

Creation versus The Big Bang

Imagine you're clearing out your attic and come across a rusty can with a mouldy reel of film inside. You unwind the film and look at the last few frames – maybe the last hundred. That's enough to get an idea of what the film is – maybe your wedding. So numbering the frames backward from the last one, could you predict what would be on frame 101 by looking at the first hundred? Yes with almost exact accuracy. The same for frame 102, 103 104. There are 26 frames a second so perhaps you might be reasonably accurate to frame 150 but then it gets a bit unsure. It's after the ceremony and the bride's walking backwards up the aisle again (*you're watching the film backwards remember*) but where did she actually turn at the beginning of her walk?

Now you're a cosmologist and you hold in your hand the film of the universe – wrapped up in its reel so you can only see the last bits. You unwind the last 50 years say. Each frame is a precise description of the nature and form of the universe. Now can you predict back along the unseen parts of the film? How long is the film? And what's on that very first frame wound up tight on the inside of the reel where you can never actually see?

(*Here comes the mathematical bit*).

The universe is described in differential equations - special equations that just restate what you actually see but in a concise mathematical form. They're special because built into them is the fact that what anything does next depends on what it's doing now and how fast it's doing it. But they can be solved so you can predict back to any time in the past and know exactly what was happening.

But here's the rub.

To solve any differential equation you have to be told (*or assume*) some initial conditions. You have to be given at least one value of x the unknown at some point in time t – not necessarily at time $t = 0$, any time will do.

Now to the cosmologist, it's aesthetically pleasing to have the simplest initial conditions possible at time zero.

The universe is governed by Einstein's equations (*OK God's then*). There are ten of them, all intertwined, and incredibly difficult to solve but they're being chipped away year by year. Cosmologists can now run the film back 15 thousand million years and get back

to a universe that's 10^{-43} seconds old (0 followed by 42 zeros then 1), composing of just a couple pounds of matter all pressed up smaller than a single atom. So the big bang is quite a neat trick. The primeval atom blows up and from that you get 100 000 million galaxies each one containing 100 000 million stars – the ultimate free lunch because quite where all that extra matter comes from is difficult to explain in plain English but mathematically a piece of cake.

But the scientist doesn't really know how long the film is because he/she hasn't actually been there to see it. For all we know the universe was created at midnight last night and even our memories were created to that effect. My point is that the creationist and the cosmological evolutionist don't really have anything to argue about because it all boils down to an arbitrary assumption on when you start the clock.

On my first morning in Satellite Mission Analysis when I completed my apprenticeship, the senior engineer said to me "Fact 1 – the sun goes round the earth because it makes the equations simpler for earth orbital satellites".

It's the same as Copernicus's bust up with the Church. In private the two parties agreed it was a pointless argument because

it boiled down to whichever frame of reference you chose to base your equations on. True, the equations were a lot simpler if you assumed the earth went round the sun but that didn't make them the truth. Yet for the masses, that was too deep a philosophy so Copernicus had to recant in public but was allowed to continue his work in private.

Suppose God builds a house of cards and uses all 52. He takes each one off the top of the pack carefully and places it in exactly the right position. It doesn't take Him any time to complete because He hasn't started time yet. He then realises He could have done it a simpler way. He picks up the pack, starts time, throws the cards in the air, and they all fall neatly into the right position. Which is the greater miracle? Or is it pointless to grade miracles because any miracle is still a miracle.

To create two pounds of matter in one go out of nothing is no more or less miraculous than it is to create twenty trillion trillion trillion trillion trillion tons of matter (*that's a lot of matter!*).

To create just one atom is enough for the miracle of creation.

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