

CORRESPONDENCE

The Editors wish to apologise for the accidental omission of the letter from Dr P.G. Nelson, now printed below, from Issue 19-2. The letter from Dr Ernest Lucas printed in that Issue (pages 185-186) was in response to this letter and should be read in conjunction with it.

P.G. NELSON

Cosmic curse?

In my letter on the Curse,¹ I argued that the description of the creation in Genesis 1:31 as ‘very good’ means that there were no phenomena like earthquakes, predation, and pestilence at the beginning. In his reply,² Sam Berry contends that the phrase does not exclude such happenings. He cites a series of commentators who take the phrase to mean that ‘creation from the beginning was good in God’s eyes’, not “good” in our normal usage of the word’.

However, all the commentators he cites are modern. As such, they would have been well aware that to take “very good” to mean that the creation was different at the beginning from how it is now would have clashed with the orthodox scientific picture of the origin of the earth.³ That they should try to ease this conflict is understandable. A better test of what the phrase means is what commentators took it to mean before the development of modern science.

Further, Genesis 1:31 literally reads, ‘and *behold* it was very good’ (Heb. *hinnēh*, Gk. *idou*). Modern commentators take ‘behold’ as intensifying God’s reaction (‘it was *really* very good’),⁴ but it is more naturally taken as inviting the reader to share it.⁵ In the latter case, the word would be inappropriate if the reader cannot use his or her own sense of what is good.

Moreover, the passage itself indicates that there was no predation at the beginning. In the immediately preceding verses (29-30), God says that he has given human beings and animals plants for food. He only permits human beings to eat meat after the Flood (9:3).

Finally, not all modern commentators discount a cosmic curse. Commenting on Genesis 3:17 (‘cursed is the ground for thy sake’), Francis Schaeffer wrote

1 *Science and Christian Belief* (2007) 19, 77-78.

2 *Science and Christian Belief* (2007) 19, 78-80.

3 Cf. Payne, D.F. *Genesis One Reconsidered*, London: Tyndale Press (1964).

4 Wenham, Gordon J. *Word Biblical Commentary*, Genesis 1-15, Waco: Word Books (1987), p. 3; Atkinson, David *The Message of Genesis 1-11*, Leicester: Inter-Varsity Press (1990), p. 42.

5 Gesenius, William A *Hebrew and English Lexicon of the Old Testament* (tr. Robinson, Edward; eds. Brown, Francis; Driver, S.R. and Briggs, Charles A.), Oxford: Clarendon Press (1962 printing), p. 244.

‘at this point the external world is changed’.⁶ He continued:

It is interesting that almost all of the results of God’s judgment because of man’s rebellion relate in some way to the external world. They are not just bound up in man’s thought life; they are not merely psychological. Profound changes make the external, objective world abnormal. In the phrase *for thy sake* God is relating these external abnormalities to what Adam has done in the Fall.

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6 Schaeffer, Francis A. *Genesis in Space and Time*, London: Hodder and Stoughton (1973), p. 95.

PETER J. BUSSEY

Emergence – another category

May I add a comment to Russell Manning’s excellent article on ‘Emergence’ (*Science and Christian Belief* (2007) 19, 37-58)? He discusses two basic classes of ‘emergent’ quantities, of which the first is marked by the fact that when suitable degrees of complexity and pattern are present, physical systems may often be conveniently described in new and significant ways. We are not at this point talking about genuinely new realities coming into existence, though; the ‘emergence’ might even be said to be occurring in the human mind, in the form of a higher-level idea that is seen to be applicable to the physical system. However the second, ‘ontological’ class of emergence refers to cases where a complex physical system can support the existence of a genuinely new type of entity: consciousness in a physical brain, perhaps. This type of ‘emergent’ quantity is not just a new description of the physics. Its presence is an empirical fact not deducible from the underlying physics as such.

I would like to point to a further category of ‘emergent reality’, which is provided by the formation of holistic systems in quantum physics. These systems have a normal physical nature, and no formation of a new layer of reality is implied. Nevertheless they possess a new level of organisation which is more than just an arrangement, pattern or sum of their constituent parts.

In quantum physics, it is fairly straightforward to give a definition of a holistic system. Two (or more) objects A and B form a holistic system *when the state of one cannot be specified without reference to that of the other*. This means the following in the quantum situation. It may be possible to specify a particle A in a quantum state $|a\rangle$, and likewise a particle B in state $|b\rangle$, and to juxtapose them to form a compound system of A and B with state $|a\rangle|b\rangle$. This is not yet a holistic system, since A and B each retain an independently specifiable state. However, correlated or ‘entangled’ systems can occur. If A and B

have available a number of possible states $|a_1\rangle$, $|a_2\rangle$, $|b_1\rangle$, $|b_2\rangle$, etc., there exists the possibility of forming a compound state denoted, to take an example, by an expression proportional to $(|a_1\rangle|b_2\rangle + |a_2\rangle|b_1\rangle)$. This cannot be written as a simple accompanying of a state of A with a state of B. Entangled systems of this type, according to our definition, are holistic.

The physical consequence of this is that an atom, let us say, which comprises an entangled state of a nucleus and some electrons, behaves as a quantum object in its own right. It is an 'atom', existing as such, not just a collection of components. It possesses the characteristics, identity and behaviour of a quantum particle, displaying its own wavelike effects, for example. (An atom may possess different internal states, such as different electron configurations, but each such internal state would give a different quantum identity to the atom.) Aristotle originally stated that the whole is 'more than' the sum of its parts, but in quantum mechanics the whole is 'different from' the sum of its parts.

In this sense, therefore, the holistic quantum object (such as an atom) may be said to 'emerge' from its constituent parts. This occurs at the price of each component part losing some of its own individual identity. The latter condition, importantly, is *not* an aspect of 'descriptive' emergence. It is interesting to wonder whether such a condition would be required in the case of 'ontological' emergence. One can only speculate, but some kind of interaction or correlation between the new ontologically emergent layer and the supportive underlying system must surely be required.

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