fruitful and multiply," God directs humanity in the first chapter, "and fill the earth and subdue it; and have dominion over the fish of the sea and over the birds of the air and over every living thing that moves upon the earth." Hardly interdependent, humanity is described as living off the earth and every living thing like a parasite. Humanity's dominion has met with decidedly mixed results. Human existence now threatens earth's existence. In this cosmology, God, who made and directs everything, may need to make and direct a miracle in order to save creation.

Sometimes interdependence is suggested as a saving corrective to the mess made by humanity's dominion. Humanity should live interdependently with earth and every living thing, and disaster will be prevented. In this way, interdependence functions as a belief about how things could be, about how the world might be better, about how life might

happen in a better way, if we were to think and act more interdependently.

Before applying pesticides to kill off pesky insects, for example, humanity should consider how these

pesticides will adversely impact human and other life. Thinking interdependently will lead to the discovery of insect-control methods that are less injurious to us and to the interdependent web of all existence.

Alice Walker speaks of this type of interdependent consciousness through her heroine in *The Color Purple*. Awed by the

recognition that she was connected to everything else, Celie observes "that feeling of being part of everything, not separate at all. I knew that if I cut a tree, my arm would bleed."<sup>3</sup> And in the words attributed to Native American Chief Seattle, "Humankind has not woven the web of life. We are but one thread within it. Whatever we do to the web, we do to ourselves. All things are bound together. All things connect."<sup>4</sup> Walker's and Chief Seattle's views, while admittedly theological, describe a *quid-pro-quo* kind of connection. As corrective visions, they caution, "Don't hurt others because you'll hurt yourself." In an interdependent web of existence, however, connection is more complicated and pervasive. Interdependence cautions that whatever we do to any part of the web effects every part of the web.

Interdependence is the way everything is. Everything effects everything else. Even when you are not aware it does. Even when you cannot figure out how it interdepends, it does. We are all related. Everything is related to everything else. Nothing can be isolated or disintegrated from the whole.

Biological interdependence is not merely connection. It is interaction. All living systems and organisms operate according to feedback loops. Biological feedback loops operate like home thermostats. When we are cold and want it to be warmer, we turn the thermostat up to a higher temperature. The higher temperature

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turns the furnace on and generates heat. The temperature in the room gets hotter. The thermostat senses the hotter air exceeding the requested temperature and signals the furnace to stop generating heat.

All biological systems, big ecological systems, smaller organisms like humans, and even tinier organisms like sea coral,

reduce to feedback loops. These regulate everything. How many trout will be in the pond this summer? How much sunlight reaches the earth? Too much rain and lawn fertilizer, fewer trout; fewer trout, fewer tourists fishing, more mayflies; more mayflies, more trout. Unprecedented volcanic eruptions produce ash and smoke; the ash and smoke clouds the skies for months; less sun reaches the gardens; the temperature drops; the tomatoes are small. These feedback loops are described in more or less linear and consequential terms, but biological interdependence is more accurately circular and concurrent. And more complex.

Biological systems amount to endless interactive and simultaneous networks of feedback loops. Less sunlight reaching the earth reduces the algae in the pond, which in turn increases the oxygen in the water and the likelihood of more trout surviving. More trout may improve the fishing and raise the number of human neighbors. More humans in the area may result for a time in the increase of lawn fertilizer followed by a consciousness about the toxic effects of fertilizer on trout. In a simultaneous, interactive process of infinite interactions (and interactions of interactions) something can be both cause and effect.

A causes B. B causes C. C causes A. A is both cause and effect. Defying all customary logic, something can be both its own cause and effect. Brian Goodwin, an evolutionary biologist, observes, "The organism is the cause and effect of itself, its own intrinsic order and organization. Natural selection isn't the cause of organisms. Genes don't cause organisms. There are no causes of organisms. Organisms are self-causing agencies."<sup>5</sup>

In interdependence, God is not sitting in the penthouse, ordering out for green tomatoes and trout. Living systems and organisms are distributed systems. Control of what happens is not centralized or isolated but distributed throughout the system. Trout and tomatoes participate in the ordering-out process. The autonomous

actions of every living thing connect and interact infinitely.

Among the more dramatic illustrations of distributed systems is the operation of a swarm of bees. Kevin Kelly describes it:

A hive about to swarm is a hive possessed. It becomes visibly agitated around the mouth of its entrance. The colony whines in a centerless loud drone that vibrates the neighborhood. It begins to spit out masses of bees, as if it were emptying not only its guts but its soul.<sup>6</sup>

What commands a hive of bees to swarm? Scientists know it is not the queen bee.

When a swarm pours itself out through the front slot of the hive, the queen bee can only follow. The queen's daughters manage the election of where and when the swarm should settle. A half dozen anonymous workers scout ahead to check possible hive locations in hollow trees or wall cavities. They report back to the resting swarm by dancing on its contracting surface. During the report, the more theatrically a scout dances, the better the site she is championing. Deputy bees check out competing sites according to the intensity of the dances and will concur by joining in the scout's twirling. That induces more followers to check out the lead prospects and join the ruckus when they return by leaping into the performance of their choice. Few bees visit more than one site.... [T]he bees simply get the message, "Go there, it's a nice place." So they go and return to say, "It's real nice, go there." The favorite sites get more visitors.... Gradually...the biggest crowd wins.... This is the true nature of democracy and of all distributed governance. By choice of the citizens, the swarm takes the queen and thunders off in the direction indicated by mob vote. The queen follows.<sup>7</sup>

The hive commands. A mob, thousands of bees united into one, directs itself to swarm.

An endless interactive network of feedback loops. The swarm has no center, but rather thousands of autonomous bees engaged in parallel actions, interacting with one another, influencing each other in nonlinear--even non-rational--ways. The bees decide to swarm out of the hive by interactive networking, by interplaying multiple directives, and by resolving a vast diversity of choice. The swarm is a distributed being, in which no individual part is more or less powerful, more or less valuable than any other. Whatever happens emerges from the interaction of all the bees.

Indeed, "the marvel of [a] hive mind," writes Kevin Kelly, "is that [while] no one is in control...an invisible hand [seemingly] governs, a hand that emerges not from any one bee but from [the individual bees all together]." <sup>8</sup> What emerges is more than a sum of its parts. In the words of an expert in ant colonies, a hive emerges from the mass of individual ants, a "superorganism superceding the resident properties of the collective ants." In this way "emergence was a way to reconcile the reduce-it-to-its-parts with the see-it-as-a-whole approach." <sup>9</sup> Emergence happens because of each part's capacity to connect, interact, to relate. Emergence keeps life happening, generating the whole's capacity to evolve, to create something new and distinct. Emergence is how life happens and continues to happen.

"If God is that Something," as Wieman attests, "that makes life happen," what can we learn of God from this biological model of interdependence? What sort of theology does this cosmology assume or infer?

In a distributed system, like a swarm of bees, what makes life happen, what controls everything, is the interaction of all the autonomous multiple parallel parts. God is not one supremely influential node in the network. God is not even the network itself. God is the capacity to network, to be immanent in an endless act of interacting and networking.

Martin Buber wrote in his most famous title, *I and Thou*, "In the beginning is the relation." <sup>10</sup> God is discerned not as a separated being, as an entity or figure, but a being in relation, as in the very essence of the verb, to be and to become. God is relation, the capacity to relate, connect, and interact, from which emerges life, evolving, new and abundant.

In an entirely secular perspective, this relational capacity has been identified as the process by which individual humans evolve. Psychologist Judith Jordan and other

therapists have observed that psychological theories that posit a contained, distinct self, separated from its context, are limited and not wholly accurate. Instead, she offers a relational model of human development, which "stresses the importance of the intersubjective, relationally emergent nature of human experience." She observes that "the deepest sense of one's being is continuously formed in connection with others, and is inextricably tied to relational movement." <sup>11</sup>

Relationality. Connectivity. Interactivity. Emergence. These are the processes from which every living thing is created, survives, and prospers. The powers of God, immanent within and among all living forms and organisms. This is a relational god, wielding power in relation, a relation of which we are an essential participant. Carter Heyward observes that this power in relation, inherent in human life and in every living thing, is what we may lay claim to, in order to change the world. Heyward writes, "For god is nothing other than the eternally creative source of our relational power, our common strength, a god whose movement is to empower, bringing us into our own together, a god whose name in history is love." <sup>12</sup>

A god of relational power is quite other than a god in the three-story universe. The God who spoke to Job out of the whirlwind

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was omnipotent and almighty. "Who is this that darkens counsel with words without knowledge? Gird up your loins like a man, I will question you, and you shall declare to me. Where were you when I laid the foundations of the earth?" <sup>13</sup> Wielding unilateral power, Job's God is the biggest, most powerful being in his neighborhood called Universe.

Bernie Loomer, a process theologian, distinguishes these two kinds of power: "unilateral power" and "relational power." Unilateral power is "the capacity to produce an effect or to influence another." Unilateral power avails one with the capacity to control or manage another. Relational power is "the capacity to be influenced or to sustain a relationship" by or with another. Unilateral power assumes that one actor directs, manages, or coerces other actors to desired action. Relational power generates mutually determined action. Unilateral power has an inherent potential for abuse or violence, because by it one person is controlled and molded to another's whim. Relational power is inherently inclusive and mutual, because by it everyone is created and all action is determined. In relational power everything is a consequence of relationships with others. "The commitment, within relational power," as Loomer notes, is not to the self only and "not to each other but to the relationship which is creative of both."<sup>14</sup> Under unilateral power, diversity gives rise to the problem of heresy. Under relational power, diversity is not a problem to be solved, but a resource to be valued and utilized toward solution.

Wieman described God as "the growth of connection between activities which are appreciable."<sup>15</sup> In the same way that distributive beings have connective capacity, God, to Wieman's view, is connective capacity. Wieman considers God to be that which makes for possibility. Sounding remarkably like an evolutionary biologist, Wieman describes God as "Creativity," as "Creative Event," and as "Saving Creativity." "What will save and transform us," asks Wieman, "like nothing else can?" Our devotion to Creativity and Creative Interchange, he answers. He describes Creative Interchange this way:

...a process in relationship in which individuals express themselves truly and fully to one another; in which each welcomes and seeks to understand the undisguised individuality of the other; each understands the view held by the other and absorbs [that understanding] into a

personal view. In this way, each expands and enriches the fullness of experience and increases the depth of reality which enters into personal consciousness.<sup>16</sup>

Wieman describes a process nearly identical to emergence in distributive systems. He asserts that what will save us like nothing else can is our expanded understanding of each other and our world and the exercise of our capacity to engage in the process that ever enlarges that understanding.

Wieman's soteriological perspective is similar to Kelly's and others'.<sup>17</sup> Our previous understanding of our world is not working, because it is not fully or accurately informed by how things really work, especially complicated things. If humanity is going to evolve and survive, we will have to manage increasingly complicated problems. Complicated problems and operations are simply too difficult to manage by centrally controlled processes. Distributive systems offer a capacity to evolve, the aggregate capacity of endless networks of parallel processes. Humanity will be saved only by using the way every living thing works, to make every living thing work better.

A god understood and experienced in these ways will have broader religious implications. Ethics will evolve from a conversation about rights and rules, obligations and principles, to a conversation about connections and creativity and how to enhance and empower both. Worship of an interactive and relational God may first challenge language's capacity to render passionately and poetically the spirit's movement among us. More importantly, worship will be understood to be about being in relation, about connecting in the interdependent web, and about participation. Indeed, "participation" will be "the holy thing giving shape to love and justice,"<sup>18</sup> a divine immanence whose image we not only share but exercise. God is not only that Something upon which human and all living things depend, but that Something in which every living thing will interdepend and participate.

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**Endnotes:**

- <sup>1</sup>Wieman, *Religious Experience and Scientific Method*, p. 9.
- <sup>2</sup>For a religious affirmation of the interdependent web of all existence, see the seventh principle of the Unitarian Universalist Association, found in *Singing the Living Tradition*, p. 1. For a scientific affirmation, see von Bertalanffy.
- <sup>3</sup>Walker, p. 203.
- <sup>4</sup>Seattle.
- <sup>5</sup>See Kelly, p. 124.
- <sup>6</sup>Kelly, p. 6.
- <sup>7</sup>*Ibid.*, p. 7.
- <sup>8</sup>*Ibid.*, p. 12.
- <sup>9</sup>Wheeler, as quoted in Kelly, p. 11.
- <sup>10</sup>Buber, p. 67.
- <sup>11</sup>Jordan, p. 15.
- <sup>12</sup>Heyward, p. 119.
- <sup>13</sup>Job 38:2-4.
- <sup>14</sup>Loomer, p. 87.
- <sup>15</sup>Wieman and Horton, p. 353.
- <sup>16</sup>Wieman, *Seeking a Faith for a New Age*, p. 102.
- <sup>17</sup>Kelly, p. 4.
- <sup>18</sup>Adams, p. 17.

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Deborah Pope-Lance is enrolled in the Doctor of Ministry program at Andover Newton Theological School. An ordained Unitarian Universalist minister and licensed marriage and family therapist, she has served since 1978 in parish and counseling ministries.

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