

# THE EMERGENCE OF CREATURES AND THEIR SUCCESSION IN A DEVELOPING UNIVERSE

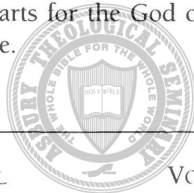
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## I

The term “create” serves in the biblical tradition and in Christian theology to relate the reality of the world to the God of the Jews. It expresses a rather specific way of conceiving the divine origin of the world. The term “create” emphasizes the unconditional and free character of the divine act of producing the world and thus it indicates the contingency of the world itself and of each part of it as well as of the divine act and puts it into being.

This way of accounting for the reality of the world seems to have emerged in the sixth century before Christ, at the time of the Babylonian exile of the intellectual leadership of the Jewish people. The priestly document on the creation of the world by the God of Israel, now the first chapter of the Bible, answered the challenge of the Babylonian religion, especially the description of the way the world was built in the *enuma elish*. The priestly text says that it was not Marduk, but the God of Israel who produced the universe and that He did it in the characteristic way of His action according to how the prophetic tradition had described God’s action in history—with sovereign freedom, unconditioned by any other factor than God Himself.

The account given in this text is significantly different from the older narrative on the creation of human beings and of the world surrounding them. The narrative in the second chapter of our Bible focuses almost exclusively on Adam and Eve, while the priestly report in the first chapter intends to comprise the entire universe and carefully attributes to each part its proper place. This indicates the doctrinal character of the priestly texts that distinguishes it from the earlier narrative, where even the very term “create” was not yet used. The difference is explained by the fact that the priestly document responds to the challenge of the Babylonian epic by claiming the world in all its parts for the God of Israel to whose creative activity each part of it owes its existence.



The apologetic and doctrinal intention of the priestly report on the creation of the universe was executed by seizing upon elements from the Babylonian and other mythological descriptions of the origin of the world as well as upon materials from wisdom traditions, especially from their efforts at collecting the different forms of natural phenomena and arranging them in catalogues. Regarding both types of materials one is entitled to judge that the priestly document made comprehensive use of the science of its day in critically selecting and interpreting its results by relating them to the creative activity of God. Whatever was known at that time about the natural world and the different forms of creatures was incorporated in the priestly document. In combining the wisdom materials with the mythological quest for the origin of the universe, the priestly document certainly claimed to provide true explanation of the existence of the different forms of reality. And it did so in a remarkably sober, occasionally almost rationalistic way. The description in Gen. 1:6-9 of how God made a divide in the primeval water to separate what was beneath the divide from further supply of water from above with the natural consequence that the waters beneath the divide would recede and let the dry ground emerge is a beautiful example of ancient engineering and thoroughly rationalistic. Such rationalism fits very well with the monotheistic emphasis that puts all the stress on the divine command as cause of the emergence of new forms of reality.

## II

The priestly report on the origin of the universe from a creative action of the God of Israel is a document from an ancient culture, and nobody should expect that the assertions of such a document could agree in all details with our contemporary scientific knowledge on the origin and development of the universe. In fact, given the historical distance, one should expect that our present conception of the universe of nature and of its history would have less in common with such an ancient document than is actually the case. There is rough agreement, first, concerning the fact that our universe had a beginning and that it developed along a succession of stages or steps, however those steps are conceived materially. But also concerning the material content of those steps and of their sequence, more similarity is to be observed than one might expect—light at the beginning of the series, human beings at its end, the priority of light over the formation of stars, including sun and moon, furthermore the production of plants by the earth, the function of vegetation as a presupposition of animal life, the close relationship between human beings and mammals, called “animals of the land” in the priestly creation report (Gen. 1:24-25). Both kinds of creature appear, according to the biblical report, in the sixth day of creation in distinction from the animals of the water and from the birds.

Such similarities, of course, are limited by dissimilarities—the creation of the earth separated in the biblical report from the formation of the stars and prior to them. This is due to the utilitarian perspective of the priestly report in dealing with the stars and especially with the sun and moon. There is an unmistakable demythologizing bias effective at this point, because in Babylon like in other ancient cultures the stars were closely connected with deities. Therefore, their importance had to be reduced in this Jewish account on the origin of the universe. The example shows, however, how religious prejudices occasionally distort the presentation of natural facts.

Other limitations in the biblical report are simply due to limitations of knowledge as it was available at the time. Thus the concept of life is limited to animals (Gen. 1:30), to the exclusion of plants, and the classification of animals according to the places of their life differs from later classifications according to families and species. There are other, more important differences between the biblical report on the creation of the universe and the modern understanding of its origin and development. But before turning to them, it seems appropriate to engage in some more general and more fundamental reflection on the question of where the authority resides that this text enjoys in Christian teaching.

### III

For many centuries, a literal authority was ascribed to the biblical report on the creation of the world as part of the inspired word of the divine Scripture. Even today this view continues with many Christians who are afraid that the authority of Scripture disintegrates as soon as one admits any incorrectness in detail. The consequence of such a fundamentalistic view of the authority of Scripture is that one has to cling to the infallible truth of every single proposition in the text. There is no room, then, for appreciating the priestly report on creation as a document from an ancient culture, sharing the achievements, but also the limitations, of its cultural setting. Such an attitude, however, amounts to an obliteration of the authentic character of the biblical text itself. It is precisely in its form as a document of an ancient culture that the authority of the text must reside. This also applies to the report on the creation of the universe. If that is so, the authority of the text cannot coincide with the infallible truth of its particular sentences, as if they were superior to all later experience. Neither can the authority of such a text consist in the old-fashioned view of a past stage in the development of human culture. This last statement, however, is somewhat dangerous, for everything in such a text can easily be denounced as belonging to a past cultural situation and can therefore be dismissed as no longer relevant. On the line of such a way of arguing any authority of the cultural tradition can be denied, and yet in human cultural history there is, sometimes at least, authority of the content of the cultural tradition in spite of cultural changes. Therefore, it is always necessary to distinguish between elements that have become obsolete and others that are still valid. What, then, is at the basis of the continuing authority of a key document of our cultural tradition like the biblical report on the creation of the universe?

Christians will argue that at the basis of such continuing authority there is the continuing faith in the God of Israel and of Jesus Christ. Then the authority of the biblical report on creation must be looked for not in particular propositions, but in the way it gives witness to the divine reality of the God of the Bible. This was done, as I said earlier, by affirming the universe to exist as a result of the creative action of the God of Israel. The priestly document made this affirmation in the form of a detailed account of how the universe came into being. To this purpose it made use of all the material knowledge about the world that was at its disposal. In this act, then, of claiming the universe with all its content to exist as God's creation, resides the authority of the biblical report. That authority is obeyed not when the individual statements of that ancient text are preserved and repeated, but when the act of laying claim on the universe to exist as consequence of God's creative action is repeated, and it has to be repeated by using the material knowl-

edge of one's own time about the world in similarity to the paradigmatic biblical teaching on creation. In the modern situation, it is necessary to that purpose to use the resources of modern science rather than to cling to the individual statements of the text against the empirical evidence of modern science.

But how can theology let itself be guided by the paradigm of the biblical report in getting involved in the scientific materials of a later period? The task is facilitated by the observation of basic similarities between the biblical approach and our modern view of the origin and development of the natural universe. The basic similarity consists in looking at the universe in terms of a sequence of emergent new forms, and in the framework of that overall similarity we may try to deal with the more profound dissimilarities and differences.

#### IV

In the judgment of my teacher Edmund Schlink, the deepest difference between the modern view of nature and the biblical report consists in the modern conception that new forms of reality emerge from the autonomous activity of nature itself, while according to the biblical view the creatures enjoy their autonomous activity only within the limits of a divine order of their existence that was put up in the beginning.

This judgment contains obvious elements of truth. Thus the different genera and species of vegetation and animal life were put up, according to the priestly report, in the beginning by the creator and remain unchanged. He granted to plants and animals the power of propagation, but such power of propagation only serves to perpetuate the character of the species. It doesn't change the nature of species as it would correspond to the modern view of natural evolution. At this point the contrast is perfectly clear.

But on the other hand, the creative activity of God can very well be effective, according to the biblical report, through the medium of a created reality. Thus, in Gen. 1:11 God addresses the earth to produce vegetation, and the earth is called upon once more in Gen. 1:24 to bring forth the animals living on it. Herein, even animal life is understood to be a product of the earth. The biblical creation story does not exclude, then, mediating agencies in the act of God's creation. In this respect, there is no opposition between the biblical report and the basic intuition of the modern idea of natural evolution. So far the difference is mainly that in modern theory the productivity of the earth is replaced by the idea of nature and, when it comes to the origin of life, by the idea of a self-organization of matter and of the creative evolution of life itself.

The difficulty in comparing the biblical report and the modern conception of organic evolution resides at a different point, in the conception of the priestly document, of course, that the act of creation was completed at the end of a first period of the world's existence, while in the modern view the evolution of life and the universe continues through the entire duration of the world's existence.

At this point, however, the priestly report on the creation of the universe is not typical of all forms of the biblical witness. In Psalm 104 we have an account of God's creative activity that describes it in terms of a continuing source of the existence of the creatures (esp. Ps. 104:30). Similarly, in second Isaiah God's action in history is presented as a creative activity in the sense of bringing forth something new and formerly unknown (Isa. 43:19), and in

expressing this idea the prophet uses the same terminology (*bara*) that functions in the priestly document as a technical term referring to the creation in the beginning. The idea of a continuing creative activity of God, then, is not foreign to the biblical witness, though of course not combined with the idea of evolution as in our modern view. It is the continuing creation of something new, on which the existence of the creatures depends. That idea differs from the traditional dogmatic term *creatio continua* which meant only the preservation of what had been created before. In view of second Isaiah, it is the production of new things that continues. The intention of the priestly document in Genesis 1 to limit the notion of creation to God's activity in the beginning, is only one variation of expressing the biblical faith in God's creative activity as the source of everything.

What was the motivation behind this particular variation in the conception of God's creative activity? One may distinguish two factors here, one more mythological and a more theological concern of lasting importance. The theological concern was for the stability and reliability of the order of creation. In view of the priestly document, such stability depends on the unchanged form of things as they were established in the beginning. The modern understanding of nature is also interested in that element of stability. But we see the stability of nature warranted by the invariable validity of the laws that govern natural processes. Thus one can argue that this concern of the biblical report has been satisfied in the modern conception of nature, though in a different way.

The mythological motivation in the priestly report on the creation of the world is to be found in its function to legitimate the Jewish week of seven days and in particular the institution of the sabbath at its end. On the basis of the priestly document the Jewish week, with the sabbath at its end, is seen as indefinitely repeating the original week of God's work of creation with the seventh day of rest at its end. Accordingly, in the decalogue of Exodus 20 the commandment to observe the sabbath day is based on the order of creation: "for in six days the Lord made heaven and earth, and all that is in them, and rested the seventh day; therefore the Lord blessed the sabbath day and hallowed it" (Exod. 20:11).

Interestingly enough, in early Jewish exegesis the seven days of creation could be interpreted differently by relating the sequence of seven days to the entire history of the world rather than confining it to an original period. In the Jewish apocalyptic literature (esp. Enoch 91 and 93), the seventh day was understood to refer to the future consummation of the world in the kingdom of God, and in Hebrews 4 the Christian hope for the eschatological future of God was described as a hope to enter into God's own rest after the labor of creation. In Enoch 71:15, the seventh day of God's rest, identified with the future aeon of consummation, was even described as the source from which peace is pouring since the first creation of the world. The peace of the sabbath, then, could be understood as an anticipation of the final piece in the kingdom of God. The interpretations of the week of creation are interesting in the context of the present argument, because in their own way they combine the image of an original period of creation with the idea of a creative activity of God continuing through the history of the world until its consummation in the eschatological future of God's kingdom. One must not mistake, however, this view for being the view of the priestly report on the creation of the world and the first chapter of the Bible. There the act of creation is limited to a first period in the history of the world.

## V

Important as the difference is between the idea of a creation of the universe in an initial period of the world's history and the conception of a continuing creative activity of God corresponding to the creative development of the natural world, still this is not the most profound difference between our modern understanding of natural processes and biblical view. The deepest difference, rather, is connected with the *atomistic* perspective of modern science according to which all natural forms are composed of more elementary particles and processes. This perspective originated from a particular form of ancient Greek philosophy of nature, from Democritos, and it influenced modern science to such an extent that the development and sequence of natural forms in the history of nature are no longer conceivable without it, though the search for the final elements of matter led to more complicated results than they could have been expected on the basis of Democritos' atomic theory. Most importantly, there is not just one type of elementary particles, but several. Furthermore, the difference between particles and events is vanishing, when so-called particles have no more than momentary existence. Nevertheless, the idea that the qualitative differences of natural forms can be reduced to different combinations of elementary particles has been victorious.

Accordingly, in the perspective of modern science, the sequence of natural forms starts with elementary phenomena out of which all more complex forms of reality developed. This perspective is significantly different from the biblical report on the creation of the universe, but it does not necessarily contradict its theological intention. The atomistic view of the universe and of its development has often been perceived as an alternative to a theology of creation, and this would be the case if it rendered God superfluous in understanding the reality of nature. Such could be a consequence of reducing all natural phenomena to combinations of elementary units, if that meant that the elementary units are finally the only factors in explaining natural processes and the emergence of natural forms. In fact, however, the interaction and combination of elementary units that is involved in the emergence of more complex forms seems to always require conditions of a holistic nature forming the context of elementary processes. As early as 1966 Ian Barbour called on de Broglie and on the Pauli Exclusion Principle as expressing the underivable function of the whole in conditioning the parts. A whole either in the form of environment or field or as manifest in a system of higher order like the atom in relation to subatomic particles provides the context for the more elementary processes taking place within it.

In the case of the early universe, the state of that universe as a whole must have functioned as the comprehensive condition of the elementary processes going on within it. They took place under the conditions of such high temperatures that the state of the universe did not allow for the formation of more complex and enduring forms of reality. It needed the expansion of the universe and the concomitant process of cooling down to develop conditions that allow for the formation of atoms and molecules and furthermore, under the influence of gravity, for their conglomeration to galaxies and stars. Thus, in a modern view, the development of the universe is also a development of complex and enduring forms out of elementary processes. But it is also true that the changing stay of the universe imposes conditions on the continuous functioning of those processes.

The importance of a holistic framework in the emergence of new forms of existence has also been pointed out with relation to the formation of a biosphere on our earth—the spontaneous emergence of life depends on a complicated texture of very special conditions as they develop on this particular planet. Life itself seems now to have emerged through spontaneous self-organization, once those conditions were given and a thermodynamic gradient could be exploited like in the case of the flame that nourishes its life from the potential energy of the candle. Long before the mechanism of life, its dissipative nature, was understood, the flame of a candle was considered a symbol of life in its effort at temporarily preserving its form at the price of consuming the energies of its environment.

As the emergence of living organisms is conditioned by the formation of a biosphere on our earth, while this in turn is conditioned by the particular state of the expanding universe, the universe as a whole seems arranged in such a way as to make organic life possible. This is the basic idea that recently has been discussed under the name of “anthropic principle.” It means that the emergence of organic life and finally of human beings is not an insignificant accident of nature as compared to the vastness of the universe. This had been the feeling of sensitive thinkers like Pascal in early modernity, by contrast to the biblical view of the creation of the world, where the entire sequence of creatures led up to the creation of human beings. The feeling of being at a loss in the vast spaces of the universe is no longer assumed to contemporary scientific cosmology. The natural constants of the universe are arranged in such a way as to make organic life and intelligent animals like ourselves possible. I do not want to go beyond this “weak” form of the anthropic principle by claiming that the emergence of intelligent life be *necessary* on the basis of how the order of the universe is arranged from its beginnings. I am quite satisfied with the contingent nature of the emergence of life as well as of other natural forms in the history of the universe. But the emergence of life and of intelligent life, as in human beings, is no longer to be considered an insignificant accident in the history of the universe.

## VI

Some such view of the universe as a totality that conditions the particular processes going on within it and the emergence of ever more complex forms of enduring existence seems to be required in a theological interpretation of nature in terms of creation. A conception of the universe as an ordered system corresponds to the unity of the one God who is supposed to be its creator, and the place of particular phenomena within that systematic order as well as in relation to its divine origin determines their individual significance. On the other hand, contingency of events in general and of the emergence of new forms of reality in particular prevents the individual forms and processes from becoming completely dependent on the systematic whole of the universe and preserves an element of immediacy in them with relation to their ultimate origin. Such contingency of natural phenomena, however, seems bound up with their temporal nature, if time is to be conceived as an irreversible flux of events, where each event is finally unique and the future always bringing about something new, notwithstanding all the regularities applying in the sequence of events.

These requirements of a theological interpretation of nature in terms of creation are met in the biblical creation report—the universe is ordered in a sequence of six days of God's work, and the significance of each work of creation is given by its place in that sequence and in the relations to other creatures such place entails. Each new work, however, is presented as contingent with regard to what went before, and that is expressed by the origin of each new work of creation in the divine word of command. Finally, the elements of systematic order and of contingency in detail are combined in the scheme of a temporal series in the emergence of the creatures.

The abiding importance of the biblical creation report may very well be perceived then in the fact that it stands as a paradigmatic exemplification of a systematic scheme which meets these three requirements of an overall systematic order, of contingency in detail and of temporal sequence in the emergence of particular forms. Each new theological doctrine of creation that will integrate theologically the scientific knowledge of its time has to meet these same requirements in order to give a theological account of the world of nature as God's creation. Such an interpretation is not superfluous with regard to our experiential knowledge about nature and it is not an arbitrary imposition upon a scientific cosmology. At present I want to emphasize that as compared with those three requirements of a theological interpretation of nature it is of secondary importance, whether organic life made its appearance on earth as completely new phenomenon or whether it emerged in a process of spontaneous self-organization from inorganic matter, and it is also of secondary importance, whether or not each new species is to be considered as a discontinuous new beginning or as a product of the continuous process of organic evolution of life. Also of secondary importance, finally, is the question of whether or not the emergence of human beings derived from the development of organic species rather than coming into existence without mediation by other creatures. I mentioned earlier that even in the biblical report such mediating function of a creature in producing new forms of existence was not considered to be opposed to the origin of the new creature from a divine act of creation, as the function ascribed to the earth in producing vegetation and animals demonstrates. Important in a theological interpretation of nature is that each new form of existence is recognized as contingent fact and hence as immediate to the ultimate cause of all. This immediacy to the ultimate cause of all, however, is itself conditioned by the place of the new creature in the sequence of others, because the divine act of creation relates to each individual creature in the context of the universe God created and not an abstraction from everything else. In this way even the emergence of human beings is seen in the biblical creation report as conditioned by the preceding stages of created existence and related to them.

In a modern perspective, then, the expansion of the universe might be perceived as the instrument of the creator in producing enduring and independent forms of created existence. The expansion of the universe does not only provide space for a multitude of creatures, but more importantly the concomitant cooling effect provides the basic condition for all forms of higher organization, higher complexity, beginning with the formation of atoms and molecules. Organic life emerged as a still higher form of such complexity and, at the same time, of independent existence. Though organisms are less durable than atoms and stars, the self-organization of life expresses an element of spontaneity



which constitutes a higher form of independent existence. In the biblical report this was expressed by the idea that living creatures are distinguished from others by sharing an apportionment of the divine Spirit, the cause of life. In modern times a similar idea has been expressed by Teilhard de Cardin by the affirmation that on the higher levels of complexity there are also increasing degrees of interiority of existence.

Human beings emerged at the end of this sequence, as far as our knowledge goes. In the biblical creation report this place of humanity implies a special relationship to the rest of creation on the one hand, to the creator of all on the other. And here we arrive at a further distinguishing characteristic of a theological interpretation of nature as creation of God—of the biblical God—and therefore in a Jewish or Christian interpretation of nature. In distinction from other religious traditions, the biblical view of humanity's place in creation is certainly anthropocentric, and the Christian doctrine of God's incarnation in one human person and by that person in humanity puts a particular and ultimate emphasis on that anthropocentric position. But it is not a narrow type of anthropocentrism that would shut itself off from anything else. It is an inclusive anthropocentrism that relates the human predicament of the destiny of the entire universe in the light of its divine origin. It is a form of anthropocentrism, therefore, that involves a responsibility of humanity for other creatures as far as the range of human activity extends. When in the biblical report the human beings are commissioned to exercise dominion over the earth and everything on it, that does not mean that all other creatures are delivered to arbitrary disposal according to human license, but the divine commission aims at a form of dominion that represents within the created universe the authority of the creator Himself and therefore involves responsibility for attending to God's creation and to His resolution of granting some degree of independent existence to the products of His creative activity. The place of the human being at the point of culmination of God's creation inevitably involves that kind of responsibility in correlation with the special relationship of that creature to God the creator of all.

