

What Shall We Make of Complexity Science? Responses to Niels Gregersen

DOES GOD PLAY DICE? A RESPONSE TO NIELS H. GREGERSEN, "THE IDEA OF CREATION AND THE THEORY OF AUTOPOIETIC PROCESSES"

by *Rudolf B. Brun*

Abstract. The idea that the Creator has a plan for creation is deeply rooted in the Christian notion of Providence. This notion seems to suggest that the history of creation must be the execution of the providential plan of God. Such an understanding of divine providence expects science to confirm that cosmic history is under supernatural guidance, that evolution is therefore oriented toward a goal—to bring forth human beings, for example. The problem is, however, that science finds evidence for neither supernatural guidance nor teleology in nature. To address this problem, I understand Niels H. Gregersen to suggest that God *is* involved in the creative process. The reason science cannot demonstrate God's supernatural guidance of evolution is that the Creator structures the process from within. Gregersen argues that God is involved in the process of creation by changing the overall probability pattern of evolving systems.

In my view, such a model of how God interacts with creation is supported neither by orthodox Christianity nor by modern science. After a critique of Gregersen's argument and a brief history of the relationship between Christianity and science, I shall suggest an alternative. It is that the freedom of creation to create itself is implicit in the fundamental dogma of Christianity that God is love.

Keywords: Christian doctrine of Creation; Christianity; evolution; Orthodoxy; process theology; religion; science; tradition.

Niels H. Gregersen points to important discoveries by modern science. The first is that chance alone, even if combined with necessity, will not

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create the world. Variations cannot just be haphazard but must follow rules of self-organization. Gregersen skillfully brings up the work of Stuart Kauffman, who formulated some of these mathematical rules and used them for modeling evolution (Gregersen 1998, 344–47).

A second fundamental insight made by science is that the past does not contain the future. Here, Gregersen discusses some important aspects of the physicist Ilya Prigogine's work (pp. 339–40). Time brings forth genuine novelty. The time of the future is open. Therefore, it is through the events that *do* happen that nature becomes what it is. Self-creation through time, self-production or autopoiesis is indeed a central insight into how nature works. The general importance of this discovery lies in the realization that the history of nature is true history, not an unfolding of a pre-determined plot.

How can theology deal with science's firm assertion that there is no teleology in evolution? Gregersen suggests that the reason science cannot find evidence of evolution following a plan is that God influences the process from within. God "not only sustains the world in general but also influences particular processes by changing the overall probability pattern of evolving systems" (abstract, p. 333). The thesis states that "God is creative by supporting and stimulating autopoietic processes" (p. 334). God binds Godself to the internal dynamics of creation (p. 348); the energy of God works inside creation (p. 350). "*We might say that the blessing of God is a structuring principle, at once transcendent in its origination and immanent in its efficiency*" (p. 352, emphasis in original). "God creates by *letting be*" (p. 353, emphasis in original), "by letting the world into existence and thereby also leaving room for a self-development of nature" (p. 353).

In section 2, titled "Short-Sighted Chance, Long-Sighted Laws," Gregersen cites the statistician David J. Bartholomew: "since chance is such an integral part of creation, it must be part of God's plan. Thus we can agree that everything which happens is ultimately God's responsibility while denying that every single happening has a meaning in terms of God's intention. His purpose is rather to be seen in the aggregate effects of many happenings" (Bartholomew 1984, 118). The religious interpretation of Bartholomew's statement, Gregersen suggests, is that "the distributions of chance are not arbitrary but are depending on God's initial setting. By letting the world into being as a self-organizing and even *sometimes* self-reproductive world (emphasis mine), God is continuously upholding the self-productive capacities of matter from its simple to most complex form" (p. 355). Gregersen continues: "As creator of the self-evolving world, then God is continuously acting *a-morally* (since randomization occurs with no distinction between good and evil) but God is not acting *im-morally*, i.e. with an evil intent" (p. 355, emphasis mine). "God is seen as *reshaping the possibilities, as history goes along, by acting in different ways in different contexts*" (p. 359, emphasis in original). "[T]he dice are not only loaded once

and for all but also “*differently re-loaded in the continuation of evolutionary history*” (p. 360, emphasis mine). “God may change the constraints themselves at many different levels . . . probability pathways are raised for some pathways rather than for others” (p. 361). “Thus, from a scientific perspective God apparently does nothing!” (p. 362). Yet, “the creative re-configuration of nature by God takes on a thoroughly temporal or processual character” (p. 362). Furthermore, “God is the creator of the fixed laws of elementary physics (a nonnegotiable position)” (p. 364 n. 21.1).

EVALUATION OF GREGERSEN’S ARGUMENT: THE VIEW FROM SCIENCE

Modern physics discovered that the laws of nature came into being as events in the history of the universe. In earliest times gravity, the strong force and the weak force, emerged within fractions of seconds after the Big Bang. Light was born about one million years later, together with electromagnetism. The evolutionary process that brought forth atoms and then molecules also brought forth the laws that govern them. The laws that control the properties of water, for example—that it can be a gas, a liquid, or solid ice—came into existence together with the first molecules of water. In the realm of life the law of natural selection came into existence together with the synthesis of life. This law of nature that makes its power known to any self-replicating entity did not exist before life emerged.

Charles Darwin discovered the two-step process of variation and natural selection through which plants and animals appeared. Through one long argument Darwin convincingly showed that organisms had evolved through natural law, not supernatural intervention.

GOD, ARTIFICER OR CREATOR?

The fundamental insight of modern science that nature is capable of constructing itself is not yet fully appreciated by theology. The old image of God as the supreme artificer and designer still stands in the way of a deeper insight into the miracle of creation. The power of God is not analogous to human power only infinitely stronger. Such an anthropocentric understanding of the power of God leads to the belief that events in the history of creation must be under supernatural control, that the world is at best only “sometimes self-reproductive” (p. 355). From our understanding of how we implement plans we extrapolate to how God plans. In the old static model of creation, the power of the Creator united eternal forms with matter. From this unification the substance of everything came instantly into being.

Then geologists and paleontologists discovered that the earth and its organisms were not created instantly but had changed through an enormous length of time. Some explained these changes by assuming multiple creations. Perhaps God had created multiple times, perhaps after natural disasters?

With Newton's discovery that gravity controls the movements of planets and stars, the Creator became the supreme artificer. The world was a clock that God had fine-tuned to make the world run on its own. Consequently, God did not have to interfere with the world. It was engineered in such a way that the world would work all by itself.

The skeptic David Hume objected to such an extrapolation of human creativity to the mind of the Creator "because there is a great and immeasurable, incomprehensible, difference between the *human* and the *divine* mind" (Hume [1779] 1976, 249; emphasis in original).

Against such skepticism William Paley argued that design in nature clearly pointed to the existence of a supreme designer. Had not a supreme engineer designed the eyes of birds to see in the air but those of fish to see in the water? Just as a watch necessarily implies that there is a watchmaker, so the adaptations of organisms to their environment is proof that there is a supreme designer. Charles Darwin showed, however, that natural law is fully capable of bringing forth the adaptations that Paley had taken as proof for supernatural design. Frederick Temple, Lord Bishop of Exeter, agreed with Darwin that organisms had evolved through natural evolution but did not believe that either life (Temple 1885, 168) or the moral law (176) had so evolved. From the old essentialist, static view of creation, Temple made the step toward a new dynamic understanding of how the universe had come to be. In his view God had ordered creation in such a way that the creative movement was predetermined (mechanistic). Temple argued that evolution shows that "design was entertained at the very beginning and impressed on every particle of created matter" (235). In Temple's view the process of creation was arranged so that the beginning (almost) contained the end of the process: God had to interfere miraculously only for the origin of life and the moral law. The Temple citation at the beginning of Gregersen's article—"God did not make the things, we may say; no, but He made them make themselves"—must be understood deterministically, not in modern indeterminate terms.

It was Henri Bergson ([1907] 1911) who got rid of the deterministic straitjacket in which the thinking about nature was constrained. Nature did not mechanistically translate the blueprint of the creator into reality. Rather, a creative thrust (*élan vital*) launched the creative process through which nature could create itself.

For theology the task became to integrate such process thinking into a Christian doctrine of Creation. For theology in the mode of process philosophy, God continuously works within creation. In contrast to the role of God in pantheism, God in process theology is not nature but transcends it, continuously acting, however, within creation in a way that is somewhat analogous to the way the human mind acts upon the body. God (mind) is acting in the world (body) yet without being the world itself. (For variations on this theme and references, see Russell 1993.)

Orthodox Christianity has fundamental problems with process theology. The freedom of God becomes questionable because God (the mind) in process theology becomes vulnerable through what happens in the world (body). In addition, process theology affirms that God is guiding the creative process from within creation. If this is so, why does God not steer history around the Holocaust or the genocides in Bosnia, Rwanda, or Cambodia? How can the actions of God within creation remain morally neutral (amoral) if the outcome of such neutrality is catastrophe, perversity, and slaughter? Is God perhaps powerless to prevent disasters in creation? Process thought calls the omnipotence of God into question because of the grim reality of evil. This is in sharp contrast to the belief of orthodox Christianity as expressed in the Nicene Creed. Christians believe in God the Father, the Almighty, not in a creator whose freedom is restrained by evolution. Orthodox Christianity holds that God the Father passionately loves the world, not that God acts amorally in the world. The providential plan of God is to save creation through the death and resurrection of God's son Jesus Christ, not by structuring the process of evolution. For these reasons I cannot see how to harmonize the view expressed in "The Idea of Creation and the Theory of Autopoietic Processes" with orthodox Christian belief as expressed in the Nicene Creed.

From the perspective of science, Gregersen builds a model of how the Creator interacts with a creation in which science has no place. If God directs evolution by throwing loaded dice, scientists cannot really understand how nature works, and their life and insights become meaningless. Given the background of the accomplishments of modern science, the suggestion that God is tampering with cosmic evolution is absurd. Einstein was precisely right: "God does not play dice."

To update the Christian doctrine of Creation, one must take seriously the fundamental discovery of science that nature is fully capable of creating itself. On the other hand, orthodox Christianity holds that God creates and saves the world not through evolution but out of love, through God's son Jesus Christ. As I see it, an updated Christian doctrine of Creation must therefore be secured by the scientific discovery that nature creates itself, and in the fundamental dogma of Christianity that God is love.

CONSTRUCTING AN UPDATED CHRISTIAN DOCTRINE OF CREATION

An updated Christian doctrine of Creation has to be anchored by Christian dogma on one side and by the scientific discovery of universal evolution on the other.

As far as I know, it was the Russian philosopher and theologian Vladimir S. Solovyev (1851–1900) who first fully appreciated the importance of Darwin's discovery for Christianity. Solovyev writes:

Why must nature experience the pains of birth, and why, before it can generate the perfect and eternal organism, must it produce so many ugly, monstrous broods

which are unable to endure the struggle for existence and perish without a trace? Why does God leave nature to reach her goals so slowly and by such ill means? Why, in general, is the realization of divine idea in the world a gradual and complex process, and not a single, simple act? The full answer to this question is contained in one word, which expresses something without which neither God nor nature can be conceived; the word is freedom. (Solovvey [1873] 1948, 179)

The reason that without freedom “neither God nor nature can be conceived” is that without freedom there cannot be love. We know from experience that a loving relationship can only be entered into and committed to freely. In order to be able to give oneself away, one first has to become oneself. This becoming requires the freedom to create oneself through one’s own history. I have to be free to become me!

As human beings we can experience the nature of love, so we can understand the revelation that the Christian God is love. Human love cannot be forced on anyone; it has to be accepted freely. The same is true for the loving relationship offered by the Creator to creation. True, the love of God surpasses all human understanding; yet without freedom there cannot be love. Therefore creation *has* to be free to create itself. Without this freedom nature could not bring forth free human beings capable of accepting or rejecting the loving relationship offered by the creator (Brun 1994).

CREATION AND SALVATION, ETERNITY AND TIME

It is also essential to Christianity that the plan of God to save creation be real. How can God’s plan of salvation be realized in a creation capable of creating itself? Before wrestling with this paradox it might be helpful to address a related paradox: the concepts of predestination and human freedom. According to Christian revelation, human beings freely realize through living what they are predestined to do from eternity (see Rom. 9:28–30; Eph. 1:4–14). Could these paradoxical situations be a consequence of the relationship between eternity and time? I think it is essential to search for an answer to this question. Saint Augustine, for example, writes:

It is not with God as it is with us. He does not look ahead to the future, look directly at the present, look back to the past. He sees in some manner, utterly remote from anything we experience or could imagine. He does not see things by turning his attention from one thing to another. He sees all without any kind of change. Things which happen under the condition of time are in the future, not yet in being, or in the present, already existing, or in the past, no longer being. But God comprehends all these in a stable and eternal present. . . . His knowledge is not like ours, which has three tenses: present, past and future. God’s knowledge has no change or variation. (Augustine [ca. 400] 1972, 452)

Furthermore, in Saint Augustine’s *Confessions* we read, “Just as you knew heaven and earth in the beginning without that bringing any variation into your knowing, so you made heaven and earth in the beginning without that meaning a tension between past and future in your activity” (Augustine [ca. 400] 1991, 254).

Saint Augustine concluded that God does not create sequentially in time but in one eternal, creative act. God is the Prime Mover, who does not move—for movement is in time, God is not. In the words of Saint Thomas, God creates the world *sine motu, ex nihilo* (without motion, out of nothing).

More recently, Karl Barth formulated some of his insights into the relationship between time and eternity: “Time is distinguished from eternity by the fact that in it beginning, middle and end are distinct and even opposed as past, present, and future” (Barth 1957, 608). “Eternity is pure duration and in this duration *God is free*” (Barth 1957, 609; emphasis mine). “What distinguishes eternity from time is the fact that there is in Him no opposition or competition or conflict but peace between origin, movement and goal, between present, past and the future, between ‘not yet,’ ‘now,’ and ‘no more,’ between rest and movement, potentiality and actuality, whither and whence, here and there, this and that” (Barth 1957, 612). What is in time separated into past, present, and future, for God is integrated into the oneness of pure, eternal duration.

This way of thinking about the relationship that exists between eternity and time might reveal how creation can fulfill God’s plan by creating itself freely. Such a concept is beyond human understanding. I think, however, that we can understand that we cannot understand. The reflection upon the relationship between eternity and time also sheds light on the paradox of predestination and free will. For Christianity, the passion of Jesus Christ is the most powerful example that eternal determination and free will are not mutually exclusive. Here everyone, including Judas, is acting freely—yet through the free actions of all involved, the saving plan of God becomes precisely executed.

From this center of Christian faith it becomes clear that the paradox that exists between predestination and human freedom has to be left standing. It is one aspect of the belief in God Almighty. Analogously, it is in God’s power to create creation that can create itself. Yet by doing so, the plan of God for creation becomes precisely executed. But where and when?

Almighty God intervenes in the history of creation through the life, death, and resurrection of Jesus Christ. In this moment of time the eternal, saving act of God intersects with the history of creation. In Jesus Christ the plan of God is realized for the past, the present, and the future, because in GodMan the Christ, eternity and time are one.

The presence of salvation within time does not mean, however, that the world is not the world anymore. Salvation is within the world, offered to the world, but it does not destroy the freedom of the world. The world remains the same except that at each point in history, salvation is freely offered in Jesus Christ. In good times as well as in the experience of evil, in every moment of each human life, salvation is extended in the invitation to walk with Christ. It is in following him that we human beings, who represent the world, are honored to contribute to salvation, too. “For

creation waits with eager expectation the revelation of the children of God” (Rom. 8:19). The children of God are not taken out of this world but are sent into the world. This mission does not preclude the possibility of evil, but it includes the promise that “God will wipe every tear from our eyes” (Rev. 7:17).

CONCLUSION

To find the rightful place for the history of the universe within Christian theology, I suggest separating the history of creation from the history of salvation. The two are separate because the history of creation continues into an open future, whereas the history of salvation ends in Jesus Christ. The point is that eternity and time are neither congruent nor parallel but are, so to speak, perpendicular to one another. Linear time, the time of history, runs from beginning to end. Eternity, however, transcends time yet is present within each moment.

The connection between God and nature is the unity of God and humanity, eternity and time, in Jesus Christ. He is the gift of God to creation. Christ is the Word of God that departs from God, emptying himself so that creation can create itself through him and in him (Col. 1:16). In Christ, creation is created *and* saved.

Without freedom on both sides, the loving relationship offered by the Creator to creation would be impossible. The scientific discovery that nature is capable of freely creating itself makes explicit what is already implicated in the fundamental dogma of Christianity—that God is love.

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