

LIFE in the UNIVERSE

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Introduction

Imagine you are in one of Australia's many deserts. It is after dark and you are lying, warmly clad, on a camp bed. The crescent moon and the cone of zodiacal light, the glow of sunlight reflecting off interplanetary dust have set, leaving only a few steadily burning planets to distract you from the stars. Gradually more and start become visible as your eyes adjust to the darkness. They are arranged in subtle patterns, clusters and clouds. Subtle reds, oranges, and blues tint their twinkling. There appear to be thousands of stars, and more lurk round the edges of your vision where your eyes are more sensitive. You scan along the axis of the Milky Way with binoculars and thousands more appear in great clouds, torn by dark rifts and spangled with luminous mists. A sense of the insignificance of our world sinks into you with the night cold as you glimpse the immensity of the starry universe.

There are an estimated 100,000,000,000 stars in our galaxy. Most are invisible to the most powerful telescopes, obscured by clouds interstellar of dust and gas. Perhaps 20% of these stars are yellow suns, much like our own. Some studies indicate that most may be accompanied by planets. How many of these planets harbour life like - or unlike - that on earth is a mystery beyond our present grasp, though not our imagination.

Life on Mars?

"LIFE ON MARS"! screamed the headlines in a hundred variants on a theme. They were sparked by a paper in the journal *Science* that more cautiously referred to "Possible relict biological activity". The evidence came from a meteorite found in Antarctica. It belonged to a small family of meteorites (only 12 are known) whose composition, age, and texture indicate they came from Mars. They were blasted off the planet's surface by the impacts of comets and asteroids. The meteorite contained organic compounds of the type produced by life processes. These were absent on the surface of the meteorite and increased in abundance towards its centre, arguing against them being derived by earthly contamination. Extremely small filaments and capsule-shaped bodies of iron sulphide and iron oxide were also found when the meteorite was studied microscopically. These resembled structures formed by bacteria on earth although they are much smaller. No earthly bacteria were found in the meteorite, which was studied under sterile conditions. A meteorite derived from the moon failed to reveal similar organic compounds or structures when studied in the same way.

Scientists round the world reacted cautiously. The discovery of life elsewhere in the universe would be among the greatest in the history of biology. Similarities and differences

between life here and elsewhere would give profound scientific insights. However, there have been false alarms before. Earlier reports of fossils or even living bacteria in meteorites all have proved to be due to earthly contamination. What is needed is more research, to test the validity of the interpretation and discover whether other Martian meteorites also contain evidence consistent with life. Numerous studies of the original and other Martian meteorites are in progress. Some subsequent results have supported the life interpretation, others have not. Many difficulties face researchers, chief among which is how closely can we expect extraterrestrial life to follow terrestrial patterns. Even negative results will be useful, as scientists will learn much about Martian conditions and how to tell true and false fossils apart.

Ultimately only long and detailed exploration of the surface of Mars by crewed expeditions would be needed to show whether or not life exists, or once existed, on the planet. Such missions have been technically feasible for the past 20 years. Much of the hardware is already in use and visitors to the *Mir* space station routinely spend six months or more aboard. One cosmonaut has spent 14 months in space, the minimum time for a round trip with present technology. All that is lacking is the political will for such adventures.

The Martian meteorite was one of the biggest science stories in the popular media for 1996. Popular reaction varied immensely. Some used it as an opportunity for low wit, make pointed jibs about scientists and their esoteric research, of the state of society, or what ever. Others (possibly those who had overdosed on the "X Files") saw it as evidence of a dark conspiracy. Perhaps the conspiracy was to get more funding for NASA, to distract attention from the truth about UFOs, or to soften the public up for a much more spectacular announcement about visiting aliens. Still others took the occasion to have dig at those Christians who believe in a young earth or disbelieve in evolution. Some Christians seemed threatened by the possibility on life on Mars, afraid that it might undermine belief in God. Others, with greater wisdom, counselled against hasty responses. A few more took umbrage at the jibes made at "creation science" and attempted to defend it by attacking the whole idea of life on Mars. Only a handful of commentators responded with awe and wonder to the discovery that life may once have existed on Mars and the implications that this has for science and philosophy.

Other planetary systems?

In the words of Douglas Adams in *The Hitchhiker's Guide to the Galaxy* "The Universe is big, unimaginably big." We get a glimpse of how big if we imagine the 150,000,000 kilometres from the earth to the sun as 2.5 centimetres (one inch). The nearest star system, Alpha Centauri, lies 1.6 km away (one mile) at this scale. These distances are so great that any planets orbiting even close stars are too faint to be seen by current telescopes.

Recent technological advances have enabled planetary systems to be detected over these distances, even though the planets themselves remain invisible. Disks of interplanetary dust glowing in infra-red light have been found round many stars and are similar to the disk of dust that surrounds our planetary system. Dust-free lanes within and warping of some of these disks hint at the presence of planets within. More directly, the gravitational pull of super-giant (Jupiter-sized or larger) planets on the paths of several stars have been detected. Direct imaging of these planets will require construction of earth and space-based telescopes already on the drawing board.

These new planetary systems seem bizarre to eyes used to our solar system. Planets far bigger than Jupiter but orbiting closer to their star that their year lasts only a few days, planets in elongated orbits, even planets orbiting neutron stars. Clearly, what is "normal" for our planetary systems is not the case for others. One thing is clear, planets and planetary systems are probably common throughout the universe. Hidden in the twinkling ornaments of the night sky are countless worlds, some very unlike, others perhaps very much like, our own. If life exists on a world as hostile as Mars, then it is probably common throughout the universe. If not, we still can only answer the question of life elsewhere in the vast cosmos with the answer of "yes" (if it is eventually discovered) and "we don't know" (until it is).

A Christian perspective

Is our God large enough to be Lord of all these worlds and any inhabitants they may harbour, or is He just the God of our small corner? Some Christians seem to be frightened by the possibility of life, perhaps intelligent life, elsewhere in the universe. They believe that the Bible teaches that our earth, the life upon it, and especially humanity, are somehow special and unique. They fear that the discovery of any life, let alone intelligent life, will undermine the Bible and thus their faith.

The Bible nowhere states that our world enjoys a special place in the universe. Mars is just as unique as Earth. Both, and all, places are created alike by God. It is the same on Earth, the land of Israel is no more (or less) sacred than Tasmania, even though Israel was selected by God to be the setting of key episodes in salvation history. The Bible deals largely with events on earth because it is about God's plan of salvation for our planet and its inhabitants, not catalogue of His dealings with other worlds.

The Bible teaches that God is the Lord of creation, not humanity. Indeed, we are created a little lower than angels. The Bible does teach that humanity has been gifted by the potential for spiritual relationship with its creator and, as such, is accountable to God as custodians of our world. The Bible is utterly silent on whether that custodianship is restricted to our world or extends to other worlds. It is also utterly silent on whether or not humanity shares this universe with other material beings that may, or may not, be aware of their creator. Some Christians take this to mean that there is no life elsewhere in the universe. Just because the Bible is silent on some matters does not preclude their existence. Australia is not mentioned in the Bible, this does not mean that Australia does not exist.

What of intelligent life in the universe? Aliens from space are part of the mythology of our era. They have haunted our imagination since H. G. Wells wrote *The War of the Worlds* in 1898. They are modern equivalents of the dragons or sea serpents that haunted those of earlier generations. Much of our attitude to aliens is strongly coloured by the monsters of popular television and cinema. Few of the screen aliens are dealt with the depth or sensitivity of those in novels. There is little comparison between the malevolent aliens of *Independence Day* or the made-up actors of *Star Trek* with the superbly conceived beings in some science fiction novels. The awesome Overlords in Clarke's *Childhood's End*, the complex society of the Moties imagined by Niven and Pournelle, or the profound simplicity of Henderson's *The People* being but a few examples. It is in literary portrayals, rather than those in film or television, that we begin to glimpse the possible forms that extraterrestrial life may take.

Among the most stimulating portrayals of extraterrestrial life were by C.S. Lewis, who thought at length on humanity's place in the universe. Lewis also pointed out that Augustine was once asked about the theological status of mythological creatures of his day. Augustine wisely suggested postponing discussion until such creatures were found. Lewis suggested we do the same with regard to aliens. He reminded us cannot know in advance the relationship of aliens (if any) to God. They may be include unfallen or completely species, species among whom God has worked acts of redemption hauntingly familiar or completely different from His dealings with us. If aliens do exist, we can be confident they too are God's creatures and that He would have dealings with them in ways fully appropriate to their nature and consistent with God's character.

Concluding thoughts

Throughout the last 2,000 years some people have used the latest scientific theories to justify their rejection of the gospel. One example is the discovery of the immense size of the universe ("How could God be interested in the inhabitants of a world that is no more than a speck in the universe"?). Another is the abyss of geologic time ("If there is a God, why would He be interested in creatures that have existed for the merest instant of the planet's history"?). Others have used organic evolution (What's so special about naked apes"?) or the theory of relativity ("If everything is relative, why claim that what you believe is the absolute truth"?). Unfortunately, this has led all too many Christians have defended the gospel by attacking these scientific discoveries. Their attacks have not resulted in scientific theories being overthrown. Rather, they have discredited the Christian faith in the eyes of many. Present day Christians should avoid repeating these mistakes by attacking scientific discoveries (such as possible discoveries of life in space), at least on theological or Biblical grounds.

Christian faith and scientific discoveries provide complementary, not conflicting views of the same world. We also need to remember the specific and scientifically limited context within which the Bible was revealed. Galileo reminded us that the Bible as given to teach us how to go to heaven, not how the heavens go. Finally we need to appreciate the way that new discoveries about the nature of God's creation can help appreciate even more His greatness.

The writers of the psalms had very limited understanding of the universe, compared to what we now know. Even their limited picture of the universe led them to an overwhelming sense of awe and wonder at God's handiwork (Psalm 8, 19, 104 etc). We have a much greater and more profound insight into the nature of the universe. How much greater should be our awe and worship as a result? The discovery of other planetary systems and even life elsewhere in the universe is would be just another step in discovering the true nature of creation.

When we gaze up at the night sky at the stars we see God's handiwork spread over the depths of space and time. If we are the only part of the material creation that can relate to its creator, then we should bow before God's gift to we who are but dust. Even if our sun is a star in the sky of other creatures, looking at the universe with unimaginable senses, then we can be confident that their heavens, as well as ours, will declare the glory of our God and theirs.

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