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From Big Bang to heat death? Theological considerations concerning modern cosmological issues

Isaak Deman

Ever since the separation of the natural and the supernatural around the twelfth century in medieval Europe, a process which continued more radically via the Reformation until the Enlightenment and up to the present, scientists in Europe have been busy exploring natural and cosmic phenomena by means of ‘scientific language’. By ‘scientific’ I mean the urge to describe reality through empirical observing, testing, and verifying. In other words, there is an urge to describe reality in literal rather than symbolic terms. Nowadays, this has become intrinsic to our modern worldview. The same can be said about the way people influenced by scientific thinking observe ‘cosmic geography’. Reality is described by stating that we live on this planet, called Earth, which in turn consists of oceans enclosing continents. In accordance with this view, Earth, together with other planets, rotates in elliptic movements around the sun, and is part of our galaxy, which is in itself part of the universe consisting of many other galaxies. The main point, as John H. Walton expresses it, is this: ‘a culture’s cosmic geography plays a significant role in shaping its worldview and offers explanations for the things we observe and experience.’¹ Applied to modern perception, there is a ‘premise that cosmic geography is physical and material’, working with cosmic and natural laws.² It is therefore ‘substance-oriented’.³ This is why, from past centuries until today, the development of astronomical sciences of new discoveries, concepts, causalities and effects can be observed. These new discoveries and explanations brought alternative or new explanations for the creation and/or destiny of the universe, including planet Earth. The new explanations have also been used to oppose

religious or theological explanations of the cosmos, including theories of creation and eschatology. The question is, however, whether this cosmological and theological dichotomy is a necessary distinction. To find an answer, one can put aside, for the time being, the modern worldview and reflect on the Ancient Near Eastern worldview.

People in the Ancient Near East (ANE) ‘also had a cosmic geography that was just as intrinsic to their thinking’.⁴ However, their cognitive understanding of the cosmos was different from the modern one. Nations and tribes in the ANE, including Israel, considered ‘the cosmos in terms of tiers’.⁵ They believed in an earth, covered by a (solid) sky which embedded the stars, along with other celestial bodies such as moon and sun. These stars and celestial bodies were considered to be ‘under the sky’. The heavens were manifested ‘above the sky’. The Old Testament is silent about the exact ‘structure of the heavens’, but other Mesopotamian literatures mention either ‘one, three, or seven levels of heaven’.⁶ For the purpose of this article, ‘it is important to realize that their cosmic geography was predominantly metaphysical and only secondarily physical/material’.⁷ The way in which (the) god(s) acted within cosmic geography was of primary concern.⁸ This must be borne in mind when we turn to later reflection on the theological implications of modern cosmology. Another important point is associated with the ontology of the ANE. Ontology ‘was more connected to function than to substance.’ In this way, ‘something exists when it has a function, not when it takes up space or is a substance characterized by material properties’.⁹ According to Walton, this idea was applicable to the whole of the cosmos. Rather than ‘substance-oriented’, this view is clearly ‘function-oriented’.¹⁰ This means, therefore, that in the understanding of the Ancient Near Eastern (wo)man it was perfectly possible for something to exist substantially for an undefined period of time, as yet uncreated, if it did not serve a function.¹¹

This view can also be applied on the Hebrew word *bara*’, ‘to create’. Lexical analysis of the word in the Old Testament, indicates its primary meaning as being that of ‘bringing heaven and earth into existence by focusing on operation through organization and assignment of roles and functions.’ Applied to the creation story in Genesis, this indicates that ‘in the seven-day initial period God brought

the cosmos into operation [...] by assigning roles and functions.¹² An example of this is the meaning of verse 3, ‘Let there be light (*’or*)’. Rather than assuming it to be the creation of the substantial form of ‘light’ (*’or*), it should be interpreted as ‘light’ starting to function in the spatio-temporal realm. In this way, ‘Let there be a period of light’, is, for Walton, a better translation than ‘Let there be light’, since in verse 5 God calls this ‘light’ (*’or*) ‘day’ (*yom*) and darkness ‘night’. A correct meaning of verse 4 would consequently be, ‘and He separated a period of light from darkness’ (the material/substantial form of light cannot be separated from darkness). The account of the creation (*bara’*) of light (*’or*) is not focusing on the substance of light, but on the function of light, that is, a timeframe for Earth and humanity.¹³

What one learns from this elaboration, is that our modern concerns about understanding the cosmos are not necessarily the same as that of the author of Genesis, or any of the biblical authors for that matter. The same idea of ‘creating’, in a functional sense, can be found in the literature of the surrounding nations. In Mesopotamia, it implies ‘the naming and giving of roles’. In Egypt, ‘the process of separation’ in creation would happen again every day.¹⁴ The question of *creatio ex nihilo* (i.e., creating out of ‘nothingness’) remains therefore open, since it comes from the mindset of a ‘material ontology’. This does not imply, however, that *creatio ex nihilo* was/is impossible and that matter was therefore considered eternal. Rather, this question was simply not of primary concern.¹⁵

Before continuing, Walton’s insights are, once again, helpful for understanding ‘the pre-cosmic condition’. He states that ‘ancient sources are unanimous that the pre-cosmic condition included water and darkness.’ This implies a non-functional, chaotic cosmos.¹⁶ The same idea of emptiness and chaos can be noticed in Genesis 1:2. Here the Hebrew *tohu wabohu* – commonly translated as ‘formless and empty’ – implies that (cosmic) elements lack a purpose and function. Yet, these elements (e.g., celestial bodies) are only considered as created and functional if they serve ‘for the benefit of humans’. Without humans, the cosmos is not functional according to the biblical author. More so, humans are ‘the keystone in the definition of order.’¹⁷ They operate within a creation which has ‘three primary functions’ i.e., ‘time, weather, and fecundity’.¹⁸ In general, ANE sources, including

those of Israel, perceived ‘the cosmos in temple terms’, where God was depicted as the enthroned ‘sovereign ruler’.¹⁹

Another exegetical remark serves to support the idea of a function-oriented creation. The very first word of Genesis 1:1 is the Hebrew *bereeshiet*, commonly translated as ‘In the beginning’. Due to the logics of certain languages (including European languages), an important element is lost in translating this Hebrew word. A literal translation should actually be ‘In beginning’, since the Hebrew term does not absorb the consonant of the article *ha* (‘the’), which would make it *bareeshiet*, and, then, consequently, ‘In *the* beginning’. This would make the reading of the first three verses of Genesis 1 different and put the main clause in verse 3. This hypothesis also suggests the idea of the first instance of something that is functionally created, and, the first time that God speaks in biblical history. For the purpose of this essay, however, this idea does not imply that we should read the first verses of Genesis 1 as *the ultimate* beginning of all things. Hence, there is room for a substantial/material creation of the cosmic elements long before the creation of the functionality of those elements.²⁰

This brings us to the theological question of the so-called Big Bang theory. In the context of the information given above, the Big Bang theory does not necessarily stand in stark contrast to the creation theory of Genesis 1. Rather, both can complement one another. The Big Bang theory might give us insight into the way in which God created the universe, and, perhaps, multiverses from a *physical* point of view. The only problem that might still occur is the question of timespan (i.e., ‘billions of years ago, the Big Bang occurred’). However, this need not be a major problem. If one takes the Genesis account seriously, that God created elements in their *functionality*, then, one can see, as mentioned earlier, the creation of time. Is this, perhaps, why time is relative within the universe? Anyway, this means that time, as people calculate and understand it, is only functional and real in our perception of life (i.e., in our time-framework). If the creation of time happened at a certain period in cosmological history, then everything that was created before the creation of time makes time, as we know it, irrelevant, immeasurable or infinite. Consequently, ‘billions of years’ could just be equal to zero years in the reality of a universe where time becomes relative and infinite. Thus, the Big Bang theory should

not contradict theological claims about God's creation as recorded in Genesis, nor God creating *ex nihilo*, nor God's salvific work in human history. On the contrary, it might push the theologian to think about God's reality in new and fresh ways.²¹

Can the idea of functional creation then be applied to the question of intelligent life elsewhere in the universe? Interestingly, there is a lot of speculation about intelligent life elsewhere in the universe, but not many proper definitions are given *from a theological perspective*. It is therefore helpful to define each word separately. Firstly the noun 'life', which can be defined as 'the possibility to exist by means of the breath and word of God'.²² The consequences are clear; no life can exist otherwise. Breath might imply oxygen, but, more importantly, it emphasizes God's Spirit. Word implies the potential to communicate, but, more importantly, it emphasizes the potential either to listen and to obey His Word, or not. As for the adjective 'intelligent', one could simply define it as 'the capability of knowing and/or understanding'.²³ 'Intelligent life' could then be defined as 'the possibility of existence, through the capacity of knowing and understanding things both internal and external, by means of the breath and word of God'.²⁴ This definition, however, still leaves the question open as to whether there is a possibility for intelligent life elsewhere in the universe. Again, if one takes the creation story of Genesis into consideration from a functional approach, then it can be understood as meaning that the Earth and the cosmic elements around it were created to function for terrestrial intelligent life. Nothing is explicitly stated about possible life elsewhere in the universe, since it seems this was not the primary concern of the author. Furthermore, intelligent life on Earth, with the capacity to know things internal and external, is also limited in knowing everything. There are limitations to earthly intelligent life. Although knowledge is limited, there is room for thinking in terms of possibilities. Consequently, there is a possibility for intelligent life elsewhere, and that idea should be taken seriously. This idea also correlates with the Genesis creation, since the latter states nothing about the creation of extra-terrestrial life.

If one takes the biblical accounts seriously, furthermore, then there are plenty of references to other intelligent life-forms which do not reside on Earth, although some might connect with, or, operate within

the earthly realm. Some texts are more speculative, while others seem to be more straightforward.²⁵ Rather than describing them in terms of intelligent or extraterrestrial life, the biblical authors and later the synagogue, the church (and, perhaps, the mosque), have referred to concepts like ‘cherubim’, ‘seraphim’, ‘angels’, ‘demons/djinns’, ‘Satan/Beelzebub’, and so on (i.e., ‘angelic beings’). Moreover, these angelic beings have been classified as ‘part of the spiritual (invisible) world’. Nonetheless, there are references to these angelic beings appearing in ways visible to humans on Earth.²⁶ Although this is the case, angelic beings are always considered as coming from a higher metaphysical level. They reside not on Earth, ‘but out there’. Reconsidering the earlier given definition of intelligent life, can one apply the term to angelic beings? I would answer in the affirmative, since angelic beings exist by means of the capacity to know things both internal and external (perhaps more deeply than human beings) by means of the breath and word of God. They might not necessarily need oxygen as human beings do, but they are alive through the Spirit of God; they might not communicate and understand in the same way human beings do, but they do have the potential to listen – and obey or not, as the case may be – to the Word of God. Since angelic beings are considered as beings ‘out there’, mostly invisible, though able to reveal themselves visibly, they can be considered consequently as ‘intelligent life elsewhere in the universe’. That being analysed, another question remains: is there intelligent life elsewhere in the universe that is not angelic, which religious texts say nothing at all about?

This question remains open to speculation, and it is here that opinions differ. Indeed, the twentieth century has shown an obsessive preoccupation with the possibility of extraterrestrial life, almost paranoid in nature. Some people and organisations have even profited from this kind of hysteria.²⁷ The urge to find extraterrestrial beings has sometimes become all-consuming and might lead those concerned to think more about life elsewhere, rather than thinking about their fellow human beings and the problems of humankind. From a theological perspective, the focus should continue to be on Trinitarian salvation within creation, be it on Earth or in the universe as a whole. The focus should primarily be on humankind and this earth, since

it is in *this* realm that humanity is created to function. It is in this realm that revelation takes place and where metaphysical liberation and salvation take place. It is in this realm that the Word became incarnate, brought redemption, and was resurrected to return in the eschaton. This is the crucial core for theology. It has, therefore, a duty to point fellow beings to (re)consider moral and metaphysical issues in an age where entertainment has many ways to distract, dissuade and misconstrue reality. However, theology also testifies that the realms ‘here’ (humankind on Earth) and ‘out there’ (God and angelic beings in the universe) are not dichotomous. Rather, the two realms flow into one another and connection is possible. What binds all existing beings within the universe together is the breath and the word of God. If there is any other intelligent life elsewhere in the universe, then the theological implications remain the same. That life is subdued under God and, therefore, under His redeeming and judging power. Intelligent life elsewhere does not change the core issues for the salvation of humankind.

Since we have raised and attempted to answer the question of intelligence elsewhere in the universe from a theological perspective, contemporary astronomical hypotheses might lead us to ask the question: Why not speak of intelligent life elsewhere in the ‘multiverse’, rather than in the ‘universe’ as such? Briefly, the term ‘multiverse’ implies multiple but different universes existing alongside one another. The universe humankind is part of, and where life is able to exist, is part of a multiverse structure. Altogether, these universes are random combinations of different cosmological constants, and our universe happens to have, by chance, the perfect combination that makes life possible.²⁸ What can we make, then, of the multiverse hypothesis from a theological perspective?

The first thing to point out is that there exists a division among scholars from various disciplines about the existence of a multiverse. It would be wise from a theological perspective, therefore, to await new developments in research, rather than immediately emphasizing the theory which best fits with traditional thinking. Theology is a dynamic discipline and should be able to reconsider ideas and concepts. If the existence of a multiverse were to be verified in future, theology might be open to reconsider certain concepts and ideas. Using its

own sources and traditions, theology might find reason to accept a multiverse, i.e., ‘God as the Infinite Being’; the concept of the Hebrew term ‘the heavens’ (*hashamayim*) throughout the Old Testament; prophetic insights which describe heavenly visions; apocryphal books such as the Book of Enoch which describe astral (heavenly) travels; the philosophical arguments for ‘infinite possible worlds/universes’; and so on. From a theological perspective, one could ask whether a universe and wider multiverses should be considered dichotomous; it could be a both-and, rather than an either-or, together forming a Unified Universe.

Where then does our universe (within, perhaps, the multiverse) lead us to? Will it continue to exist eternally? The idea that the universe is continuing to expand forever is gaining more support. At the same time, however, there are different scenarios for the ultimate fate of the universe, and there may come a final point in an expanding universe. One of which is that of ‘heat death’. Briefly, although the universe is continuously expanding, it will reach ‘maximum entropy’ at a certain point. In so doing, the universe will not be able to function as a cosmos anymore, lacking the energy necessary to sustain itself. The final stage will then be a universe cooling down to a point of equilibrium.²⁹ Is this idea in line with Christian eschatology? It should be noted that, like the theory of intelligent life elsewhere and the theory of a multiverse, the ‘heat death’ scenario is still speculative. In any case, there are different descriptions within the Bible about cosmological happenings with relation to eschatology.³⁰

Although some things are considered revealed in eschatology, ranging from Christ’s second coming to the final judgement and the renewal of all things, the language used to describe these events is still largely that of metaphor. It is an attempt to communicate something which goes beyond our capacity of grasping and understanding. It is both tangible and simultaneously intangible. Therefore, the exact details as to how and when God will work through the cosmos in the eschaton remain unresolved. It is for Him only to decide. Due to the unknowability of the exact moment of this event, eschatological studies should refrain from attempting to calculate the timing of these events, using calculations made for the ultimate fate of the universe. That would be to decide for ourselves when God should come to

renew creation, rather than the other way around. Whether the concept of heat death is compatible with certain Scriptural claims about the eschaton, remains a possibility. Scripture and ‘heat death’ do not rule one another out. Many eschatological events in the Bible, could also occur during heat death, while others might happen before or after a heat death. Or, perhaps, the renewal of the earth and the judgement of humankind might take place first and, at a later stage, the renewal of the heavens might follow after a long period of time when heat death starts to occur. Eschatological events do not necessarily have to happen simultaneously.

To conclude, modern cosmological understanding does not necessarily have to contradict theology. Theology is, and, should remain a dynamic discipline, open to learn from and engage in dialogue with other disciplines, such as astronomy and cosmology. What modern cosmology might learn from theology, and with it, ancient functional cosmology, is that metaphysical concerns should not be set aside for scientific purposes. Both can co-exist and learn from one another as the two frames of reference enrich and define each other. Such co-operative reflection would enable us to reconsider, re-evaluate and ultimately transform our understanding of the multi- or universe we inhabit.

Notes

- ¹ John H. Walton, *Ancient Near Eastern Thought and the Old Testament: Introducing the Conceptual World of the Hebrew Bible* (Grand Rapids, Mich.: Baker Academic, 2006), 165.
- ² Ibid.
- ³ Ibid., 180.
- ⁴ Ibid., 166.
- ⁵ Ibid.
- ⁶ Ibid., 168f. Walton refers, for example, to ‘The Shamash plaque’, see p. 168.
- ⁷ Ibid., 167.

- 8 Ibid.
- 9 Ibid.
- 10 Ibid., 180.
- 11 Ibid., 184.
- 12 Ibid., 183.
- 13 Ibid., 180.
- 14 Ibid., 181, 184.
- 15 Ibid., 183f.
- 16 Ibid., 184–86.
- 17 Ibid., 187.
- 18 Ibid., 190.
- 19 Ibid., 123–27, 196–99.
- 20 I am aware, however, that the question of where to put the main clause in Genesis 1:1–3 has caused many debates and hypotheses, and that these different hypotheses still have not been resolved. See the classic works of, for example, Gordon Wenham, *Genesis 1–15* (WBC 1; Waco, Tex.: Word Books, 1987); Edward J. Young, “The Relation of the First Verse of Genesis One to Verses Two and Three”, in *Studies in Genesis One* (Philadelphia: Presbyterian & Reformed, 1976), 1–14. It is possible that my opinion on this debate might already have been affirmed or refuted in the past, from the point of view of the syntax of the verses. The objective in this essay, however, is to correlate it with Walton’s views and to address the issue of the Big Bang (although, without this exegetical remark, Walton’s ideas would still be applicable to the issue of the Big Bang).
- 21 I would like to point out that there is also the question of ‘evolution of life-forms’ after the Big Bang. However, the scope of this essay limits my discussion to the cosmological question of the Big Bang.
- 22 I have deliberately left out ‘and to procreate’ after the verb ‘exist’, since that would exclude other possibilities of life-forms which do not originate through procreation. Hence, I consider ‘to procreate’, as applicable to, for example, human beings, under the ‘word of God’ (e.g., God urges humans ‘to go and multiply’). Moreover, I have also deliberately left out the capital ‘B’ for ‘breath’ and ‘W’ for ‘word’, since my intention is to explore the differing aspects of

these two nouns. This is made clear further in the text. The reader, however, will see a Trinitarian approach in the attempt to define 'life'.

- ²³ I left out 'things internal and external', as will be clear in the definition of 'intelligent life', in defining 'intelligent/intelligence', since 'intelligence' in itself does not necessarily comprehend things internal and external (e.g., artificial intelligence). Intelligence only does so when it correlates to any form of life. Of course, one can say that artificial intelligence (AI) is 'alive', but that would not suit our *theological definition* of 'life' as mentioned earlier, i.e., the Spirit of God which lives in a form of life and has the possibility of obedience to His Word. In this way, AI can be operative, with the ability to communicate, and may even have the possibility either to obey or not to obey *human commandments*. However, one can ask the critical question as to whether it contains God's Spirit and whether it has the possibility to obey or not to obey God's Word. This is not to imply that God does not have the power to undo AI.
- ²⁴ By 'things both internal and external', also mentioned in the previous note, I mean the possibility of 'self-understanding' and 'understanding of the other' (e.g., of an animal, a fellow being, the world, history, etc.) through inner and outer stimuli. More importantly, since that same capability of knowledge is always limited, 'knowing and understanding things both internal and external' implies above all, from a theological perspective, the possibility of obedience to God's Word and God's Spirit *from within* and *from outside*. In this way, 'intelligent life' differs from, for example, 'artificial intelligence' (see previous note).
- ²⁵ For a speculative text, see, for example, the Nephilim in Genesis 6:4; for a more straightforward text see, for example, the idea of a divine council and angels/spirits operating on Earth in 1 Kings 22:19–22 and Job 1:6–7.
- ²⁶ See, for example, Genesis 19, Daniel 9:21, Luke 1:11–20.
- ²⁷ For example, the many books on the Roswell UFO incident, or Hollywood movies like *War of the Worlds* (1953) and *E.T.* (1982).
- ²⁸ See, for more extensive studies on the multiverse concept, Bernard Carr, ed., *Universe or Multiverse?* (Cambridge: Cambridge

- University Press, 2007); Max Tegmark, “Parallel Universes”, *Scientific American* 288:5 (2003): 40–51.
- ²⁹ Stephen G. Brush, *A History of Modern Planetary Physics. Vol. I, Nebulous Earth: The Origin of the Solar System and the Core of the Earth from Laplace to Jeffreys* (Cambridge: Cambridge University Press, 1996), 77. For more information, see Philip Plait, *Death From the Skies! These Are the Ways the World Will End* (New York; London: Viking, 2008); Lisa Dyson, Matthew Kleban, Leonard Susskind, “Disturbing Implications of a Cosmological Constant”, *JHEP* 0210:011 (2002).
- ³⁰ The shaking of heavenly powers (Mark 13:25); the falling of stars [on Earth] (Mark 13:25, Matt 24:29, Rev 6:13) and/or not giving their light (Isa 13:10, Ezek 32:7, Joel 2:10, 3:17); the darkening of the sun (Isa 13:10, Joel 2:31, 3:17, Mark 13:24, Matt 24:29, Acts 2:20, Rev 6:12); the moon not giving its light (Isa 13:10, Joel 3:17, Ezek 32:7, Mark 13:24, Matt 24:29) and/or being as blood (Joel 2:31, Acts 2:20; Rev 6:13); the present state of heavens and earth being reserved for fire, kept for the day of judgement and destruction (Joel 2:30, 2 Pet 3:7); and a new heaven and earth (Isa 65–66, Rev 21).