

Looking at Scripture with New Eyes: A Chance Conversation Between Faith and Science

William K. Lewis
Fairmont Presbyterian Church
College Ministry Team

One of the things I really enjoy about education in general, and college in particular, is the broadening of horizons and the new ways of thinking about old subjects that often occurs in this setting. New information often helps us come to a new or deeper understanding, and I have occasionally acquired new knowledge or life experiences that have helped me look at Scripture with new eyes. This month, I would like to share a serendipity encounter between faith and science in my own life. Several members of the congregation have requested that I relate it to you. Admittedly, this letter is a bit different in both style and substance than my usual letters to you, but I hope you will find it interesting.

As a young man, I realized that there was an possible contradiction between two of my deeply-held beliefs. On the one hand, there was the picture of an all-knowing and infallible God obtained from my study of the Scriptures. And on the other, the concepts of free will and responsibility for one's actions. If God has known everything I would ever think or do since before He placed the stars in the heavens, and He cannot possibly be wrong, how then am I truly free to make my own choices or responsible for the consequences? At the time, I could not resolve this seeming paradox, but ultimately decided to take both ideas on faith. Still, for someone with a mind wired for science and logic, consciously choosing to believe something that was (apparently) demonstrably irrational was rather unsettling.

Some years later my college philosophy electives taught me that my questions were far from new and had in fact been wrestled over for centuries. But it was in my physical chemistry courses, however, that I got a surprising new perspective on the question. Bear with me; I'll try

to not make this a boring physics lecture. The new perspective came when I was introduced to quantum mechanics. Like many students before me, quantum physics rocked my world! Really, it was like being in the movie "The Matrix" and taking the red pill. Niels Bohr, a very famous scientist (and one of the fathers of quantum physics) once said "Anyone who is not shocked by quantum mechanics has not understood it." But I'm getting ahead of myself.

The background sort of begins with Sir Isaac Newton. During his extraordinary life he almost single-handedly laid down a quite thorough description of the laws of physics, and for centuries after his death the physics community was mostly concerned with applying Newton's Laws to various systems in order to understand them. Often the math got ugly, but the basic framework was usually there. Newton's description of the inner workings of the universe (called classical mechanics) worked with almost boring regularity for one generation after another after another. But then in the early 20th century, a problem popped up. The 19th century had concluded successfully with man coming to understand quantitatively the relationships between energy, temperature, and mechanical work. And as the 20th century dawned, mankind sought to now understand the relationships between the temperature of an object and the wavelengths of light that it emitted. Well, to their shock and horror, physicists discovered that when they applied classical mechanics to this question, they got the wrong answer. Not just wrong, spectacularly wrong! And just like that, classical physics came crashing down.

The next few decades were turbulent, but ultimately yielded a new formulation of physics built around an idea that was rather strange at the time: that only certain values of energy were allowed *i.e.* energy was quantized. Quantum physics was born, and in the years since that time it has yielded correct descriptions of the physical properties of every system to which it has been applied. But quantum mechanics paints a very different picture of reality than does classical

physics. Newton's picture of the universe is stately, clock-like, and deterministic. It is usually consistent with everyday human experience and implies an objective external reality wherein an event and its observer are independent. On the other hand, quantum physics paints a surreal picture of reality that is counter-intuitive, probabilistic, and often just weird. All sorts of strange things happen in quantum mechanics: a particle can exist in multiple locations at the same time, particles can sort of teleport through barriers (the technical term is "tunneling"), and they can be in so-called "superposition states" where they exist in multiple different configurations simultaneously. And quantum mechanics inseparably links event and observer: the behavior of the system can actually change depending upon which measurements an observer chooses to record!

As well as quantum mechanics works, there is an intriguing question that remains unanswered after all these years: when a system exists in a superposition state and an observer makes a measurement that forces the system to choose a configuration from among those that compose the superposition state, what happens to the other components that are not observed? This dilemma is the famous "Schrodinger's cat" paradox. For example, if you have a particle that is simultaneously an apple and an orange, and you set up an experiment to determine what type of fruit it is, 50% of the measurements will say apple and the other 50% will say orange. But the system will always answer "apple" or "orange," never "half-apple, half-orange." So when the system answered "apple," what happened to orange component of the superposition state at that moment? Possible answers to this question are contained in the "interpretations of quantum mechanics," proposed by the scientists who discovered quantum physics. The interpretations of quantum mechanics are regarded largely as philosophy rather than science because they cannot be tested, and science by definition is limited to ideas that are testable.

One of these interpretations is known as the "multiple worlds" interpretation. It essentially proposes that everything that can happen does happen. Whenever an observation or measurement is made that has multiple possible outcomes according to quantum mechanics, parallel realities are created - one for each outcome. In the apple-orange example above, when I measure what kind of fruit I have, reality splits into two parallel worlds. In one reality I measure "apple." In the other, everything in the universe is the same except for the outcome of that one measurement, where I measured "orange." Presumably, countless parallel worlds exist according to this interpretation, with each one varying from the others by the outcome of a single observation.

So is this true? Is the universe actually a multiverse containing countless parallel realities? Frankly, I have no idea. The idea is consistent with the laws of physics as we currently understand them, but it isn't an idea we scientists can test. My point is that this incredible suggestion does offer a resolution to the paradox of Divine fore-knowledge and human free will posed at the beginning of this letter. There would be no contradiction between God (who presumably transcends parallel realities) knowing all my thoughts and actions in advance, and me being free to make my own decisions. One might imagine God seeing one reality in which I spoke an unkind word to a friend, and the parallel world in which another version of me held his tongue, a world in which I helped someone in need, and the parallel reality in which I turned him away instead. My newly gained knowledge of quantum physics had radically changed my understanding of the world and my concept of reality. And when viewed from this (admittedly strange) new perspective, I was able to reflect upon the Scriptures with new eyes.

That's the real point of this month's letter. I don't expect you to study the nuances of

quantum physics, nor do I expect you to accept the seemingly fantastical multiple-worlds interpretation. I'm not even sure I do; there are other more mundane interpretations. But the point is that as we go through life, and especially when we broaden our horizons, we are able to look at the Scriptures with new eyes.