

sees a parallel in this policy to our approach to a colony of, say, mountain gorillas. We look on those gorillas as an ecologically protected species and maybe that is how extraterrestrials would regard us.

Certainly, if such aliens wished to take over our planet or to destroy us, they have not done so. That is unarguable. If we did chance to see them, or their craft in our skies, we would have little understanding of what we were looking at. Just like the gorillas, we might be puzzled for a while, but completely uncomprehending of what was going on. That, I believe, is one of her most important points.

Much of the trouble with modern scientific outlook is that many scientists seem to believe that our science is by now more or less complete. There may be, in their estimation, a few murky corners which are not fully understood, but these are minor and will probably yield to research soon enough. Therefore our civilisation represents a pinnacle of intellectual achievement and, in the unlikely case of extraterrestrial intelligence being found, we would undoubtedly be on a par with such beings.

I suggest that this is very far from the case. By present standards Newton's amazing insights into the dynamics of the physical world a little over 300 years ago seem comparatively elementary. In a further 300 years enormous advances may well be made which will turn our present scientific thinking on its head. At any rate, our view of the universe could easily be extremely different from what it is now.

So there are excellent reasons for thinking, like Gato-Rivera, that humanity could indeed be embedded in a large galactic civilisation without being aware of it. On the other hand extraterrestrial civilisations may be only too aware of our existence but choose to leave us alone. Whether they regard us as a species to be protected or one to be clandestinely experimented upon is clearly something that we cannot answer. Perhaps they have no particular interest in us, in our well-being, or in our continued existence? If we are "embedded" thus, there will certainly have been visits and maybe visits from several different species of extraterrestrials. As I have said, the visitors' agenda can hardly be to announce themselves or, at worst, to exterminate us, or that would certainly have happened already. In most respects we must appear extremely primitive to visiting extraterrestrials though we can hardly be seen as any kind of a threat to them.

Consider a parallel situation. If you and your friends were to land in some remote region or on an island where there existed a colony of gorillas, would you announce yourselves or demand to meet their leader? Would these

animals, if they saw you, have the slightest idea of what you represented, or where you came from, or the purpose of your visit? Of course not. I suggest that they –or perhaps an even more dissimilar species to our own, such as fish or insects—are analogous to human beings confronted by extraterrestrial visitors. Our sightings of such visitors or their craft would be like the sighting by a fish, or by insects, of the vapour trail of a high-flying jet moving across the sky. Such creatures can have little idea of the significance of what they see, or what it means.

Orthodox scientific discussion about where extraterrestrial life may be within our galaxy excludes any mention of the possibility that such life may have engaged in colonisation, migration, or even interbreeding with less intelligent species of a similar kind. We are told that if the physical conditions are correct for life and the supposed primordial "soup" of water, amino-acids and other essential elements are present, life on a planet could gradually develop and evolve over a period of millions of years.

Under some conditions, the wide spectrum of such evolving life may produce a particular species with the advanced attributes of intelligence and self-awareness. Not all that long ago scientific orthodoxy completely rejected such a notion, and it is fairly obvious that the current scientific thinking on these matters is little more than a fad which will soon be superseded by different suggestions. If scientists can now talk openly about the possibility of extraterrestrial intelligence, why cannot they envisage that intelligent life on this planet might possibly have developed here as a result of colonisation, interbreeding, or even as a result of the deliberate "farming" of the life-forms which existed here by some external civilisation? Again we simply do not know, but we should not rule out these possibilities.

The absurd "Crown of Creation" viewpoint mentioned by Gato-Rivera is one that is still adhered to by many people who think that human beings are the most perfect and the most intelligent creatures in the universe – perhaps even the only intelligent species in the universe. Common sense should be enough to dismiss such a preposterous notion. We are a comparatively primitive civilisation, not far in advance of those mountain gorillas, and with a very long way to go yet.

Also it seems more than likely that our existence on this planet is known about by external civilisations which choose to let us remain ignorant of our situation. It is at least encouraging that mainstream scientists like Beatriz Gato-Rivera are brave enough to express new ideas on this and move away from the orthodox scientific thinking of yesteryear? ■

IS OUR UNIVERSE A HALL OF MIRRORS, A COPY OF ANOTHER UNIVERSE, OR A SMALL PART OF A GREATER UNIVERSE? AND WAS IT CREATED BY A 'SIMULATOR' – OR ALIENS, PERHAPS?

It is a little known fact that physicist Paul Davies, author of such works as *God and the new physics*, used to sit in on informal meetings arranged by FSR in the 1970s. Paul Davies has always been something of a lateral

thinker, pushing out the boundaries while basing his thinking on science-fact and fact-based possibilities. He is currently employed at the Australian Centre for Astrobiology at Macquarie University, Sydney.

He has a new book out -*The Origin of Life*, published by Penguin – and on September 23rd 03 wrote a thought leadership article for *The Guardian*, a British national newspaper, reprinted below. FSR has previously published science-based articles about our universe and other universes, but as far as I am aware this is the first time that a physicist has speculated, in the way that Paul Davies does here, about what may be behind our universe, literally as well as figuratively.

Readers may wish to draw parallels with the previous article written by George Wingfield exclusively for FSR, which addresses a question recently posed by Beatriz Gato-Rivera, particle physicist and member of the Spanish Scientific Research Council (CSIC) – *Is Planet Earth Embedded in a Large Galactic Civilization?* - **Paul Whitehead, Consultant, FSR.**

Reality in the melting pot.

The Times, September 23rd 03

According to ‘multiverse’ theorists, life as we know it could be nothing but a Matrix-style simulation

Five hundred years ago it was widely believed that the Earth lay at the centre of the universe and mankind was the pinnacle of creation. Then along came Copernicus and showed that our planet was merely one of several orbiting the sun. Since then the lesson of Earth’s mediocrity has been reinforced again and again: ours is a typical planet around a typical star in a typical galaxy, of which there exist untold billions.

The Copernican principle - that our location in space is unremarkable - is the default assumption for most scientists. But recently this principle has been challenged by a group of cosmologists who claim that what we have all along been calling “the universe” is nothing of the sort. Rather, it is a tiny fragment of a much vaster and more elaborate system that, for want of a better word, has been dubbed “the multiverse”.

The basic idea is simple. Cosmologists think the universe began with a big bang about 14bn years ago. This means we can’t see anything farther than 14bn light years away, however good our telescopes may be, because light from those regions hasn’t had time to reach us yet. But this doesn’t mean there is nothing there, and for decades astronomers supposed that what lies beyond this horizon in space is likely to be more or less the same as we observe in our cosmic backyard - just more galaxies.

Now this assumption is in serious doubt following major developments in fundamental physics. A key premise of the more-of-the-same view of the universe is that the laws of physics are identical everywhere and for all time. But physicists have found that some features of nature thought to be law-like might actually be frozen accidents - properties that were locked in only as the universe cooled from its fiery birth.

Take the mass of the electron. Why does it have the value it does? Well, maybe the mass isn’t decided in advance once and for all by some deep law, but just comes out at random, like the throw of a die, in the searing maelstrom of the big bang. In which case, it could come

out differently somewhere else. In the same way, the strength of gravity or the number of space dimensions might also vary from place to place.

There is no evidence for any substantial variation in these features out as far as our best telescopes can peer. But that is no guarantee that a trillion light years away it will be the same. Electrons could be heavier there or space might have five dimensions. A God’s-eye view of the cosmos would then resemble a patchwork quilt, with a haphazard pattern of properties. What we took to be universal laws of physics would be relegated to mere by-laws, appropriate only to our local “Hubble bubble”, while far out in space other “bubbles”, possibly generated by other big bangs quite distinct from ours, possess other laws.

Multiverse enthusiasts bolster their claims by pointing to the astonishing bio-friendliness of the universe. It has long been known that the existence of life depends rather sensitively on the exact form of the laws of physics. Change things a bit and life would never have happened. This looks suspiciously fluky, but it can be readily explained by the multiverse. Most of the cosmic patches in the quilt will be sterile, their physics all wrong for making life. Only here and there, in rare patches where all the numbers come out right, will life arise and observers like us evolve to marvel at it all.

History has thus turned full circle. According to the multiverse theory, if you look at Earth’s location in space on a grand enough scale, then it does occupy a special and privileged position, namely one that can support life. Like winners in a gigantic cosmic lottery, we find ourselves in a rare bio-friendly patch for the simple reason that we could not exist in any of the bio-hostile ones.

If one accepts recent advances in fundamental physics, then some sort of multiverse seems inevitable. But how far down this slippery slope should one go? Max Tegmark, a cosmologist at the University of Pennsylvania, argues that there is no need to stop with properties like the strengths of forces or the masses of particles. Why not consider all possible mathematical laws? Don’t like the law of gravity? No problem. There’s a universe out there somewhere with gravity that waxes and wanes in a paisley pattern. Of course, there’s nobody there to admire it.

Tegmark’s speculation forces us to confront what is perhaps the deepest of all the deep questions of existence: why there is something rather than nothing. There are only two “natural” states of affairs. The first is that nothing exists. The other is that everything exists. The former we can eliminate by observation. So should we conclude that everything exists - all possible worlds? Those who would argue against this position must concede that there is some rule that divides what actually exists from what is merely possible, but not real. But where does that rule come from? And why that rule rather than some other?

These are murky waters, but they get even murkier when we scrutinise what is meant by the words “exist” and “real”. In the Tegmark multiverse of all possible worlds, some worlds will have intelligent civilisations with computers powerful enough to create authentic-looking virtual worlds. Like in the movie *The Matrix*, it may be almost impossible for an observer to know which

is the real world and which is a simulation. And if the simulation is good enough, is there any fundamental difference between the two anyway?

It gets worse. Mathematicians have proved that a universal computing machine can create an artificial world that is itself capable of simulating its own world, and so on ad infinitum. In other words, simulations nest inside simulations inside simulations ... Because fake worlds can outnumber real ones without restriction, the "real" multiverse would inevitably spawn a vastly greater number of virtual multiverses. Indeed, there would be a limitless tower of virtual multiverses, leaving the "real" one swamped in a sea of fakes.

So the bottom line is this. Once we go far enough down the multiverse route, all bets are off. Reality goes

into the melting pot, and there is no reason to believe we are living in anything but a Matrix-style simulation. Science is then reduced to a charade, because the simulators of our world - whoever or whatever they are - can create any pseudo-laws they please, and keep changing them.

The final twist in this saga is that almost all multiverse theories predict the existence of infinitely many duplicate cosmic regions, including duplicate Earths and duplicate *Guardian* readers. There will also exist all possible variations on this theme.

So if you are uncomfortable with the multiverse idea, content yourself with the fact that there will be another you out there somewhere who has just read a thoroughly convincing refutation of the entire multiverse concept? ■

MORE THEORETICAL PHYSICISTS PROPOSE THE MULTIVERSE. BY PHILIP CREIGHTON, B.Sc. Hons.

Over recent years quite a number of articles have appeared in the *New Scientist*, all dealing with such ideas as that our known universe may be in some way 'embedded', a special case among many variations, a parallel universe, some kind of projection from a 'higher universe', a holographic construction, or even a 'Matrix-style' computer simulation.

They are all necessarily speculative to a degree – but what is important is that such speculation is indeed taking place in the minds of some of the top physicists of our time. It is indeed extraordinary to behold how severely our earlier primitive, geocentric view of the universe – has been - well - demolished.

Latest *New Scientist* Article.

1 Nov 2003, p. 34. *Reality's True Nature*, by Leonard Susskind. No less a figure than Leonard Susskind, the originator of string theory, is now arguing that our thinking on the laws of nature must be overturned. If the cosmological constant – the energy of 'empty space' – turns out to be variable, then the greater Universe could contain any number of smaller universes in which the laws of physics were entirely different.

He says: " Things, maybe all things, that we thought were 'hard-wired' into the equations may only be properties of our local environment, just like the temperature of the sea? " ■

TEN CONCURRENT REPORTS BY TURKISH AIRLINE PILOTS - CONT'D.

A meteor that entered the atmosphere, and which could possibly have wrought havoc on Earth, was broken into pieces by a UFO, and rendered ineffective before it hit.

The incident, which could be considered as one of the most significant events in the history of mankind, was witnessed by a total of 6 different airliner crews (4 in the air, 2 from the ground) and several people from the ground, and was filmed by an amateur video camera.

The details about the incident, written testimonies by pilots and the other witnesses involved, drawings, animations, video footage, and analysis of the incident are as follows:

DATE: NOVEMBER 1ST 2002; TIME: 05.30 – 05.35; ALTITUDE: BETWEEN 22,000 AND 36,000 FT; LOCATION: BETWEEN AFYON AND YALOVA.

THE FLIGHT CREWS AND THE AIRLINERS WITNESSING THE INCIDENT.

1) AIRLINER: (The Airliner which was nearest to the UFO fleet) Sun Express Air - Flight No: 590, Boeing 737-800.

Capt. Pilot Erkan Eken.

First Officer: Sinan Yilmaz.

2) AIRLINER (The aircraft following the first) Sun Express Air - TC -SUA B737-800)

Capt. Pilot Yilmaz Atli.

First Officer: Bulent Demirturk

3)AIRLINER: INTER AIR

Captain: Salih Gonuc.

First Officer: Fatih Aksoy.

4) AIRLINER: Hapag Lloyd Airliner. The pilots of this aircraft reported the UFOs that were also picked up by