

УДК 125 + 215 + 524.8

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IS THE TRUTH OUT THERE? COSMOLOGY, THE UNIVERSE AND GOD

The article deals with the question of relationship of cosmology, the Universe and God, involvement modern science to the Christian faith, finding the true beginning of civilization and possible ways to approach the truth. Discussions about the emergence of the world divided scientists (cosmologists, biologists) into two camps: one supporting creationist point of view, while others rely solely scientific facts. The discoveries of modern cosmology contradict to the tenets of the Bible. It is a certain "threat" to Christian believers, who see the meaning of existence in the glorification of acts of Christ and his death on the cross. Also, the work discusses the questions of probability that God created not only the Earth and the people in his own image and likeness, but also the other worlds according to the unknown to mankind project.

Keywords: Universe, Earth, scientific cosmology, extraterrestrial intelligence, Christian theology.

У статті розглядаються питання взаємозв'язку космології, всесвіту та Бога, причетності сучасної науки до християнської віри, пошуку справжнього початку цивілізації та можливих напрямків наближення до істини. Дискусії щодо виникнення світу поділили науковців (космологів, біологів) на два табори: одні підтримують креаціоністську точку зору, інші ж довіряють винятково науковим фактам. Відкриття сучасної космології суперечать догматам Біблії. Це становить певну «загрозу» для віруючих християн, які вбачають сенс існування в уславленні діянь Христа та його смерті на хресті. Також у роботі обговорюється питання ймовірності того, що Бог створив не тільки Землю й людей за образом своїм і подобою, а й інші світи за невідомим для людства проектом.

Ключові слова: Всесвіт, Земля, наукова космологія, позаземний розум, християнська теологія.

В статье рассматриваются вопросы взаимосвязи космологии, вселенной и Бога, причастности современной науки к христианской вере, поиска настоящего начала цивилизации и возможных направлений приближения к истине. Дискуссии о возникновении мира поделили ученых (космологов, биологов) на два лагеря: одни поддерживают креационистскую точку зрения, другие же доверяют исключительно научным фактам. Открытия современной космологии противоречат догматам Библии. Это представляет определенную «угрозу» для верующих христиан, которые видят смысл существования в прославлении деяний Христа и его смерти на кресте. Также в работе обсуждается вопрос вероятности того, что Бог создал не только Землю и людей по образу своему и подобию, но и другие миры по неизвестному для человечества проекту.

Ключевые слова: Вселенная, Земля, научная космология, внеземной разум, христианская теология.

What are the implications for Christian faith of modern scientific cosmology, in particular, the age and size of the universe and of the possibility of there being intelligent life elsewhere in the universe – extraterrestrial intelligence (ETI)? In answering this I am working on the assumption that theology needs to coexist with science, without necessarily accepting every single claim made by scientists.

The Age of the Universe. Modern cosmology estimates that the universe is some 13.7 billion years old. The Earth is relatively young – less than 4.6 billion years old. The simplest forms of life are some 3.8 billion years old, the genus *homo* is up to 2.5 million years old and anatomically modern humans are a mere 200,000 years old. About 10,000 years ago civilization began with the systematic husbandry of plants and animals. Furthermore, the age of the universe is miniscule compared with what may lie ahead. By contrast, until the nineteenth century most people assumed that the world was just a few thousand years old.

The size of the universe. The latest estimate is that there are more than a hundred billion galaxies in the universe and that the average galaxy contains more than a hundred billion stars. The lowest estimate for the total number of stars in the *visible* universe is a “mere” 10 billion trillion and it could be much more. As for distances, the furthest objects whose light we can receive are some 46 billion light years away, i.e. some 430 billion trillion kilometres. That is just the *observable* universe.

The entire universe may prove to be considerably larger. In New Testament times the best astronomy was fairly accurate regarding the size of the solar system, but no one until the last century had the faintest idea how far away the farthest stars were.

Extraterrestrial intelligence? If the universe is this vast, does it contain other intelligent life? Scientists are seeking the answer by listening for communications from outer space and also by searching for planets elsewhere in the universe capable of sustaining life. While the first search has so far yielded no fruit, the second has been very fruitful, the first confirmed discovery of an exoplanet being in 1992. Exoplanets are detected either by the wobbling of their stars as a result of the gravitational force of the planet as it revolves or, more commonly, by the drop in brightness of a star as the planet passes in front of it. NASA's Kepler mission conducted a systematic search for such evidence from 2009 to 2013. There are now over 1000 exoplanets whose existence has been confirmed and over 4000 more candidate exoplanets whose existence has yet to be confirmed. These numbers are increasing on a weekly basis. On the basis of results so far it has been estimated that in our galaxy alone there may be as many as 10 billion stars with planets that could potentially sustain life. Some planets are too hot to sustain life, others too cold, while some are just right, lying in the "habitable zone" of their stars. In 2008 the Hubble Space Telescope took the first visible-light photo of an exoplanet, of a planet larger than Jupiter orbiting the star Fomalhaut, some 25 light years away.

A suitable planet is only the first stage. Life then needs to evolve. How likely is it that *intelligent* life would have emerged? Biologists are sharply divided over this. Some regard it as virtually certain that this will happen wherever the environment is suitable. Others regard it as so unlikely that statistically we ought not to be here. In 1950 Enrico Fermi proposed what is known as the "Fermi paradox": if aliens exist in our galaxy, "where are they?" From our current state of development it should "only" take some 5 to 50 million years for us to colonise the galaxy. Given that our Sun is a relatively young star, if life is abundant someone should have arrived by now – or at least have contacted us.

In my judgement, ETI is most unlikely to be abundant, but I would by no means exclude the prospect of its existing in our own galaxy, let alone in some of the other 100-plus billion galaxies. But while it may well exist, given the vast distances involved it could be that we will never find *proof* of its existence, let alone communicate with it, let alone meet it face to face. And even if there is ETI close enough for us to access, would it be sufficiently like us for communication to be possible? And if we received a message from, for example, a relatively close hundred light years away, the ensuing conversation would be somewhat limited by the fact that there would be a two-hundred year interval between sending any message and receiving the reply!

Do these findings of modern cosmology pose a threat to Christian faith? Apart from those who insist on a very literal interpretation of Genesis 1, the majority of Christians have no problem with the scientific account of the age of the universe. It does, however, have potential implications for the timing of the Second Coming of Christ. The size of the universe raises the question of human significance, but for the Christian faith (unlike Aristotle) our value is based not upon our physical location in the universe but on the fact that we are created in God's image and that he gave his own Son to become one of us and to die for our sins. Also, the vastness of the universe points us to the infinity of God and inspires us with awe.

Would the discovery of ETI pose a problem for Christian faith? Surveys reveal that the great majority of believers would have no problem with it. In fact Christian theologians have been debating this issue since the invention of the telescope in the seventeenth century, and even further back since the fourteenth century. So Christian theology has been preparing for the discovery of ETI for at least four, if not seven, hundred years. There is nothing in the Bible that either affirms or denies the existence of life upon other worlds. What it emphatically does not state is that we are the only intelligent spiritual life created by God. Both Testaments affirm the existence of angels, as does the Christian tradition. There are no theological grounds for excluding the possibility of ETI.

If there are many forms of intelligent and spiritual life throughout the universe, is it only ourselves that partake of God's image? While Genesis states that "God created man in his own image" (1:27), Scripture nowhere claims that this is unique to us. Our significance is based upon our creation in God's image, not upon any claim to exclusivity. We may never discover whether ETI exists, but either way we have no grounds for exalting ourselves as the sole object of God's love. The Christian faith makes positive claims about God's love for us, supremely in giving us his Son; it

makes no negative claims that he loves us alone or that the creation is purely for us.

Perhaps the biggest issue raised by ETI concerns the incarnation of Christ and his death for us on the cross. Is it only on Planet Earth that the divine Word, the second Person of the Trinity, has become flesh? This question has been debated since the fifteenth century. We cannot assume that ETI (if it exists) will have sinned. If the incarnation is unique it might be because we are the only fallen race out of a myriad of ETI species. But equally we need to consider the possibility that we are not the only fallen species in the universe. Some argue that the death of Christ on Earth would suffice to save fallen ETI. But when the doctrine of the incarnation was developed in the early centuries, there was rightly an emphasis on the full humanity of Christ. It was only by truly becoming one of us that Christ could save us – which would mean that he cannot also save ETI. So, if the work of Christ does not cover ET, does this mean that there have been or will be multiple incarnations and passions in different parts of the universe? There are no *theological* grounds for denying that the Word may have become flesh in more than one form — though why should we assume God would do the *same* thing for every fallen species? It is possible, therefore, that ETI may be saved not by the death of Christ as a human being, not by another incarnation, but by some quite different means. We may not be able to imagine any alternative way of salvation, but that does not mean that God has none. It is best to maintain a cautious agnosticism. Christian revelation is silent concerning what God may or may not have done elsewhere in the universe. We do not even know whether ETI exists, or whether it has fallen if it does exist, so it is arrogant to think that we can know how God might save them.

The age of the universe poses a question for Christian hope for the future (Eschatology). From reading the Bible alone one would form the impression that the universe is only a few thousand years old. Similarly one gets the impression that the end of the universe is not too far in the future. Given that the age of the universe is so much greater than one might have expected, should we also be thinking of the return of Christ as taking place in billions of years' time?

Furthermore, when Paul states that the whole creation is groaning in anticipation of the future freedom of the glory of the children of God (Rom 8:19-23), to what does “the whole creation” refer? What is the scope of this new creation? Does it include galaxies so far away that their light cannot reach us? Could it be our galaxy only? Or could it refer to the solar system only? It is likely that Paul was thinking of Planet Earth, not of distant stars. Extending the meaning more widely is highly speculative. Scripture is addressed to human beings on Planet Earth and its purpose is not to tell us what God may (or may not) be doing elsewhere in his universe. I have no doubt that God's saving purposes extend to the whole universe and do not wish to argue that part of the universe will be discarded. But does God need to redeem all parts of the universe at the same time? Must it all happen when Christ returns to planet Earth? Is it possible that the End referred to in the Bible might relate to our solar system only? Here, even more than elsewhere, we need humility. Luther was exaggerating when he stated that, “we know no more about eternal life than children in the womb of their mother know about the world they are about to enter” – but only slightly exaggerating. Probably the safest prediction is that when Christ returns it will be very different from what *anyone* is expecting.

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