

What we do in science and of course in cosmology is to think of models and test them if they are correct. In statistics there is a rule the so-called Bayes' rule that connects the a posteriori probability of a model (hypothesis) to be correct given the observations with the probability of the observations that we take given the model.

In cosmology and generally in science when we say a cosmological model is probable we imply that the universe was created following this model with some probability. Suppose now the following cosmological experiment - probabilistic model. In a finite time span $[t_1, t_2]$ there are N points x_1, x_2, \dots, x_N . Then a coin is flipped and with probability 0.5 (fifty fifty) one of the following happen:

1) A being lives an experience N times (identical at each time), each one at times x_1, x_2, \dots, x_N . This means $p(x_i = \text{experience} | \text{hypothesis1}) = 1$.

2) A being with probability $1/N$ lives an experience at time $x_i = \text{experience}$ (only once, so $x_j = \text{non-exp}, j \neq i$). This means $p(x_i = \text{experience} | \text{hypothesis2}) = 1/N$;

The question is what is the posterior probability that hypothesis 1 holds, in the mind of a being that lives an experience that knows that such a cosmological game takes place. Using Bayes rule:

$$p(\text{hypothesis1} | x_i = \text{experience}) = \frac{p(x_i = \text{experience} | \text{hypothesis1})p(\text{hypothesis1})}{p(x_i = \text{exp} | \text{hyp1})p(\text{hyp1}) + p(x_i = \text{exp} | \text{hyp2})p(\text{hyp2})} = \frac{1 * 0.5}{1 * 0.5 + 0.5/N}$$

Notice now that as N goes to infinity the above probability is one, even when the choice of the cosmological model was not based on a coin ($p(h1) = 0.5$) but in every non-zero probability $p(h1)$.

What this all about...? This means that if we assume that there is a probability that we were 'created' by a cyclic time, what we do is that we assume the previous described cosmological experiment. Then, it mathematically follows that we must be absolutely sure that this was indeed the cyclic time that brought us here.