

Big Bang, Actual State of Our Universe, Fine-Tuning, Anthropic Principle

Physicists have been very confused about the fine-tuning argument and the anthropic Principle. But there is a simple resolution.

There are two ways to model things:

1. From there to here. One can start with a model of the big bang, evolve the state of the universe forward 14 billion years, and ask what is the probability that the universe would have ended up in the state it is in now? What is the probability distribution for the various states it could have ended up in? We conditionalize on the state at the big bang.
2. From here to there. Alternatively, one can start with the state of the actual universe as it is right now, evolve the state back 14 billion years, and ask what is the most likely state the universe would have started out in, at the big bang? What is the probability distribution of the possible states of the big bang, given how the actual universe is right now? We conditionalize on the current state.

That's all there is to it. Both methods yield useful information.

3. Evolving the universe back and forth to see whether there are fixed points is mathematically interesting but doesn't seem to correspond to anything in particular physically.
4. The fine-tuning argument, is the confused claim that the universe had to be the way it is now, to within a narrow range of fundamental physical values, for us to be in it. One example of this is the claim that, for example, if the ratio of the proton mass to electron mass had been different by just 1% the universe would not have been able to support life. But, even if that were true, there could be 10 such universes that could support life if the ratio had been only .1% different, 100 universes if the ratio had been .01% different, 1000 universes if the ratio had been only .001% different, and so on tending to an infinity of universes if the ratio had been different by an arbitrarily small amount. So this argument actually holds no water whatsoever.
5. The Anthropic principle is also a confused version of method (2) above, the claim being that if the universe were not just the way it is now we wouldn't be here to make the claim. But there is no reason the universe could not have had radically different constituents and even structures and yet support the exact same subjective experiences—life—as it does now. This is further dependent on which theory of consciousness one considers (Panpsychism, Functionalism, etc.). And there are other considerations, such as whether the universe as a whole is conscious, whether the physical laws may have been radically different, etc. And the notion of 'life' itself could refer to radically different subjective experiences than it does now.

This should straighten things out once and for all.