

## **COSMOS & CONTACT: The Religion of Carl Sagan**

### **INTRODUCTION**

Want to talk about the religion of Carl Sagan as it is revealed in the two films and books *Cosmos* and *Contact*, making some use also of Sagan=s last book *The Demon-Haunted World*.

Not just a survey of Sagan=s views, but an attempt to think through the whole question of how one should decide between one worldview and another

### **SAGAN=S OPENING STATEMENT IN COSMOS**

*The cosmos is all that is,  
or ever was,  
or ever will be*

This is not a scientific statement, but a religious one  
From this statement, it appears that Sagan believes nothing exists but the cosmos.

Does Carl Sagan have a religion?

### **WHAT IS A RELIGION@?**

*Webster=s New World Dictionary* (1955)

Sagan doesn=t have a religion by first two meanings here, but 3<sup>rd</sup>:

AAny specific belief, worship, conduct, etc., often involving a code of ethics and a philosophy@

Roy Clouser, *The Myth of Religious Neutrality*, 21-22:

AA religious belief is any belief in something or other as divine@

A>Divine= means having the status of not depending on anything else.@

Sagan has a religion in this sense, as we shall see that he believes the universe has always existed.

### **THE BIG BANG** (*Cosmos*, 246)

*In that titanic cosmic explosion, the universe began an expansion which has never ceased. It is misleading to describe the expansion of the universe as a sort of distending bubble viewed from the outside. By definition, nothing we can ever know about was outside.*

Here Sagan seems to indicate that he believes there is nothing outside the universe, or at least, that we can never know about anything beyond our universe. Is this true? How could we learn about something that we cannot reach out to with our technology? Sagan will try to address this in his sci-fi novel and film *Contact*.

### **HOW IT ALL BEGAN** (*Cosmos*, 257)

*In many cultures it is customary to answer that God created the universe out of nothing. But this is mere temporizing... if we decide [where God comes from] to be unanswerable, why not save a step and decide that the origin of the universe is an unanswerable question? Or, if we say God has always existed, why not save a step and conclude that the universe has always existed?*

Here we see that Sagan is very reluctant to allow the postulation of a God to help in understanding the universe.

### **SAGAN=S METHODOLOGY** (*Demon-Haunted World*)

- B Sagan concerned about the rise of superstitions, @ e.g., New Age philosophies, belief in UFOs, belief in supernatural
- B Sagan wants to be open to the evidence of nature
- B He does not **in principle** rule out the supernatural
- B He says he is not impressed by evidence for the supernatural he has seen

But is it really true that we are faced with a lack of evidence for God?

### **ORIGIN OF LIFE** (*Cosmos*, 39)

Sagan admits there is much we don't understand about the origin of life, including the origin of the genetic code (the information stored in DNA molecules). He admits there are many major questions in science which have not been explained by purely natural causes. But Sagan thinks that all of these will eventually be explained without having to call in the supernatural as a cause.

### **COMPLEXITY OF LIFE** (Article *ALife@* in *Encyclopaedia Britannica* [1970])

*The information content of a simple cell has been estimated as around  $10^{12}$  bits, comparable to about a hundred million pages of the Encyclopaedia Britannica. (13:1083B)*

Sagan himself, in his article *ALife@* which appeared in two editions of the EB, granted that the complexity of even the simplest known life is staggering.

## **RECOGNIZING A MESSAGE FROM AN EXTRA-TERRESTRIAL**

In his science fiction novel *Contact*, made into a film just a few months before he died, Sagan imagined what it would be like to receive a message from higher intelligences.

How might we recognize such a message?

B Strong signal

B A string of a few dozen prime numbers would be decisive

B The whole message to build the transport machine is about 50,000 pages.

We want to look at a 15-minute clip from this film.

### **FILM CLIP FROM CONTACT**

Starts with Ellie Arroway=s arrival on the planet (or spaceship?) in Vega system and her experiences there. When she returns, the powers that be on earth refuse to believe she actually made the trip. An interesting exercise on how one could prove the existence of a higher intelligence than our own. Some very strong parallels with evidence for God and for the resurrection of Jesus!

### **CONTACT: HOW THE NOVEL ENDED**

For some reason, the book ends very differently than the film. The hero, Ellie Arroway, comes to believe in the existence of God because she is confronted with what seems to her (and to Sagan?) Incontrovertible evidence.

Ellie finds that in the infinite run of the digits of the number  $\pi$ , there is a place where a picture of a circle is given.

### **THE FILM DOESN=T END THIS WAY!**

Why not? Did Sagan have second thoughts? Did Hollywood veto this ending? Did Sagan back away from Athe precipice of theism@ in the last years of his life? He comes closer to Christianity in this novel than in anything he wrote before or after.

I fear that part of the reason for this was that Sagan didn=t like the idea of God sending messages. For if we seriously entertain this as a possibility, we may start looking for them. And if we look for them, we will indeed find them, and this would force us to reconsider our whole worldview and lifestyle.

### **MIGHT GOD SEND SUCH A MESSAGE?**

If God exists, he certainly might!

Where would he put such a message?

Christians claim he put one such message in the Bible.

But there is good evidence that he has also put such a message in:

- B The structure of the universe itself
- B Living things

## **THE UNIVERSE AND GOD=S MESSAGE**

Several books, dating back as early as 1913, but most since the mid-1980s, have pointed to a marvelous fine-tuning@ in the structure of our universe:

- B Lawrence Henderson, *The Fitness of the Environment*
- B Paul Davies, *The Accidental Universe*
- B John Barrow & Frank Tipler, *The Anthropic Cosmological Principle*
- B Hugh Ross, *The Creator and the Cosmos*
- B Michael Denton, *Nature=s Destiny*

## **FINE-TUNING OF THE UNIVERSE**

There are four known basic forces in the universe:

- B Strong Nuclear Force (strength = 1)
- B Electromagnetic Force (strength = 1/100)
- B Weak Nuclear Force (strength = 1/100,000)
- B Gravity (strength = 1/10<sup>39</sup>)

As divergent in strength as these forces are, if their strengths were only very slightly different, the results would be disastrous!

## **THE STRONG FORCE**

The strong force is apparently the external appearance of the force that binds the so-called quarks@ together. It is the strongest we know about, and has a very short range of influence, about the diameter of an atomic nucleus. Its most obvious influence is to hold atomic nuclei together.

- B 50% weaker, no stable elements in the universe
- B 5% weaker, deuterium not stable, stars won=t burn
- B 5% stronger, diproton stable, stars explode!

The strong force is tuned to +/- 5% for our universe to function!

## **THE WEAK FORCE**

The weak force is some 100,000 times weaker than the strong force, and of even shorter range. It is more obscure to the non-physicist than the other forces, but is involved in the decay of neutrons.

B few % weaker:

++ too little helium formed in big bang, too few heavy elements

++ heavy elements stay trapped inside stars

B few % stronger:

++ too much helium formed in big bang, too many heavy elements

++ heavy elements stay trapped inside stars

The weak force must be fine-tuned to a few % to have any heavy elements (carbon and heavier) outside stars where they can be used for planets and people!

## **ELECTROMAGNETIC FORCE**

The e-m force is very familiar to us, being involved in all our electrical devices. It is also what makes solid objects solid.

B number of + and - charges in the universe almost exactly equal, to better than one part in  $10^{40}$

B protons and electrons are drastically different in mass, and Afroze out@ at very different times in the history of the universe

If not for this equality, electromagnetism (being much stronger) would overwhelm gravity, with the result that there would be no universe of galaxies, stars and planets. Electromagnetism is fine-tuned to one part in  $10^{40}$ !

## **GRAVITY**

Gravity is also very familiar, though it is the weakest of all these forces. It is the force that is mainly responsible for the movement of the galaxies, stars and planets through space.

There is a very close balance between gravity and the expansion of the cosmos:

B weaker by 1 part in  $10^{60}$ : universe expands too quickly, no galaxies or stars formed

B stronger by 1 part in  $10^{60}$ : universe collapses too quickly, no galaxies or stars formed

Gravity is fine-tuned to cosmic expansion at the big bang to one part in  $10^{60}$ !

## **FINE-TUNED UNIVERSE**

Combining these cases gives fine-tuning to one part in  $10^{100}$ . How big is  $10^{100}$ ? There are estimated to be  $10^{80}$  elementary particles (protons, electrons, etc.) in our universe, so need  $10^{20}$  universes to get  $10^{100}$  particles.

So to explain this fine-tuning by chance, we have to imagine marking one electron (say) in all the  $10^{20}$  universes and then trying to find it purely by guesswork! Would you want to stake your life on a chance like that?

To make such a fine-tuned universe by chance, we something like  $10^{100}$  universes formed by chance in order to expect that just one of them would turn out with this level of fine-tuning. Do we really have any evidence for another  $10^{100}$  universes?

Besides the four cases we examined above, Hugh Ross gives 22 more in his book *Creator and the Cosmos*. The universe gives every evidence of being designed!

### **SIR FRED HOYLE ON A DESIGNED UNIVERSE**

A far more minor feature than the ones we have examined (the detailed spacing of nuclear energy levels for carbon and oxygen) led former atheist Sir Fred Hoyle to make the following statement:

*... a superintellect has monkeyed with physics, as well as with chemistry and biology*

*The Universe: Past and Present Reflection, 16*

### **LIFE AND GOD=S MESSAGE**

Living things are also a striking example of organized complexity. Those who believe that the cosmos is all there is have nothing but chance and survival to explain the level of order found in living things:

B Living things are by far the most complex objects yet found in the universe

B Recall Sagan=s remark about the *E coli* bacterium:

++ info content =  $10^{12}$  bits

++ = 100 million pages of the *Encyclopaedia Britannica*

B Human beings have trillions of cells, each of which is more complex than an *E coli* cells, and they are also coordinated

Sir Fred Hoyle and his associate Chandra Wickramasinghe spent a number of years investigating the complexity of living things. They came to the conclusion that life could not be understood in a worldview where there is no mind behind the universe.

*The chance that higher life forms might have emerged [by chance] is comparable with the chance that a tornado sweeping through a junk-yard might assemble a Boeing 747 from the materials therein.*

*Nature (12 Nov 81): 105*

## RECOGNIZING A MESSAGE

If we go back to the scenario visualized by Sagan in *Contact*, we find a strong analogy between the message we find in the DNA of living things and the radio message detected by Ellie Arroway and her associates. Will we try to explain this away like the villain Michael Kitz in *Contact*?

- B Strong signal: seen in all living things
- B Decisive: the information content is beyond the probabilistic resources of the universe
- B The whole message to build an *E coli* bacterium is about 100 million pages, but to build the Vegans= transporter was only 50 thousand pages.

## THE RELIGION OF CARL SAGAN

- B If he was really open to the universe
- B If he was really willing to consider the supernatural

Why didn't Sagan respond to this sort of evidence?  
Why did he draw back from Athe precipice of theism@?

Why indeed? Will you?

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Dr. Newman's publications include articles in *The Astrophysical Journal* (1967-68), the book *Genesis One and the Origin of the Earth* (1977), contributions to *The Journal of the American Scientific Affiliation*, *The Genesis Debate* (1986), *The Evidence of Prophecy* (1988), *Evangelical Affirmations* (1990), *Evidence for Faith* (1991), the article on the word cluster Astar@ in *The New International Dictionary of Old Testament Theology and Exegesis* (1997), and contributions to *Mere Creation* (1998), *Three Views on Creation and Evolution* (1999) and *What's Darwin Got to Do with It?* (2000).

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