



Prof. Russell Stannard: The questions on everyone's minds
ET, Life and the Universe

Russell: The Sun and the other stars are great balls of fire. The depths of space, by contrast are freezing cold. The distances involved are immense. The Big Bang that created the universe was unbelievably violent. It's perhaps not surprising that many people view the universe as hostile to life. The physicist Steven Weinberg once dismissed life as 'a more or less farcical outcome of a chain of accidents'. But first impressions can be deceptive. Here are some of the laws of nature, the laws that governed how the cosmos evolved and govern all that goes around us now. It turns out that if these laws had been fixed at random, if the strength of the gravitational force, or the strength of the Electrical force, or the masses of the sub-atomic particles, or the violence of the Big Bang. If any of these had been chosen purely at random - then the chances of having a world with life, any kind of life, would have been virtually zero. So the universe appears to have bent over backwards to accommodate life. This observation goes under the name The Anthropic Principle.

As another physicist, Freeman Dyson somewhat colourfully put it: "The universe knew we were coming' So how are we to account for it - the way the universe is so life-friendly? Was it specifically designed as a home for life by some Creator? That's one possibility. But that, of course, takes us way beyond the realms of science. Some seek to solve the problem by suggesting that our universe might not be alone. There are other universes. Lots of them. Perhaps an infinite number of them. The whole ensemble is called the multiverse. And the idea is that the laws of nature are different in all the individual universes. In the vast majority of them there is no life because one or other of the conditions was not satisfied. But once in a while there comes along a universe which, purely by chance, happens to have the right set of conditions for the development of life. We being a form of life ourselves must, of course, find ourselves in one of these freak universes. Fair enough. That would account for why our universe is life-friendly. But that simply raises another problem: How are we ever to prove that there are universes other than our own and that they are run on different lines?

Other universes, by definition are not part of our universe and so cannot be contacted. So it could be that the multiverse idea might also lie beyond the realms of science. When thinking about our universe being life-friendly, one can't help wondering whether there might be other forms of life out there. And if there is life and it's intelligent, how does that affect the status of us humans? Well, as far as our Solar System is concerned, the planets circling our sun, there might be some forms of very primitive life. We should have the answer to that quite soon as a result of planned space probes. But not intelligent life. No, if ET exists it must be on a planet going round some other star, what we call an exoplanet. And there's no shortage of those. Several hundred have been found and the tally increases weekly. Most of them will not be habitable. But from the law of averages, there must be many, many earth-like planets out there, planets where intelligent life could flourish. Which is not to say that it has. So a big question is whether or not there is extraterrestrial intelligent life, and if so what's it like. Evolution on earth took a very long time, billions of years.

So, on some other planet, it has only to get out of step with what happened here on earth to only a small degree for ET to have reached our level of intelligence, the intelligence of a Charles Darwin, to have reached that level a long, long time ago. So that means they must by now be way ahead of us. Except, except the human race has got this far in intelligence because, in the past there was survival value in having a superior intelligence. You had a better chance of surviving to the point where you could mate and pass on your superior genes. But does that still apply today? Do the more intelligent people today have more children than the less intelligent? If anything, I'd have thought it was the other way round. After all, the more intelligent you are the better your chances of getting a well-paid job. And the better paid job leads to a higher standard of living and the fewer children you are likely to have. If that's true of us, perhaps it's also true of ET. On the other hand, when ET reached our stage of development, it would know all about DNA and genetic engineering. For all we know, they might be heavily into genetically engineering designer babies with superior intelligence, a case of directed evolution rather than relying on evolution by natural selection. In which case

as we previously thought, they will now be vastly superior to us. On the other hand, when they reach our stage they discover nuclear power, and in all probability, in a comparatively short time, they blow themselves up.

Perhaps that's the fate of all intelligent species throughout the cosmos. They reach the stage we're at, then POOF! That's it. No further improvement. So, which of these scenarios, if any of them, which of them is right? How can we find out? Simple. Go and visit them, as is done in countless science fiction adventure stories. No. Hardly. The distances are just simply too far. Space travel is not the answer. The other approach is to search the skies for any signals indicating that ET is trying to communicate with us. Such searches have been carried out for many years by the SETI programme - the Search for Extraterrestrial Intelligence. But so far without success. The search will carry on but there's no guarantee that they will find anything. Even if ET exists they might not have the means to communicate with us or the desire to communicate with us. The situation is not under our control. It's up to ET. Perhaps we're destined never to find out about intelligent life elsewhere in the universe?

After Piece

Tony: Russell? Russell, sorry slight problem, page 21 of the script. You say ET might be getting more intelligent when they get affluent. Then you say 'On the other hand they might go in for genetic engineering'. And then you say 'On the other hand they might blow themselves up. That's three hands.

Russell: Well perhaps ET has three hands. You know, it would be very useful as you're at a reception and you're trying to eat. It's all to do with survival value, surviving stand up receptions.