

Before the Hills in Order Stood—And Afterwards

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Isaac Watts's lyrics came to mind recently as I was contemplating the possible meanings of the second law of thermodynamics for theology. (I'll explain what caused such a bizarre contemplation later.) Sang Watts,

Before the hills in order stood,
Or earth received its frame,
From everlasting thou art God,
To endless years the same.

Watts of course was echoing the Palmist who sang long before him:

Before the mountains were brought forth,
or ever you had formed the earth and the world,
from everlasting to everlasting you are God. (Psalm 90: 2)

It is interesting to realize that both Watts's early eighteenth-century language and the much more ancient language of the Psalmist are consistent with the notion of a world, a universe, and maybe universes that have been in motion for a long time. Moreover, the motion has involved change—from when the hills did not stand in order, before mountains were manifest, to when they reach their present majesty; from when the earth had not been framed, when it was unformed, to when it had taken the shape witnessed by the Psalmist and Watts, respectively. In both there appears an emergent cosmology that sees an unfolding, changing reality in the world around them.

Of course, whether the majesty of the hills or the shape of the earth were the same circa 1000 BC and AD 1700 is another interesting question that brings me back to meditation on the second law of thermodynamics. The law tells us that for the longest of long-term features of creation (our universe and any others which there may be), thoroughly disorganized, unstructured reality is the eventual condition. To use a metaphor from physicist Brian Greene's *Until the End of Time*,¹ like the aroma of freshly baked bread that initially hovers around the point of baking but eventually radiates throughout the house and dissipates beyond, so the physical world we inhabit is destined for a similar fate. We can take heart initially from the fact that *eventually* in this context means much longer than creation (again, creation as a whole) has been in business—and almost unimaginably longer than there have been us homo sapiens around to contemplate the matter. Ok, according to Katie Mack,² the actual number of years before we reach this point is 10^{1000} —which is the number 1 followed by more zeroes than you would care to write. Best I can figure, that is many times longer than it has taken for earth to get to its present “frame.”

I

But I've been drawn into this meditation because not so long-ago things seemed

more promising to me as preachers and theologians engaged with scientific thought. In 1988 I wrote an article for the pages of this journal that took considerable comfort from what cosmologist Freeman Dyson was saying in his fascinating book, *Infinite in All Directions*. For example, “No matter how far we go into the future, there will always be new things happening, new information coming in, new worlds to explore, a constantly expanding domain of life, consciousness, and memory.”³

But cosmology has undergone some seismic shifts in years since Dyson wrote those words and since I read and appropriated them to my theological ends. Most notably it appears that the discovery of “dark energy”⁴ in the years since has decisively shifted the cosmological calculus. Rather than a universe whose rate of expansion continually allowed for life to adapt to its changes, the force of dark energy appears to be accelerating the expansion of the universe. This has led Dyson to observe that important parts of his views have been rendered obsolete. “We now have strong evidence that the universe is accelerating, and this makes a big difference to the future of life and intelligence.”⁵

One strategy for the preacher-theologian in the wake of new learnings from physics, astrophysics, and cosmology is to set aside the attempt to think biblically and theologically in concert with science. My own experience of finding theological resonance with Dyson’s earlier view certainly suggests that a certain caution is in order, especially when too much advantage may seem to be earned for faith in the conversation with physics. Yet, the conviction that the life of the mind belongs to God argues that theology and the proclamation it funds should continue to occur in clear awareness of what current cosmological science may be discovering. There may be no clear advantage for faith in the conversation. Indeed, there may be significant impediments presented. Still, a thoughtful faith sponsored by thoughtful preaching will want to consider how core theological affirmations about creation can best be articulated in the context of contemporary cosmology.

II

Two recent books to which I have already referred furnish stimulating and challenging insight along these lines—*Until the End of Time* by Brian Greene and Katie Mack’s *The End of Everything (Astrophysically Speaking)*. The latter is a delightfully written bestseller that renders many of the startling developments in cosmological investigation in an engaging manner. The former is an equally delightful account that ponders, especially in its concluding chapter, implications that for the preacher will be especially salient.

What both make clear is that the theological comfort I took in 1988 from a then-current understanding of the likely long-term future of the universe is no longer available. They describe a variety of possible developments that could happen over almost unimaginable time scales given what is now known about the constituent elements of the universe. However, none of the possibilities include the survival of life, mind, and consciousness as we know them.

Greene and Mack concur in the judgment that among the multiple possibilities, the most likely is the one also cited above by Freeman Dyson, that the evidence now suggests that the expansion of the universe is accelerating. This contrasts greatly with the previous understanding that since the Big Bang, the universe has been gradually decelerating, an outcome more hospitable to life, mind, and consciousness continu-

ing pretty much forever. Instead, the ultimate outcome for the universe is increasing disorder (entropy) until all that is left is dark, empty space in which nothing much happens.

The first consolation we might find in the face of this picture is that it is so many billions of years into the future that it shouldn't worry us. Or, better said, we should attend to more immediate worries. Before it occurs, we will have to survive our penchants for destroying ourselves by inter-human warfare or environmental disregard. If we are lucky enough to survive these, we'll have to figure out ways to adapt to living in different environments in the universe since our solar system and even our galaxy will become inhospitable to our continuance long before the ultimate quietude that cosmology describes. In any case, eternal, empty darkness is an experience that will occur in a post-human future.

III

Nonetheless, this portrait of how things will eventually be, “until the end of time,” does pose a theological issue. It's not just that “we are ephemeral and evanescent,” as Brian Greene puts it.⁶ So is everything—at least in longest of long terms, from the largest to the smallest of physical particles. “The entropic two-step and the evolutionary forces of selection enrich the pathway from order to disorder with prodigious structure, but whether stars or black holes, planets or people, molecules or atoms, things ultimately fall apart.”⁷

And pondering all this is what recalled Watts's hymn that led me quickly to Psalm 90.

Before the mountains were brought forth,
or ever you had formed the earth and the world,
from everlasting to everlasting you are God. (Psalm 90:2)

The Psalmist was able to look back from the present as then experienced to a primordial past—before the world as the Psalmist knew it had taken shape—and trust that divine benevolence had guided the whole process, “from everlasting to everlasting you are God.” Instructively, the Psalmist continues by candidly acknowledging the ephemeral and evanescent character of human existence.

You turn us back to dust,
and say, “Turn back, you mortals.”
For a thousand years in your sight
are like yesterday when it is past,
or like a watch in the night.
You sweep them away; they are like a dream,
like grass that is renewed in the morning;
in the morning it flourishes and is renewed;
in the evening it fades and withers. (Psalm 90: 3-6)

No longer looking backward, the Psalmist has now looked forward to the universal human destiny of transitoriness—a destiny that we are learning from contemporary cosmology is shared by the universe itself. Yet both the backward look and the forward

look by the Psalmist are decisively contextualized by the very first affirmation of the Psalm: “Lord, you have been our dwelling place in all generations” (Psalm 90:1).

The Psalmist’s theological invitation in view of the cosmological future is to affirm that God continues to be creation’s dwelling place—both as the hills come to stand in order and as they inevitably decay into disorder, both as the whole creation evolves through our remarkable moment in time toward a future that appears inevitably diminished. In all moments of this movement, God is to be trusted as “dwelling place”—the provider of care and protection sufficient for the circumstances of creation in every time. With such a conviction, we may live into the Psalmist’s petition later in this Psalm, “So teach us to count our days that we may gain a wise heart” (Psalm 90:12).

IV

One more thought for further exploration of faith’s relation to cosmology: if the ultimate destiny of our universe’s accelerating expansion is dark, disordered motion, a particular New Testament passage springs to mind. The wisdom of God to which Psalm 90:12 refers is the same Wisdom/Word that the Gospel of John speaks of being present with God in the beginning, actively engaged in the creation of all things. “In the beginning was the Word, and the Word was with God, and the Word was God. He was in the beginning with God. All things came into being through him, and without him not one thing came into being” (John 1: 1-3). This text goes on to claim that this Word brought life and light into the world and then poses an implicit theological question to our universe’s cosmological destiny of dark, empty space. “The light shines in the darkness, and the darkness did not overcome it” (John 1:5). A worthy theological project is to explore what it might mean that even the darkness of distant cosmological “heat death”⁸ will not overcome the power of life and light that was in the beginning, “became flesh and dwelt among us,...full of grace and truth” (John 1:14).

V

As previously observed, the eventual expansion of the universe into empty darkness portrayed by contemporary cosmology is an experience occurring in a post-human future. So, at the predicted cosmological outcome, only God (and angels?) will be there to take note. But there is another Psalm that suggests how it might all seem to the divine observer:

If I say, “Surely the darkness shall cover me,
and the light around me become night,”
even the darkness is not dark to you;
the night is as bright as the day.
for darkness is as light to you. (Psalm 139: 11-12)

In saecula saeculorum. Amen.

Notes

1 Greene, Brian, *Until the End of Time* (Alfred A. Knopf: New York, 2020), 32-33.

2 Mack, Katie, *The End of Everything (Astrophysically Speaking)* (Scribner: New York, 2020), 104.

3 Dyson, Freeman, *Infinite in All Directions* (Harper & Row: New York, 1988), 115.

4 cf. Greene, *Ibid.*, 254-256.

5 John Horgan, 2018, <https://blogs.scientificamerican.com/cross-check/freeman-dyson-s-solution-to-the-problem-of-evil/>.

6 Greene, *Ibid.*, 322.

7 *Ibid.*, 316.

8 Mack, *Ibid.*, 90.