

ARE WE ALONE IN THE UNIVERSE?

III ITALY-UKRAINE SCIENTIFIC MEETING

V. N. KARAZIN KHARKIV NATIONAL UNIVERSITY

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V. N. Karazin Kharkiv National University

Are we alone in the Universe?

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Editors

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Plurality of worlds and Christian faith

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Today, the question of life in the cosmos must be answered by the sciences, but in the past the topic has aroused, and still arouses, interest in literature, cinema, philosophy and, to some extent, theology. After briefly examining the position of the debate on extraterrestrial life within the dialogue between scientific thought and humanistic culture, we discuss which questions seem to involve Christian theology and which, on the contrary, fall outside its method. Among the questions posed to theology, some of them subtend an inadequate epistemology and need to be more properly addressed. Christian theology can, however, suggest some paths to understanding what role extraterrestrial life might play in a cosmic context having a common dependence on a Creator God. Theology points out that the search for life in the cosmos seems to be underpinned by motivations that transcend the empirical method, as happens in other fields of scientific research that focus on humanistic relevant questions. Such queries belong to the existential sphere concerning the relations between the human being, nature and the Foundation of all things, and involve the philosophical-religious question par excellence, that about the origin and meaning of life.

Keywords: extraterrestrial life, Christian theology, humanistic culture, Creator God

The question "Are we alone in the Universe?" has also been addressed to theology. This is not surprising, because a Christian-inspired culture contributed, in certain way, to promoting the study of nature, especially the universe at large. Actually, in many countries the rise of astronomical observatories resulted from the development of small observatories associated to schools or seminaries, built by priests or members of religious orders. This is precisely what happened in Italy between the Eighteenth and early Nineteenth centuries. That theology is called into debate when we discuss about extraterrestrial life is not surprising also for another reason: as we will see, the question "Are we alone in the universe?" often raises philosophical, existential or even religious reflections. In this short talk, I will try to touch on two topics. First, I will see how the debate about extraterrestrial life is positioned within the dialogue between scientific thought and humanistic thought. Second, I will specifically address theology, as a discipline among the others, the question about the spread of life in the cosmos.

Let us start from the first step, the position of the debate about extraterrestrial life in the dialogue between humanistic and scientific thought (see also the paper of Massimo Capaccioli in this same book). The question "Are we alone?" is an ancient question. Probably, the first author who posed it was Plutarch, already in the First century, when he wrote a piece of work wondering whether there were inhabitants on the Moon. He was intrigued by something we all experience: staring at the surface of the Moon on a full Moon night, we can almost recognize the features of a "face".

In the Middle Ages as well, people asked the same question, but from a slightly different perspective: they wondered if the power of God, the creator, was such as to create many worlds, and if those many worlds were different worlds or a single world. In his *Summa Theologiae*, St. Thomas Aquinas clarified that, from the view point of God's creative power, many worlds or one world, did not change much. Nicholas of Cusa, a cardinal of the Catholic Church, a mathematician and philosopher, also dealt with the theme in his book *Of learned ignorance*: he wondered whether there were inhabitants in the cosmos and naively placed them on the stars.

In the Sixteenth century, Giordano Bruno also hypothesized that life was widespread throughout the universe, not only in the form of inhabitants of the stars and planets, but also by invoking a vitalist principle that would provide a soul to the entire cosmos, and a soul to individual celestial bodies. Two characters of great importance such as Galileo and Kepler, however, did not directly ask this question. Their vision was certainly a very broad vision of the cosmos, and thanks to Galileo's observations and to Kepler's mathematical formulation of planetary orbits, we began to understand that our Solar System was larger than expected, that not everything revolved around the Earth. This somewhat broadened the cognitive categories, and indirectly led people to wonder about the possibility of the spread of life in the cosmos. However, as far as I know, they did not address this topic directly. We had to wait for the end of the Seventeenth century, the beginning of the Eighteenth century and then the whole Nineteenth century, to have works of great impact.

Bernard le Bovier de Fontenelle wrote a widespread essay titled *Conversations on the Plurality of Worlds*. Christiaan Huygens, a great optician and astronomer, dealt in his work *Cosmotheoros* with the possibility of life in the cosmos. Camille Flammarion wrote a very influential work, *La Pluralité des Mondes Habités*, 1862, and then Giovanni Schiaparelli entered into the debate with his observations of Mars' surface. It is now widely accepted that Schiaparelli did not believe in the existence of Martians on Martian soil; however, he decided to use the term "canals" to indicate the configurations he observed on the surface of Mars, because he knew that this term would arouse the interest of the general public. There were also people who went against the hypothesis of inhabitants in other worlds... For example, Alfred Wallace, a biologist and naturalist contemporary of Charles Darwin, who also contributed to the discovery of the law of evolution by natural selection, wrote a book in 1903 titled *A Study of the Results of Scientific Research in Relation to the Unity or Plurality of Worlds*. Here Wallace supports the uniqueness of humankind throughout the cosmos.

Between the Eighteenth and the Nineteenth centuries, a few authors tackled the comparison between the plurality of worlds, extraterrestrial life and the Christian faith. Astronomers who also were Christian believers, such as William Herschel, Angelo Secchi, Francesco Denza, Virginio Schiaparelli, were favorable to the idea of the spread of life in the cosmos. In the Nineteenth century, Christian believers seem to move from caution to optimism: people began to say that the spread of life was compatible with the greatness of God the creator or, indeed, it was explicitly required by His greatness. A universe where life is widespread in the cosmos would give more glory to God.

In the Twentieth century, some theologians tried to get into this very difficult subject. Eric Mascall, Paul Tillich, Michael Schmaus, Ernan McMullin, nowadays Ted Peters, in Berkeley. Also paleontologist Pierre Teilhard de Chardin was favorable to state the compatibility between Christian faith and the plurality of inhabited worlds. A well-known theologian like Karl Rahner, however, explicitly preferred not to get into the subject, because he considered it too complex and difficult to tackle.

Today, different views coexist among theologians. Some are in favor of the idea that life is a widespread phenomenon, others are inclined to what we could call the “classical solution”: humankind could be alone. In the absence of evidence in favor of extraterrestrial life, we understand that not a few theologians prefer to endorse the classical theological solution. In a sense, until evidence of life in the cosmos arises, we cannot qualify their standpoint as anti-scientific. In recent



FIGURE 1: The scene from the movie "Contact". Jodie Foster represented a non-believing scientist, an atheist, while Matthew McConaughey, the advisor of the President of the United States for philosophical and theological affairs, as a believing theologian

decades, cultural and philosophical studies devoted interest to our topic. There are several universities in the United States, for instance in Chicago and Berkeley, which offer university courses on the plurality of worlds, framing this topic within the context of literature, cinema and philosophy.

It is interesting to note that our approach to extraterrestrial life is inevitably made by using human categories. Well, if we think about the titles and the plots of a few good science fiction films, we note that sometimes we think of extraterrestrial intelligence having an angelic, good personality, and sometimes we think of extraterrestrial intelligence having a demonic, conflictive character, up to pushing them to destroy humans. Let us now address a higher-level question: When we talk about extraterrestrial life and extraterrestrial intelligence, humanistic and philosophical considerations – inspired from literature, cinema and science popularization – often and naturally flow towards the religious and theological domains. Why does it happen so?

A film like *Contact* (1997), which is well-known to many, had two protagonists in opposition to each other: Jodie Foster represented a non-believing scientist, an atheist, while Matthew McConaughey, the advisor of the President of the United States for philosophical and theological affairs, was a believing theologian (Fig. 1). Their opposition is precisely what ensured a good dialectic to the plot of the film. We have to choose: who is more apt to represent humans, an atheist or a believer? It is as if we acquire the consciousness of a “common self” in front of a new “other” to confront. Search for extraterrestrial life and extraterrestrial intelligence promotes a greater awareness of the unity of humankind as a whole. Now, if we want to answer existential questions – who we are, where we come from, what the purpose of our life is – we instinctively seek sources of knowledge different from ours. We look for someone else more informed or wiser than us. It is a bit as if, after having tried for many years to answer these supreme questions, human genre had perhaps exhausted its resources... Therefore the desire to listen to extraterrestrial intelligence and learn from it, is the unconscious desire for more knowledge in these existential and spiritual fields. This is the reason, in my opinion, why these plots in literature and cinema stimulate religious questions: who are we, what is our origin, is there someone behind the world, is there someone in the foundation of the world?

Let us read a page by Paul Davies¹, an astronomer but also a great science popularizer, who explicitly addresses why the religious dimension enters the debate on the search for life in the cosmos. Paul Davies writes: “*The powerful theme of alien beings acting as a conduit to the Ultimate—whether it appears in fiction or*

as a seriously intended cosmological theory—touches a deep chord in the human psyche. The attraction seems to be that by contacting superior beings in the sky, humans will be given access to privileged knowledge, and that the resulting broadening of our horizons will in some sense bring us a step closer to God.” Then

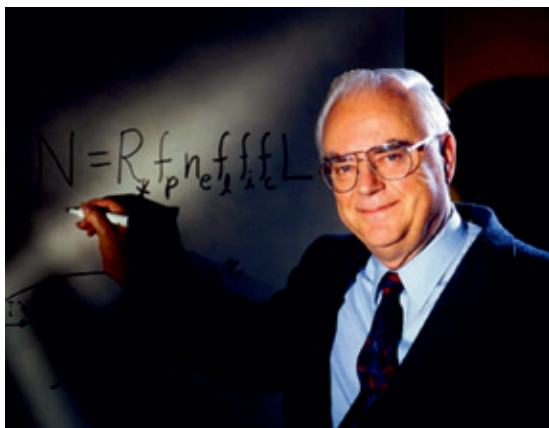


FIGURE 2. American astronomer and astrophysicist Frank Donald Drake and his famous Drake equation, also called Green Bank equation, equation that purports to yield the number N of technically advanced civilizations in the Milky Way Galaxy as a function of other astronomical, biological, and psychological factors

he continues: “The search for alien beings can thus be seen as part of a long-standing religious quest as well as a scientific project. This should not surprise us. Science began as an outgrowth of theology, and all scientists, whether atheists or theists, and whether or not they believe in the existence of alien beings, accept an essentially theological world view.”¹

We have now arrived at the second and final step of my talk: “Christian theology and the plurality of inhabited worlds”. Let us resume a few epistemological clarifications and a few tracks of understanding. Not much can be said... I will try to develop what little we can say about the subject.

In the first place, scientific thought can righteously ask some questions to theology. Addressing them, science helps theology to reflect more in depth on these issues. For example: Is faith in God the creator of heaven and earth, the One and Triune God fully revealed by Jesus Christ, consistent with the presence of extraterrestrial life – extraterrestrial intelligence included –, within the cosmological context we know in the 21st century? Another epistemologically consistent question is asking theology: What relationship would there be between extraterrestrial life and the notion of God as “life”, as the “source of all life”? Another good question is the following: What relationship could there be between extraterrestrial *intelligence* and God, being He the Intelligent Primary Cause of the world and the ultimate scope of all intelligence in the world? On the other hand, there are some other questions that are epistemologically less

1 P. Davies, *Are We Alone? Philosophical Implications of the Discovery of Extraterrestrial Life* (Harmondsworth: Penguin, 1995) pp. 137-138.

centered, and which cannot be asked, as such, to theology. For example, we cannot ask theology to explain whether extraterrestrial intelligence has an “original sin” or not. Theologians simply do not have the tools, nor enough data to answer this question. Analogously we cannot ask theology to explain whether a creator God should or should not “visit” his intelligent creatures up to became “incarnated” as one of them. We simply ignore this and we cannot deduce the answer from what we know. In addition, theology cannot show if the presence of life in the cosmos is confirmed or denied by sacred Scripture: we cannot ask this question, simply because authors having a historical and hermeneutical frame very different from that of our contemporaries wrote sacred Scripture. The fact that theology does not have an answer for this kind of questions, I say it frankly, does not mean that theologians want to defend themselves; they simply do not have the tools to provide and answer to such questions. The Christian God is not a “Platonic” god, from whom everything can be deduced: some things are non-deducible, they remain unknown to us, simply because they are left to God’s freedom: we have no information.

Let me try to highlight five conclusive statements on what theology could, or could not say about Extraterrestrial Life. First: strictly speaking, theology is not obligated a priori to affirm the existence of intelligent extraterrestrial life; nor is it obligated a priori to modify all its teachings taking this view into account. I think this position is legitimate. Drake's equation only concerns necessary conditions for life, not necessary and sufficient conditions to have life (Fig. 2).

Drake-like equations do not tell us what the necessary and sufficient conditions for life are, because we do not know why (and even how) life developed, including intelligent life. Although the huge enlargement of the space-time horizons of our universe plausibly suggests the spread of life in the cosmos, the “size argument” is not an apodictic proof for that. In fact, we know that the universe is so large and so old precisely because space and time are two anthropic conditions: if it were not so large and so old, we could not have been here and now, on our planet.

Second: the discovery of intelligent life in the cosmos, or that of life in general, would not be, I guess, a decisive factor for confirming or denying the existence of a creator God. Think for instance of the messages that we have sent during the past decades towards the deep cosmos, as witness of our existence on the earth. I refer to the Arecibo radio information broadcasted to M13 in the Seventies, and to the various illustrative plaques we put on our interplanetary satellites. In these human witnesses there were no references at all to the *fact* that the majority of humankind believe in a creator God. By *fact*, I mean that the cultural heritage of humankind offers evidence that the majority of humans believe that the universe

has been created by Someone. If we human decided not to give this information to possible cosmos inhabitants, the absence of a similar information from possible extraterrestrial messages cannot be used to state anything in favor or against the



FIGURE 3. Angels from Basilica of Sant'Apollinare Nuovo, Ravenna, Italy

existence of God. Therefore, I do not think that a simple “contact event,” whenever possible, will be decisive in this respect. Much more dialogue between humans and other intelligences would be needed, an “interactive dialogue” which, unfortunately, seems impossible because of time constrictions.

Third conclusive statement or third suggestion: Christian theology has no prejudicial arguments against the presence of extraterrestrial life, including intelligent life, in the cosmos. It would be a factual result, something belonging to science, not to theology. Actually, there are no teachings of the Magisterium of Catholic Church, nor any theological arguments, which exclude such a possibility. Let me add one more reflection. Perhaps you could judge it not entirely in tune with

what we are discussing, but it is part of the Christian faith: I refer to the fact that Judaeo-Christian tradition supports the existence of *angels*.

Angels are intelligent creatures (Fig. 3). They were the recipient of a divine revelation and had a history of salvation, which were very different from ours. What do I mean? I mean that Christian faith is aware that not everything, in the universe, is understood only in terms of the relationship between God and the human beings; the history of creation and salvation is open to other intelligent creatures.

Fourth statement: according to our present scientific knowledge, the “classical” solution, i.e., to consider the human being to be unique in the cosmos, may seem, perhaps, implausible, but not formally erroneous. What could theologians do until we have a clear evidence of extraterrestrial life? They are allowed to consider this “classical” solution similarly to how physicists consider and manage classical solutions compared with quantum or relativistic solutions. In many problems of physics, classical solutions continue to hold as “particular cases” of quantum or

relativistic solutions; this happens, for instance, when we have sizes much larger than atomic structure and velocities much slower than the speed of light. Therefore, while waiting for further data, we cannot judge as obsolete or incomplete those theological views, which do not a priori assume extraterrestrial life actually. I do suggest my colleagues-theologians to consider this possibility, being it well plausible, but I cannot criticize those who still prefer to work in the frame of a *classical* solution.

Last statement: the idea of a possible dialogue between different extraterrestrial civilizations—I emphasize here the word *dialogue*—seems prohibitive, due to the distances involved. In a sense, we should say: *detect, not dialogue*. We could get a contact, but develop a dialogue... is a completely different thing! For many well-known reasons, space and time constraints are too severe to let dialogue develop: distances to travel, signals time delay, etc. However, let us do a working hypothesis, a mental experiment. If such a dialogue were possible, if a dialogue between different extraterrestrial intelligences were truly possible, then what the role of theology, of believers in God, would be? Well, I guess that a believer in God would welcome this encounter as an extraordinary *religious* experience; he or she would approach it with a great sense of respect toward “the other,” recognizing a common origin, envisaging the possibility of better understanding the relationship between God creator and the whole of creation.

On the other hand, as I said before, it seems inconsistent that such an encounter will provide the last word on God’s existence. Someone thinks that a contact with extraterrestrial intelligence (and the following dialogue...) would free Homo sapiens from an infantile religious phase, making him finally understand what a man’s true place in the universe is. This seems to me an ingenuous and naive hypothesis. Why? The “Big Questions,” the great existential and religious questions, those that characterize our human species, will certainly remain unresolved even after a contact/dialogue with other intelligent creatures: Why does the universe exist? What is the meaning of human life? Is there any reason for the innocent pain? Why are the universe and we humans on the Earth bound to die? Why do we have the desire for a love without end, the desire for an eternal life? Other intelligent beings who share our “creaturely-ness” would be unable to provide exhaustive answers to all that. If these beings exist, they too will ask themselves these questions, just the same as we ourselves do. I conclude. The final word on the issue of extraterrestrial life is not up to theology but up to science. The existence of intelligent life on planets other than Earth is neither required nor excluded by any theological argument. Theology, as well the whole humanity, can do nothing but wait.

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In the last few years, under the stimulus of the Italian Embassy in Ukraine and with the essential contribution of the Italian National Institute of Astrophysics and the V.N.Karazin Kharkiv National University, the collaboration between Italian and Ukrainian scientific and academic institutions has developed significantly, with mutual advantages, especially in the field of astrophysics and cosmology.

Both in 2018 and in 2019 two meetings were organized on the occasion of the Day of the Italian Scientific Research, with the purpose of informing a large audience and attracting the younger generation to scientific disciplines. The meetings were both held at V.N.Karazin University in Kharkiv with the participation of Italian and Ukrainian scientists and academicians.

Motivated by the common interest in ground and space-based researches and stimulated by last year award of the Nobel Prize to Michel Mayor and Didier Queloz for their discovery of the first extrasolar planet just 25 years ago, we decided to dedicate this year's Conference to debate the question: "Are We Alone in the Universe?", approached from different angles: scientific, technological, philosophical, sociological, legal, historical, biological, futurological, theological, and many more.

The COVID-19 emergency, which made traveling impossible, brought us to change the format of this third conference. The webinar solution turned out to be a challenge and an opportunity at the same time: a challenge because of the need of exploring and making the most of new communication tools; an opportunity since the web allows us to reach a far larger audience in different countries. The scientific contributions by a plurality of outstanding specialists speaking a language understandable by non-experts, will be delivered on the web with subtitles in Italian, Ukrainian, and English in order to facilitate the fruition.



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