



Discussion Questions

THE RETURN OF THE GOD HYPOTHESIS

by Stephen C. Meyer

Chapter 17: Stephen Hawking and Quantum Cosmology

1. Last week we discussed some of the motivations scientists might have for pursuing theories which contain “Six Impossible Things Before Breakfast”. According to Meyer, what helped motivate Stephen Hawking down the road of Quantum Cosmology? (pp. 348-9)
2. In 1988 Hawking’s book, *A Brief History of Time* sold over 10 million copies. What 3 reasons does Meyer list for why this complicated theory reached and influenced culture widely? (p. 351) And, what was the main critique by other scientists to his theory? (You may enjoy footnote 16 on p. 507).
3. Why did Caltech physicist Richard Feynman muse that he could “safely say that no one understands quantum mechanics” and Danish physicist Niels Bohr comment that those “not shocked by quantum mechanics when they first come across it cannot possibly have understood it.” (p. 360)
4. Quantum cosmologists regard the solutions to the Wheeler-DeWitt equation (“wave function of the universe”) as “genuine explanations for the origin of our universe.” (p. 363) Hawking and Hartle tried to solve the Wheeler-DeWitt equation to “calculate the probability that a universe such as ours (out of all the possibilities of other universes) with its specific gravitational field would emerge.” (p. 364) Their math did produce a solution for our universe (although the footnotes have more to say about this success), but what were the “catches”? (pp. 357-367)
5. For non-scientists, Meyer says we only need to keep 3 elements in view to understand how Quantum Cosmology is an origins theory. What are those 3 things (p. 363) and based on this chapter, how is Quantum Cosmology shaping up for you as an “origins of the universe theory”?

Chapter 18: The Cosmological Information Problem

6. Meyer opens this chapter by pointing out that both Hawking's and Vilenkin's versions of Quantum Cosmological theory (which attempt to explain the origin of the universe) claim, as Hawking wrote, "Because there is a law such as gravity, the universe can and will create itself from nothing. Spontaneous creation is the reason there is something rather than nothing." What is the fundamental "category mistake" with this premise that Meyer explains? (p. 370; see pp. 369-372)
7. In the section, "Of Math and Minds" (p.73) how did Vilenkin tumble into the realization that his Quantum Tunneling theory may have theistic implications?
8. Meyer exposes a couple important problems with Quantum Cosmology theories in general. The first is that both Hawking & Hartle's *and* Vilenkin's theories presuppose a universe to explain its own origin. The second is that in order for their theories to work they must set boundaries and conditions on math that has no physical reality (i.e. make up a set of conditions to get solution desired). Why does this violate Shannon's Information Theory (p. 383) and why does that point to theism?
9. Meyer gives us this great takeaway— "Thus, these quantum cosmological models inadvertently *confirm a major theme of this book*: it takes a mind to generate specified or functional information, whether in ordinary experience, computer simulations, origin-of-life simulation experiments, the production of new forms of life, or, as we now see, in modeling the design of the universe." (pp. 384-5, emphasis ours) What is your favorite quote or takeaway from the last section of the chapter entitled, "Calling the Bluff" (or the whole of chapter 18)?

Chapter 19: Collapsing Waves and Boltzmann Brains

10. In Meyer's critique of the Many Worlds Interpretation, he uses the term "reifying the math" (p. 392), a term he defines on p. 374. He says, "...quantum cosmologists do reify the universal wave function as the metaphysical foundation of all existence." What does he mean by that important term?
11. The rest of this chapter is about the "vain imaginings" of Max Tegmark's Mathematical Universe Hypothesis which says that all mathematically possible universes exist somewhere. Meyer explains how the Epistemological Cost to this theory undermines both Scientific Explanation and Scientific Prediction. Were you at all surprised that this theory warrants mention in Meyer's history of the cosmological science?

Note: If you're interested in some behind-the-scenes insights, read this [Blog about Max Tegmark by a Senior Lecturer in the Math Department of Columbia University](#) back in 2014. What stood out for you?

12. The Boltzmann Brain. When scientists adopted infinite universe theories, they discovered that the probability we are just a random brain living in an illusion is more probable than that we are living in a theistic fine-tuned universe that supports life. Meyer compared the horror of living as a Boltzmann Brain to what he observes among the lost souls of the Seattle homeless population. It seems any attempt, cosmologically or otherwise, to flee from God results in “denying uniformity, intelligibility, and reliability” and, “denies the possibility of knowledge”. Do you feel like this book has given you enough footing to explain why scientific evidence concerning biological and cosmological origins leads logically to the knowledge of God and that as St. Augustine says, we must “Believe in order to understand”?

If Time Permits:

13. Did you have a favorite quote?