

# Creation: Big Bang or the Work of Seven Days?

By [Michael Welker](#)

Today common sense would scarcely pose the question "Creation: Big Bang or the Work of Seven Days"?<sup>1</sup> The question has already been answered. If common sense engages the question at all, that is due at most to some remaining uncertainty: Perhaps there is, after all, in the old biblical creation accounts some sort of valid insight, some wisdom that has not yet been fully mined. But common sense would scarcely ask whether the old religious understandings and the new understandings of the natural sciences are compatible with each other, or whether connections can be observed between the two. The dominant opinion is that new developments in the natural sciences have turned the biblical creation accounts into documents that hold only a historical interest, vestiges of the outdated worldviews of past cultures. The striking insights achieved by contemporary scientific research into creation are worlds apart from the Bible's religious conceptions of creation. A religious concept like the idea of creation as the work of seven days makes it crassly clear how outdated those conceptions are.

This common sense view, however, jumps to false conclusions. The creation narratives, which have an effective history of millennia, are by no means naive. Rather, they provide insight into complex structural patterns, from which scientific cosmologies extract only particular aspects. The utterances about "God" and the "Creator" that we find in the latest cosmologies refer to reductionistic and degenerative forms of what

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<sup>1</sup>I am grateful to many colleagues for helpful discussion of this text at different stages of its development, especially the Canadian physicist Archie Harms, the Swiss physicist and theologian Christoph Wassermann, the German Old Testament scholars Hans-Peter Müller and Erich Zenger, and the colleagues of the Consultation on Science and Theology at the Center for Theological Inquiry in Princeton.

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developed religion seeks to know and to describe as "Creator" and "creation." The markedly greater degree of naiveté lies with representative contemporary scientific statements about "God" and about "creation."

## CREATION IN THE PERSPECTIVE OF RECENT SCIENTIFIC COSMOLOGY

The book *A Brief History of Time: From the Big Bang to Black Holes*,<sup>2</sup> by the cosmologist and Cambridge professor Stephen Hawking, has become an international bestseller. One of the reasons for the book's broad impact probably lies in the points made throughout the book about the theology of creation. These points are both religious and critical of religion.

The introduction to the book is by Carl Sagan but evidently accepted by Hawking. At the end of the introduction, Sagan one-sidedly highlights Hawking's critical stance toward religion. Sagan writes:

This is also a book about God ... or perhaps about the absence of God. The word God fills these pages. Hawking embarks on a quest to answer Einstein's famous question about whether God has any choice in creating the universe. Hawking is attempting, as he explicitly states, to understand the mind of God. And this makes all the more unexpected the conclusion of the effort, at least so far a universe with no edge in space, no beginning or end in time, and nothing for a Creator to do.<sup>3</sup>

This introduction may be great advertising. It speaks to an agnostic mood of our time and our region of the world, a mood that is critical of religion. But Hawking's own reflections on God and world are more complicated and subtle. To be sure, skeptical perspectives on God as creator of the universe are present at least throughout the first and last thirds of the book. Yet, they appear in three

different forms. Only one partially matches Carl Sagan's judgment that the book's conclusion is "a universe with ... nothing for a Creator to do." At any rate, Sagan qualifies his claim, saying that is "the conclusion... at least so far." He also characterizes the book as "a book about God... or perhaps about the absence of God." But what is it about Hawking's position that permits such a vacillating summation?

In their first form, those critical reflections on Hawking's part that we can place under the rubric theology of creation in the broadest sense pick up on a discovery made in 1929 by Edwin Hubble. Hubble's discovery that the distant galaxies are moving away from us made it possible to entertain the hypothesis that "there was a time, about ten or twenty thousand million years ago, when they were all at exactly the same place." This discovery "suggested that there was a time, called the big bang, when the universe was infinitesimally small and infinitely dense." From this discovery of galaxies continually moving farther away from each other, and from the connected hypothesis that there was once a big bang, Hawking draws

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<sup>2</sup>Stephen Hawking, *A Brief History of Time: From the Big Bang to Black Holes* (New York: Bantam, 1988).

<sup>3</sup>Hawking, *A Brief History of Time*, p. x.

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two conclusions: (1) "This discovery finally brought the question of the beginning of the universe into the realm of science" and (2) "An expanding universe does not preclude a creator, but it does place limits on when he might have carried out his job!"

This first form of cosmological reflections on the theology of creation—a form that is oriented on the big bang—continues to enjoy great popularity. After conferences of cosmologists in the last few years, the newspapers have regularly reported the struggle to gain knowledge about the first moment of the universe, which supposedly came into being by means of a "hot big bang." On occasion, the newspapers have announced that the triumph of mathematics over the creator is near.

"On the one hand, it seems as if God were to disappear once an absolute beginning of the universe is excluded. On the other hand, that which is supposed to become clear in the unified theory is described in religious forms: 'We would know the mind of God!'"

It is astonishing that, on the one hand, Hawking wants to retain the God of the first moment, while on the other hand, his thought moves in another direction, away from the "hot big bang model." With a certain irony, he reports that, on the occasion of a conference at the beginning of the 1980s, the Pope gave an audience at the Vatican to the conference participants. The Pope told the participants "that it was all right to study the evolution of the universe after the big bang, but we should not inquire into the big bang itself because that was the moment of Creation and therefore the work of God." Hawking adds, "I was glad then that he did not know the subject of the talk I had just given at the conference—the possibility that space-time was finite but had no boundary, which means that it had no beginning, no moment of Creation [that is, no 'hot big bang']. I had no desire to share the fate of Galileo."<sup>3a</sup>

In a second form of reflections that Hawking evaluates from the perspective of a theology of creation, he strives for a theory that is supposed to replace the conception of the "hot big bang" and to render superfluous the problem of the first moment. This second form of

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<sup>3a</sup>*Ibid.*, p. 116. W. Stoeger notes that although Pius XII, "in a now famous and somewhat controversial allocution to the Pontifical Academy of Sciences in 1951" identified the big bang as the "moment of creation," it is a documented fact that, at the latest, at the end of the 1980s, John Paul II warned against making hasty identifications (W. Stoeger, "Theology and the Contemporary Challenge of the Natural Sciences," *CTSA Proceedings*, 46 [1991], pp. 21-22). 1 am

also grateful to Stoeger for pointing out that, after the conference referred to by Hawking, Hawking continued to participate in events organized by the Vatican. It seems that the purpose of Hawking citing the comments given above is more to style himself an ironic hero and to strike a chord with his readership than to report facts and actual feelings.

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Hawking's reflections aims at a unified theory that connects quantum mechanics and the general theory of relativity. This theory could describe finite four-dimensional space as "completely self-contained, with no singularities or boundaries [such as a 'hot big bang']."<sup>4</sup> Hawking's religious comments on a universe corresponding to this theory, a universe that would exist in processes of contraction and expansion without being bounded by a beginning, are ambivalent. On the one hand, he asks, "What place, then, for a creator?"<sup>5</sup> On the other hand, he concludes his book not only with the hope that a unified theory of the type described above will be discovered and will achieve plausibility and broad currency within the general culture. He connects with this hope the certainty that this would be "the ultimate triumph of human reason-for then we would know the mind of God."<sup>6</sup>

Aside from the fact that this theory for which Hawking is working does not yet exist, one is struck by something remarkable in the evaluative religious thoughts and criticisms of the second form. On the one hand, it seems as if now the first moment is also to be taken away from God. It seems as if God were to disappear once an absolute beginning of the universe is excluded. On the other hand, that which is supposed to become clear in the unified theory is described in religious forms: "We would know the mind of God!" It thus remains fully undecided what religious consequences would follow if such a theory could be developed. Must we join the philosopher Nancy Murphy in concluding, "Then God would have created the only universe that mathematics permitted him to create ... He would then be beaten by mathematics."<sup>7</sup> Or would cosmological knowledge and religion merge if big bang thinking with its fixation on the first moment really became superfluous: "We would know the mind of God." Could we, in Hegel's words, switch over to a religion of the "insight into necessity?"

Hawking himself, though, suggests that even this cognitive triumph, which would signify insight into the mind of God, could quickly go stale. Even this insight would still be highly deficient: "Even if there is only one possible unified theory, it is just a set of rules and equations. What is it that breathes fire into the equations and makes a universe for them to describe?"<sup>8</sup> The open questions concerning the creation and preservation of the world go far beyond, though, the problem of the difference between theory and reality, between knowledge and actualization.

Hawking renders problematic the second form of cosmological thought (ambivalently evaluated as both religious and critical of religion) by

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<sup>4</sup>Hawking, *A Brief History of Time*, p. 174.

<sup>5</sup>*Ibid.*, p. 141. Christoph Hoffman-Richter has rightly noted that, in asking this question, Hawking astoundingly still holds on to the first form and attempts to use his repression of theory to make a point critical of religion.

<sup>6</sup>*Ibid.*, p. 175. Paul Davies has attempted to make this conception the central idea of his book *The Mind of God: The Scientific Basis for a Rational World* (New York: Simon and Schuster, 1992).

<sup>7</sup>*Der Spiegel*, 52 (1992), p. 203.

<sup>8</sup>Hawking, *A Brief History of Time*, p. 174.

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tossing out several "irregular" reflections and considerations. He writes that "science's usual approach of constructing a mathematical model cannot answer the questions of why there should be a universe for the model to describe. Why does the universe go to all the bother of existing? Is the

unified theory so compelling that it brings about its own existence? Or does it need a creator, and, if so, does he have any other effect on the universe?"<sup>9</sup>

At this point, where there is currently no prospect of an adequate accord between theory and realization, Hawking begins to consider that there might be limits to forming theories and conceiving reality in mathematical terms. In doing so, he moves toward a third form or approach contained in his reflections. This approach poses from the outset the question of whether it is possible to construct a unified theory that grasps cosmological, biological, mental-cultural, and other "life processes" in a way that respects the particular nature and logic of each. He is essentially moving toward posing the following problem: How can we develop theories of the world that incite the theoretical conceptions of reality particular to each specific discipline both to engage in syntheses and to allow their mutual differences to emerge clearly?

"The question What is creation? has not yet found an answer with Hawking. "

From this perspective, Hawking would actually have to continue working on relativistic forms of cosmological theory, such as those developed as early as the 1920s by the great mathematician, physicist, and philosopher Alfred North Whitehead. Or Hawking would have to engage critically the group of Nobel laureates and unconventional young scientists, thinkers, and researchers in Santa Fe who for nearly a decade have been advancing in an interdisciplinary manner the development of theories of complex systems. Hawking would be compelled to combine the search for a unified theory with the contrary search for events and interrelated clusters of events that, in their respective differences, necessitate alternative theoretical forms and generalizations.<sup>10</sup> This third ap-

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<sup>9</sup>*Ibid.*

<sup>10</sup>On the development of Whitehead's thought see M. Welker, *Universalität Gottes und Relativität der Welt: Theologische Kosmologie im Dialog mit dem amerikanischen Prozeßdenken nach Whitehead*, 2d ed. (Neukirchen: Neukirchener Verlag, 1988); M. Welker, "Alfred North Whitehead: Relativistische Kosmologie," in *Grundprobleme der großen Philosophen: Gegenwart I*, edited by J. Speck (Göttingen: Vandenhoeck and Ruprecht, 1985), pp. 269ff. On complexity theory—the development of which was called to my attention by the Canadian physicist Archie Harms—cf. S. M. Mitchell Waldrop, *Complexity: The Emerging Science at the Edge of Order and Chaos* (New York: Simon and Schuster, 1992); Heinz R. Pagels, *The Dreams of Reason: The Computer and the Rise of the Sciences of Complexity* (New York: Bantam, 1989); and the Santa Fe Institute Bulletin for the years 1987 and following.

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proach, though, compels the recognition that the question What is creation? has not yet found an answer with Hawking. Not only the exclusive concentration on a particular cosmic model (for example, the big bang), but also the exclusive concentration on one theoretical form (the sought after unification of quantum mechanics and the general theory of relativity) must be rendered problematic against the background of the substantive and religious knowledge aimed at by the last group of Hawking's questions introduced above. But that brings us to the level at which creation is perceived by the most famous creation text of the Bible, the creation account of the Priestly writing.

### CREATION IN THE BIBLICAL UNDERSTANDING OF THE PRIESTLY WRITING

One hardly takes a great risk in assuming that common sense in the contemporary Western world moves back and forth between the three positions on theology of creation considered by Hawking. One minute, common sense might believe the big bang theory, whether with or without giving religious content to the first moment. The next minute, common sense might advance the view that the world can and should be universally explained by the theory constructed in mathematical terms. Common sense might even fancy that this wish has already been fulfilled. The next minute, common sense will be chasing after a relativistic theory of the world, be that theory open or closed to religious questions. Or common sense will fall victim to epistemological relativism in questions concerning "the whole."

All this can be expected today from so-called normal and rational persons. By contrast, the creation account of the Priestly writing in Genesis 1, which talks about creation in seven days, seems to be nothing but the expression of the religious conceptual world of times that are long since past. That creation account seems to be outdated. We know in a definitive way that the processes described by Genesis 1 did not occur in one week, be it in a forty-hour or in a sixty-hour week. Even if God had been at work day and night, the world was not created even in six times twenty-four hours. Yet, is this what the first chapter of the Bible is actually saying?

The first chapter of Genesis presents a much more differentiated perception of reality than is grasped by those who quickly jump to the judgment that what is at issue here is "primitive thought" or a "naive worldview." This begins to become clear as soon as we concentrate on a contradiction that seems to be present in this text.

On the one hand, Gen. 1:3-5 recounts, "Then God said, 'Let there be light'; and there was light. And God saw that the light was good; and God separated the light from the darkness. God called the light Day, and the darkness God called Night. And there was evening and there was morning, the first day." On the other hand, Gen. 1:14-19 describes the creation of the stars that are supposed to separate day from night. "And God said, 'Let there be lights in the dome of the sky to separate the day

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from the night; and let them be for signs and for seasons and for days and for years' " (Gen. 1: 14).

If we approach these statements without sensitivity to this text's particular perception of reality, the text seems to be propounding contradictory nonsense. How could God create light without creating stars? Why is the separation of day from night carried out twice? Is this separation carried out directly by God, or are the stars supposed to be separating day from night? Such questions, which with apparent cleverness hold themselves aloof from this supposedly naive text that can not clearly work out its ideas, do not perceive the differentiated view of reality that is being developed here.

In his book on the creation account of the Priestly Writing, Odil Hannes Steck has presented a well-structured argument that two perspectives on reality must be distinguished here.<sup>11</sup> Verses 14-18 proceed on the assumption that "in the domain under the dome of the sky, particularly in the domain of the earth, there is no light prior to or apart from the stars. Evidently it is presupposed that the first-created light does not extend here as such. Rather the illumination of the earth is exclusively bound up with the stars."<sup>12</sup> In a critique of positions that assume doublings, redundancies, and secondary material here, Steck concludes that "the creation of the stars in verses 14-18 is thus not a process of creation that continues or even competes with the first work, but rather a parallel provision for the domain underneath the dome of the sky ... day and night, which exist in the world of creation from the first day, are thus also a reality in the earthly domain."<sup>13</sup>

But, Steck rightly asks, what makes the creation of light necessary on the first day of creation, as expounded above, if the provision of the earth with light is sufficiently regulated on the fourth day?<sup>14</sup> Picking up on the work of Benno Jacob and Claus Westermann, he sees an initial answer to this question in the fact that the creation of light at the very beginning is necessary for the Priestly writing because it wants to present "God's action of creation in a succession of seven days": "In order for there to be days of creation in which the works of creation of Genesis 1 can be erected, day and night must already be given as separate and alternating."<sup>15</sup>

But why should one talk about "days of creation" at all? How are we to explain the interest in doing so? And why is this interest not accommodated with the creation of stars that from the very beginning illuminate

<sup>11</sup>Odil Hannes Steck, *Der Schöpfungsbericht der Priesterschrift: Studien zur literarkritischen und überlieferungsgeschichtlichen Problematik von Genesis 1,1-2,4a*, rev. ed. (Göttingen: Vandenhoeck and Ruprecht, 1981), pp. 112-113 and 161ff. In general, I follow in this article the translation of Genesis I proposed by Steck.

<sup>12</sup>*Ibid.*, p. 112.

<sup>13</sup>*Ibid.*, pp. 113-114; cf. p. 171.

<sup>14</sup>*Ibid.*, pp. 171-172.

<sup>15</sup>*Ibid.*, pp. 173-174; cf. Benno Jacob, *Das erste Buch der Tora: Genesis* (Berlin: Schocken, 1934), p. 33; Claus Westermann, *Genesis (Biblischer Kommentar: Altes Testament 1/1)*; Neukirchen-Vluyn: Neukirchener, 1974), pp. 123, 155ff.

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the totality, including the earth that will later come into being, in the alternation of day and night? Why this complicated order that seemingly produces something redundant and contradictory?

A whole series of reasons speaks for the following answer. The Priestly writing evidently wants there to be a clear differentiation between, on the one hand, the total domain of divine action and, on the other hand, the domain of earth together with the heavens above it. At the same time, it should be possible to make sense of God's action of creation on earth and under heaven. If this is not to entail doing away with the difference between the domain of God's action and a totality that is only earthly and relative, there must be a constellation that makes possible knowledge by analogies. God's action of creation shall not remain hidden or appear obscure and anomalous. God thus creates brightness, transparency, and light from the very beginning. In the divine activity of creating, God acts in this brightness.<sup>16</sup> Indeed, not only does God not create in darkness, the statement is not even made that God rests in darkness. Astonishingly, the text explicitly emphasizes that even God's resting occurs in the brightness of the seventh day. That does not mean, however, that God's being, acting, and resting in the light are simply to be equated with an existence the light of the stars.

The light of God, the light in which God creates, rests, and is alive an effective, is not simply identical with the light in which human beings and other creatures live. They stand, though, in analogy to each other. This analogical relation is what makes it possible at all for there to be knowledge of God and of creation under the conditions of earthly existence. Likewise, the separation of the light from the darkness, carried out by God in the first work of creation, is far from simply identical with the separation of day from night by means of the stars. Yet, there are analogies between God's days and the days of creatures. God's time, the time of human beings, and the times, the rhythms of action or of life of the other creatures stand in analogy to each other. They can be correlated and coordinated with each other in differentiated gradations.

Once we have recognized this, we can understand why the Priestly writing chooses to present its account of creation in a form in which God creates over the course of several days. The creation account of Genesis 1 describes the differentiated connection and the differentiated structural pattern of realities and life processes that we today divide between the separate categories of processes that are to be described in physical terms, processes that are to be described in biological terms, and mental or cultural processes. God's creative action consists in the reciprocal constitution in the connection of these very different domains of life and action. In the process of creation, complex interdependencies are produced between diverse domains of life. It is only by being destined for each other and by being interwoven in each other that the domains of life become "creation" in the strict sense. The stars are to give rhythm to life

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<sup>16</sup>Cf. Steck, *Schöpfungsbericht*, p. 176.

on earth, particularly the life of human beings; human beings are to attend to the welfare of animals in ruling over them; the earth is to bring forth living creatures; and so forth. These complex dependencies have been masked by worldviews and metaphysical traditions that were only interested in the abstract power of God as the power "bringing forth and defining all things,"<sup>17</sup> or that sought to conceive God the Creator as "Sovereign of being" or as "Lord over being and nonbeing."<sup>18</sup>

Yet these abstract forms of thought are as inadequate to grasp God's creative power as is the first work of creation taken on its own.<sup>19</sup> God's separation of light from darkness is, to be sure, the first determinative step in the process of creation. But this first step is not yet, nor does it appropriately represent, "the creation."<sup>20</sup> The heading "In the beginning God created heaven and earth" refers to a far-reaching structural pattern, not just an initial ignition.

"The light of God, the light in which God creates, rests, and is alive and effective, is not simply identical with the light in which human beings and other creatures live. "

The differentiation into several days for God's creation allows the Priestly writing to present diverse processes and domains of life in complex structural patterns. These domains of life are described today in terms that are physical, biological, or cultural-theoretical in the broadest sense.<sup>21</sup> All these different domains of life are created in the light created by God. They are all created on God's days. In addition, many of them are ruled by the rhythms marked out by the stars, by day and night. The different rhythms of life and of movement are held together in God's time and by God's action. For the earthly creation, this action is accessible

<sup>17</sup> Michael Welker, "What is 'Creation'? Rereading Genesis I and 2," *Theology Today*, 48 (1991) pp. 56ff.

<sup>18</sup>Cf. Karl Barth, *Church Dogmatics 1/1*, (Edinburgh: T. and T. Clark, 1936), p. 446 and *passim*; similarly Eberhard Jüngel, *God as the Mystery of the World., On the Foundation of the Theology of the Crucified One in the Dispute between Theism and Atheism*, (Grand Rapids, Mich.: Eerdmans, 1983), pp. 381ff., 217ff.

<sup>19</sup>This view is confirmed both by recent works of leading Old Testament scholars and by the judgments of theologically educated physicists and cosmologists. "God is not a God of the edges" (J. Polkinghorne, "Reckonings in Science and Religion," *Anglican Theological Review*, 74 p. 376ff., 378); "God is more than the omnipotence who decides when to push the mighty ON switch" (O. Gingerich, "Space, Time, and Beyond: The Place of God in the Cosmos," [Lecture delivered at Valparaiso University, October 1992], p. 16).

<sup>20</sup> Cf. my critique of E. Herms' "Postscript" to his reflections on his concept of a "relation that grounds existence" (E. Herms, *Offenbarung und Glaube: Zur Bildung des christlichen Lebens* [Tübingen: Mohr, 1992], pp. 368ff.) in Michael Welker, *Schöpfung und Wirklichkeit* (Neukirchen-Vluyn: Neukirchener, 1995).

<sup>21</sup> If the cultural-theoretical dimensions—for example, of the stars that shape the rhythm of time, or of the basic forms of the relation between human beings and animals—are not simply left out of the picture. Cf. Welker, *Schöpfung und Wirklichkeit*.

within the processes under the heavens, within the seasons and rhythms and brightnesses marked out by the stars.

This complex structural pattern is articulated by Genesis 1 with its differentiated language of God's work of creation over the course of several days.

Recent research on the Tanakh or Old Testament shows that these reflections are anything but externally imposed speculations or systematic-theological arbitrariness in working with ancient texts. This research opens the prospect of understanding why the Priestly writing's creation account speaks not merely of a work of creation that spans several of God's days, but of a work of seven

days.

As early as 1905, Benno Jacob in his book "The Pentateuch" had called attention to structural parallels between Genesis I and Exodus 24ff.<sup>22</sup> He had cited Exodus 24:16: "The glory of the Lord settled on Mount Sinai, and the cloud covered it for six days; on the seventh day God called to Moses out of the cloud." Jacob had then commented:

There is no analogy for a period of six days with a following seventh day other than the six workdays with the Sabbath. The six days are the time within which God, hidden in the darkness of the cloud, creates the archetype of the sanctuary in order to call Moses in on the seventh day and to show and explain to him the completed work. This is one of the multiple . . . parallels between the six-day creation of the world and the sanctuary.<sup>23</sup>

In an article titled "Temple and Creation" that picks up on Benno Jacob's insight and that points to ancient traditions within Judaism, Bernd Janowski has more closely investigated the interconnection between the creation of the world and the construction of the sanctuary.<sup>24</sup> He has picked up and further developed very recent insights of Moshe Weinfeld, Jon Levenson, Erich Zenger, Peter Weimar, and others from the 1980s.<sup>25</sup> Going beyond Benno Jacob's insights, he highlights further structural parallels between the Sinai narrative and the creation narrative .<sup>26</sup>

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<sup>22</sup>Benno Jacob, *Der Pentateuch: Exegetisch-kritische Forschungen* (Leipzig: 1905).

<sup>23</sup> *Ibid.*, pp. 157-158.

<sup>24</sup>Bernd Janowski, "Tempel und Schöpfung: Schöpfungstheologische Aspekte der priesterschriftlichen Heiligtumskonzeption," in *Schöpfung und Neuschöpfung, Jahrbuch für Biblische Theologie*, 5 (Neukirchen: Neukirchener, 1990), pp. 37ff.

<sup>25</sup>Moshe Weinfeld, "Sabbath, Temple, and the Enthronement of the Lord-The Problem of the Sitz im Leben of Genesis 1:1-2:3," in *Mélanges bibliques et orientaux en l'honneur de M. Henri Cazelles*, edited by Andre Caquot and Mathias Delcor (*Alter Orient und Altes Testament*; Kevelaer: Butzon und Bercker, 1981), pp. 501ff; Jon Levenson "The Temple and the World, *Journal of Religion*, 64 (1984), pp. 275ff.; *Creation and the Persistence of Evil: The Jewish Drama of Omnipotence* (San Francisco: Harper, 1988), esp. pp. 82ff.; Erich Zenger *Gottes Bogen in den Wolken: Untersuchungen zur Komposition and Theologie der priesterschriftlichen Urgeschichte* (*Stuttgarter Bibelstudien*, 112; Stuttgart: Katholisches Bibelwerk, 1987), esp. pp. 170ff.; and Peter Weimar "Sinai und Schöpfung: Komposition und Theologie der priesterschriftlichen Sinaigeschichte," *Revue biblique*, 95 (1988), pp. 337-385.

<sup>26</sup>Janowski, "Tempel und Schöpfung," pp. 47ff. See also Janowski's insistence that in God's action of creation and of rendering possible creaturely life together, "fundamental significance belongs to 'time' as an ordering category" (*Ibid.*, p. 55).

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Janowski specifies the decisive interconnection between the process of creation and the seven day event described in Exodus 24 in the following manner:

God blesses and sanctifies the seventh day as the conclusion of God's labor of creation. "Long-term continuation, even beyond the temporally and substantively limited process of creation,"<sup>27</sup> is thus appropriated to the seventh day. The significance of the seventh day is concretized in the Sinai pericope . . . and in its overall compositional structure . . . in so far as it is here that God's coming to the world, for which creation laid the basis, is first developed-specifically as YHWH's coming to Israel or, in the words of the Priestly writing, as YHWH's "dwelling". . . in the midst of the Israelites.<sup>28</sup>

According to Janowski's commentary, it is "on Sinai" that "the seventh day's theological secret of creation is uncovered."<sup>29</sup> This secret says that YHWH wills to have communion with Israel through the mediation of cultic life. Grasped in more general terms, the process of creation described in Genesis 1 initiates a process whose intention becomes clear in Exodus 24. This process-in the formulation of Peter Weimar-aims at the transformation of the world as the space in which God's



proximity can be concretely experienced.<sup>30</sup> In conclusion, Janowski cites the Midrash Genesis Rabba 3:9 which says that "from the beginning of the creation of the world the Holy One, to whom be praise, longed to have communion with those below (= human beings/creatures)."<sup>31</sup>

By means of cultic life, the secrets of God's light and of God's days, God's intentions with creation become knowable even under the heavens, in the mere light of the stars and within the temporal relations marked out by them. The interconnections between the different domains of life thereby also become accessible. Knowledge of the truth and justice intended by God, and the corresponding ways of living, also become possible in this manner. By contrast, processes of systematic and systemic self-encapsulation and self-immunization can be broken open again and again.

For those who attempt to grasp "creation" only with regard to an initial event or who strive to conceive "creation" with the help of only one or two systems of reference, access to the theological and substantive meaning of this process is closed. By contrast, in the exegetical investigation of the substantive interconnections between creation and cultic life, and in the systematic development of theories of complex systems, we stand before new beginnings in the theology and theory of creation.

"Creation" produces a complex unity between diverse structural pat-

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<sup>27</sup>Citing Steck, Schöpfungsbericht, p. 194; cf *Ibid.*, pp. 64ff.

<sup>28</sup>Janowski "Tempel und Schöpfung," p. 61.

<sup>29</sup>*Ibid*

<sup>30</sup>Weimar, "Sinai und Schöpfung," pp. 368ff.; idem, "Knit und Fest: Aspekte eines Kultverständnisses im Pentateuch," in *Liturgie--ein vergessenes Thema der Theologie?* edited by K. Richter (*Quaestiones Disputatae*, 107; Herder: Freiburg, 1986), pp. 65-83, esp. 75f.

<sup>31</sup>Janowski, "Tempel und Schöpfung," p. 68.

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terns of life and events. Creation does this by differentiating and interrelating God's days, God's time, God's light, and God's rhythm of life with earthly times, relations of light, and relations of life. Anything but outdated and naive, the creation account of the Priestly writing articulates with its presentation of the work of seven days a differentiated structural pattern of events and processes that we today attempt to describe in terms that are physical, biological, or cultural-theoretical in the broadest sense. The Priestly account describes the work of creation in such a differentiated way precisely in order not merely to trace "everything" back to God in an indeterminate manner and to attribute to God the mere production of anything and everything. Instead, in the establishment of heaven and earth, creation aims from the very beginning at the differentiated communion of God with human beings in particular and with creatures in general, and thus at knowledge of God and of creation. Creation is, thus, not "complete" without the seventh day, although that which is previously created is in itself good, indeed, very good. Creation is the reality that, on the basis of continually new communication of human beings with God, is ordained to be perceived by human beings and that human beings are ordained to have a role in shaping. Whoever wills to conceive "creation" without this focus, without this cultic-transcendental point, is talking about something other than creation. Processes that can be understood in terms that are merely physical, merely biological, or merely naturalistic do not articulate what "creation" is: the differentiated structural pattern of reciprocity of natural and cultural forms of life and events, oriented and ordered toward the human capacity to experience. In cultic life-that is, in communication with God-this knowledge of creation is to be acquired, developed, renewed, and verified in diverse forms.

### TOWARD A COMPLEX UNDERSTANDING OF CREATION

Regaining, developing, and rendering generally plausible this challenging, complex understanding

of creation belong to the important tasks of our time for the preservation of our future. In going about these tasks, we need to ponder secular and religious equivalents to the often rather obscure notions of cultic life held by us Christians today. We must also attain much greater clarity concerning the interconnections and differences between, for example, cultic life and science (in the broad sense of scientia, including social science and the humanities) or cultic life and ethos. Yet independently of the fact that the significance and functions of cultic life require greater clarification, the background elucidated in this article should make it evident even to persons who are religiously indifferent that we must regain a complex understanding of creation.

In a number of studies over the last several years, Hans-Peter Müller has made this necessity more plainly visible. He has shown that the great mythic creation accounts both of the Bible and from other sources are concerned with articulating the processes whereby civilization reshapes

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nature.<sup>32</sup> The tensions and interconnections between affirmation and critique of nature, and the difficult and dangerous efforts to stabilize and correct natural and cultural reality stand at the center of creation theology. This theme is at least as relevant today as in those periods in which the great creation myths were being developed.

Above all, it is the great instances of ecological self-endangerment, the instances of massive erosion of our natural and cultural resources and environments, that spur today's search for ways to conceive these processes with their rationalities and the interconnections of heterogeneous natural and cultural processes and of their logics. Anyone whose concentration is fixed only on the big bang, or who thinks that "creation" can be grasped on the basis of observational and conceptual approaches that operate in terms that are only physical, only biological, or only naturalistic, does not attain the level of this problem. Nor does a perspective that takes the human perception of creation as its point of departure move in

"The heading 'In the beginning God created heaven and earth' refers to a far-reaching structural pattern, not just an initial ignition. "

the direction indicated by the Priestly writing. To be sure, "creation" establishes the reality created with reference to human beings and oriented toward being known by them. At the same time, though, part of the intended human response to creation is for human beings to know God and God's creative intentions. This means that that knowledge can not be usurped by a particular common sense of a particular time and culture and can not be "frozen" therein. Instead, this knowledge is to be acquired only in continually new efforts to gain insight into the interconnections of the "works of creation" and God's intentions with those works.

This complex understanding of creation can and must serve as the basis for correcting both the natural sciences' overestimation of their own capacity to know reality and the religious flight into naiveté and obscurantism. Uncertainties in the exchange between religious perspectives on the world and perspectives on the world that belong to the natural sciences can also be recognized and avoided. Consider only the famous case of Galileo, which the Roman Catholic Church-in a manner that is attractive for its humaneness, but unsatisfying with regard to the substan-

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<sup>32</sup>See Hans-Peter Müller, "Bauen-Bewahren-Mit-Sinn-Erfüllen," *Zeitschrift für Theologie und Kirche*, 30 (1993), pp. 231 ff.; idem, *Mythos-Kerygma-Wahrheit: Gesammelte Aufsätze zum Alten Testament in seiner Umwelt und zur Biblischen Theologie* (Beihefte zur Zeitschrift für die alttestamentliche Wissenschaft, 200; Berlin: W. de Gruyter, 1991), pp. 88 ff.

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tive issue-has recently again brought into the media.<sup>33</sup> I shall clarify the problem and the missed opportunities by taking recourse to a commentary by Whitehead on the case of Galileo.

In the chapter "Religion and Science" in his book *Science and the Modern World*, Whitehead had stated:

Galileo said that the earth moves and that the sun is fixed; the Inquisition said that the earth is fixed and the sun moves; and Newtonian astronomers, adopting an absolute theory of space, said that both the sun and the earth move. But now we say that any one of these three statements is equally true, provided that you have fixed your sense of "rest" and "motion" in the way required by the statement adopted. At the date of Galileo's controversy with the Inquisition, Galileo's way of stating the facts was, beyond question, the fruitful procedure for the sake of scientific research. But in itself it was not more true than the formulation of the Inquisition. But at that time the modern concepts of relative motion were in nobody's mind; so that the statements were made in ignorance of the qualifications required for their more perfect truth. Yet this question of the motions of the earth and the sun expresses a real fact in the universe; and all sides had got hold of important truths concerning it. But with the knowledge of those times, the truths appeared to be inconsistent.<sup>34</sup>

Galileo sought to go beyond the perspective of common sense "under the dome of the sky" The Inquisition was defending-consciously or unconsciously-this perspective, which among other things generalizes individual perception. In the rehabilitation of Galileo, the Vatican should have made these subtleties clear. That would have been important precisely in this time of often blind trust in the perspectives of the natural sciences on reality. Our culture still has not recovered from the fact that Galileo called common sense essentially into question on the basis of natural science. But, in the meantime, it should have become clear that both the relativizing and the strengthening of common sense, belong together in the "knowledge of creation." Both belong together for the sake of the benevolence toward human beings that God intends creation to have. Anyone who is not seeking this orientation toward benevolence to human beings is looking not at "creation" but at conceptions of nature, cosmic interconnections, or totality that lack the decisive qualities of "creation."

The Genesis creation account places in clear relief these qualities that distinguish creation from mere nature or mere culture. Creation connects diverse processes and domains of life and orders them in such a way that they can be known by human beings and that human beings can enter into communication with God. The description of creation as God's work of seven days makes it possible to recognize this. That description includes the differentiation of domains of life, the interconnections of these domains in God's time and action, and the destining of creation to be

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<sup>33</sup>L'Osservatore Romano, November 1, 1992.

<sup>34</sup>Alfred N. Whitehead, *Science and the Modern World* (New York: Macmillan, 1925), p. 263.



known by human beings-a knowledge that is to be continually reacquired and deepened in communication with God.

In contrast to this stand the insights developed above from a scientific cosmology that is representative for our day. For both the theology of creation and the critique of religion, these insights were disappointing. Three different theoretical approaches, scarcely compatible among themselves, were shown to have totally vague religious conceptions without the power to provide real insight. As interesting as the discussion is about the big bang theory, about its explanatory capacity and about its replacement, this cosmological enterprise has not yet developed a sense for "creation."