Quantum Realism FAQ

Quantum realism is the idea that the quantum world really exists, and it generates physical world events on demand as quantum processing outputs, just like a virtual reality.

1. A universe as big as ours must be real.
   **Answer.** It is only “big” relative to us.

2. A universe that has been going for billions of years must be real.
   **Answer.** Again, only relative to us. With enough processing power, one could run a program of the entire history of the universe in a few seconds.

3. It would take a computer bigger than the universe to simulate it.
   **Answer.** Physicists already speculate a multi-verse bigger than our universe, so why not one big enough to output it? Actually, in this model, the physical universe is generated by a same size quantum universe, because quantum computing is so powerful.

4. So who is the programmer?
   **Answer.** I don’t know. I guess everything is. Every choice we make changes the program.

5. Computers need physical hardware so the argument is circular. Processing based on the physical world can’t simulate the physical world. That’s recursive.
   **Answer.** The physical world can’t create itself as you say, but in quantum realism a non-physical quantum world creates the physical world. We know that a quantum world, if it exists, must be non-physical because what quantum theory describes is physically impossible. As processing by definition doesn’t require a physical base, quantum processing cannot have a physical base, and so there is no circularity.

6. Can we hack into the system?
   **Answer.** Quantum computers already do that. Quantum computers, based on quantum processing, are far more powerful than computers based on physical processing.

7. Is this like The Matrix, with Keanu Reeves as Neo?
   **Answer.** No. Neo escaped from the Matrix into a physical world produced by another physical world, so the reality base is still physical. In quantum realism, the physical world is the output by a quantum world that works differently from our physical world, so the reality base is no longer physical. The Matrix allowed miracles beyond the laws of physics, but here our physical rules are a consequence of quite different quantum rules, not in conflict.

8. This just defers the problem of fully explaining everything to another level, so it can’t be a theory of everything (TOE).
   **Answer.** Quantum theory and general relativity dashed the TOE dream last century. That science can explain everything is no more possible than squaring the circle. Quantum realism is a query of everything (QOE), not a TOE. Determinism is dead but science, as way to ask questions of the world, lives on, as the virtual reality conjecture is a testable theory about our world. For science to discover that a quantum quintessence is continually creating the physical world would be the greatest discovery ever made.

9. This is just a “turtles all the way down” explanation again.
   **Answer.** There is no recursion. With respect to us, the quantum world just is. Even if there is

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anything beyond it, we could never know it. We don’t see an objective world from above, like a bird, but from the ground like a frog. Our frogs-eye view makes us embedded observers, unable to see for example relativistic changes of time or space that change us too.

10. If virtual reality calculations are performed by “something”, it would be a system (like our Universe) that needs an explanation, so we are back to square one, so to speak.

Answer. The "something" you refer to is described by the advance of quantum theory, so we are not back to square one. We are one square further on. We need the humility that implies.

11. A theory that some other world creates this world is not testable.

Answer. Of course it is. A theory about heaven is not testable but a theory about this physical world is. We know how the physical world behaves and we know how information behaves, so we can test if the physical world is an information output. We are just not looking.

12. It is all just meta-physics, like the number of angels on a pinhead.

Answer. Meta-physics is untestable speculation on unknowable things. The virtual reality conjecture targets this physical world, so it is not just meta-physics.

13. This is just plain stupid and you’re a moron.

Answer. It’s just a theory. No-one is making you believe it.

14. You aren’t an expert in physics, mathematics, philosophy or religion. You should leave physics to the physicists and philosophy to the philosophers, who are experts.

Answer. It is true that specialists rule in academia today, but the resulting knowledge castles tend to resist new ideas. It’s time to open up quantum theory to everyone for comment.

15. This theory is unproven.

Answer. So is the objective reality theory alternative. Would you fail one candidate by a test the other also fails? Science compares alternatives and picks the best, so why not give this theory a chance in the academic arena?

16. This theory is based on assumptions.

Answer. So is every scientific theory. The method of science is to assume an hypothesis then test it by physical world data. This theory agrees with that approach.

17. Denying the axiom that there is nothing outside the physical universe opens the floodgates to let anything convenient through, no matter how unlikely or even absurd.

Answer. No floodgates open if we follow the scientific method, of logic, data and making predictions. To ask a question of the physical world is science. That the question happens to be “Is the physical world a processing output?” doesn’t change that.

18. This theory would end science, as you can't study what you can't by definition see.

Answer. Not true. Science studies quantum states no-one can see and it is still fine.

19. A theory that postulates the unseen is not scientific.

Answer. That science is about the seen is logical positivism, a simplistic nineteenth century view now discredited in almost every discipline. Visibility is not a demand of science.

20. This theory can never be decided.

Answer. Not true. Science decides theories based on likelihood. It decided that our universe had a “big bang” beginning, so it can decide whether or not it is a processing output.

21. Eventually, all these impossible quantum paradoxes will be chalked up to faulty measurement. Right now, we just don’t have the technology to fully detect quantum reality.
**Answer.** Not so. We are already exact enough. Better measurement won’t change this.

22. *Where is the reset button?*

**Answer.** For matter, every moment is a reset.

23. *Why doesn’t whoever is running this simulation shut it off to save power?*

**Answer.** Beats me. One can only presume some good reason. I guess it’s important?


**Answer.** Occam’s razor, to take the simplest theory to fit the facts, favored an objective world last century but today as space bends, time dilates and quantum entities teleport, it cuts the other way. Compare the one grid and one Planck program of this model with the five fields, thirty-eight basic particles, sixteen charges, fourteen bosons and twenty four result-fitted parameters of the standard model. Quantum realism is a much simpler theory.

25. *This is not mainstream physics.*

**Answer.** Of course it isn't. Nothing new ever is.

26. *This is a crazy idea.*

**Answer.** That doesn't make it untrue. Science advances by crazy ideas. Even if this theory is wrong we might learn something. Novel scientific ideas have always been called crazy.

27. *This is just another God theory.*

**Answer.** No it isn't. God theories put no constraints upon God but reverse engineering the physical world requires a consistent information model. Multi-verse theory postulates beyond our physical universe, so is it a God theory? Was Everett's many-world theory a God theory? Postulating beyond the physical universe doesn’t make a theory a God theory.

28. *So did God program the universe?*

**Answer.** A processing model doesn’t change the God argument one way or another. Perhaps God is the programmer, or advanced aliens, or as Bostrom suggests, ourselves from the future! Whether the virtual reality conjecture is true or false, we can still argue about God!

29. *Does this model imply a phantom spirit world reality, alongside the physical world?*

**Answer.** No it doesn't. Dualistic religions have a spiritual or heavenly world as well as the physical world, but quantum realism is a monism with just one reality - the quantum world. It is the physical world we see that is the phantom. If reality is based on the observer-observed interaction, in this view, the observer is real not the observed.

30. *How can everything we see be information!*

**Answer.** Biologists already know that everything we see is information, since neurons are on-off devices just like transistors. Yet quantum realism isn't solipsism, that the world is created by our minds. The universe doesn’t need us to observe it because everything is observing. It existed for billions of years before we arrived and will carry on even if we die out. We are the product of an evolution, so if we die out, perhaps rats will evolve an intellect?

31. *Where are the equations?*

**Answer.** They are already there in quantum theory, e.g. Schrödinger’s equation describes a processing wave expanding in three-dimensions. Quantum realism doesn’t contradict the equations but their standard model interpretation. The future of fundamental physics lies in dynamic program simulations, not static equations.

32. *Equations that work are enough. Physics doesn’t need meaning.*
Answer. Physicists who just calculate rarely stop to think what it means. Copenhagen enshrined this carry on calculating approach. If you are happy with that then fine, but why stop others wondering what it means? Meaning is important to people.

33. The equation of the standard model work incredibly exactly, so it must be right.
Answer. That an equation works doesn’t mean its interpretation is true, e.g. calculations that assume an object’s mass is at a center-of-gravity work, but that doesn’t mean it is. Physicists fed on equations but starved of philosophy (Kuhn, 1970) confuse equations that work with theory that predicts. They say the standard model “predicted” top and charm quarks, but that was like “predicting” the last move in a tic-tac-toe game. They say it “predicted” gluons, W bosons and the Higgs, which this model says don’t exist. Devising equations after the facts, then match their terms to transient resonances in billions of accelerator collisions is the research equivalent of reading tarot cards.

34. I don't think the world is a fake.
Answer. Neither do I. A virtual world is a local reality not a fake. It doesn’t exist in or of itself as an objective reality would, but to those within it, it is as real as it gets. There is a real world “out there” generating our experiences - it just isn’t the world you see. In quantum realism, the physical world is just an interface to the actual world.

35. What exactly is the processing “grid” you propose? What is a “node” made of?
Answer. Nothing physical. This is actually the $64,000 question. The grid as the “… primary world-stuff” was proposed by (Wilczek, 2008) p74, and he was equally vague. If you ask what the quantum world is, the best answer is quantum theory. We also use it in quantum computing, which is beyond our physical computing. Is it the basis of our consciousness? We don’t know. This desire for “objective” definitions is the problem not the solution.

36. I am not a pixel!
Answer. Neither am I. Log on to The Sims as a character and look around, what do you see? Your local reality is made of screen pixels - even your character - but that doesn’t mean you, the observer, are made of screen pixels. In fact we don’t know what our “I” is made of. We call it “consciousness”, or “being”, but no-one in the world today can define it.

37. If the physical world is virtual, we don’t really exist!
Answer. Yes and no. Our physical bodies are virtual, like an avatar in a game, but the “I” is not “in” the game. It is outside looking in. In quantum realism, observation creates physical events, and everything is observing everything else. We differ from animals and computers in self-awareness not in consciousness (Whitworth, 2009). Consciousness as the capacity to observe is fundamental - it exists in everything, even an electron. So we exist as conscious beings making choices but our physical bodies, or avatars, only locally exist – for now.

38. Whoever is playing my character is pretty boring.
Answer. Sorry about that. Have you tried all the options?

39. I feel like we are in a Sim game and my player is the worst gamer in history..........
Answer. When I feel that way I review my biological performance - today I have eaten and avoided being eaten, so I am a biological success! Performance is relative.

40. This contradicts common sense.
Answer. Common sense also told us that the earth was flat and the sun went round the earth.

41. If our bodies don’t really exist, being just virtual pixels, then basically we can do what we want - robbery, murder, rape - because it's just a simulation.
**Answer.** Firstly, people who think the world is real already do all those things, and secondly, pixels affect pixels, so you still get consequences, e.g. if you run out of game money in Civilization you can’t buy stuff. And those who see the physical world as unreal, like the Buddha or Ramana Maharshi never do such things. Why would they?

42. *This is not a new idea.*

**Answer.** True. It goes back at least to Plato's prisoners in a cave, taking their shadows on the wall as reality. Modern precedents include Conrad Zuse, Edward Fredkin and Tom Campbell.

43. *Why would anyone create a world like this?*

**Answer.** We can only guess. Perhaps reality wanted to know itself and this was the only way?

44. *This theory makes no difference in practice.*

**Answer.** Yes it does. If matter comes from light, the money spent colliding protons should be spent colliding light and the $30 billion Higgs project just found another species in an already full particle zoo. How much money was spent looking for proton decay that doesn’t happen, gravitons that don’t exist, and WIMPs that will never be found?

45. *Is this the end of science?*

**Answer.** No. Science works just as well in a local reality as in an objective reality.

46. *Are paranormal powers like healing and precognition implied?*

**Answer.** They are not ruled out, but if you built a virtual world, would you let the players flout the rules? I don’t see too many holes in this system.

47. *Could the experiments at CERN start a new big bang? (Dunning, 2008)*

We alter physical outputs not the quantum system rules, just as online Sims change their world not ours. The creation of our universe was a once-only event, a chain reaction where the grid itself ripped apart to generate the free processing of the universe, which since then has remained constant. Over billions of years, the system has operated extremes beyond anything we even know of. Nothing our accelerators do can harm the quantum world that creates physical reality.

For further details see [http://thephysicalworldisvirtual.com/](http://thephysicalworldisvirtual.com/)