Excerpt from ***Part II: The Invention of Nature***

Who Holds the Patent on Quantum Fields and the Genetic Code?

The world is made up of things: stones, sunsets, flowers, tornadoes, microbes, chimpanzees, and galaxies. The things in turn have properties of various kinds: from color, size and shape to sound, smell and taste to locomotion and replication.

The most obvious and yet the least noticed feature of these things is their individual uniqueness and their inexplicable ability to follow certain laws. At one time there was nothing, or a formless something if you prefer, and then the world as we know it came to be with a plethora of particular things that obey certain universal instructions.

Now someone invented everything around us in the human world: cars, cookies, restaurants, microchips, and clothes. As we noted, all these things were first ideas in the minds of their inventors before they were brought into being. When we turn to nature, we ask who or what thought up photons and suns, DNA and dinosaurs, mass and charge? Who or what is powering the whole enterprise, keeping it always "online?"

> "The scientist can't consistently believe that everything has an explanation, but that the chain of explanation begins and ends with facts that can't be explained."
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> —*Guru*

We call something an invention because it's the concrete actualization of a unique idea. Inventions embody ingenuity. The systems in nature and the laws of nature are far more complex, intricate and innovative than the internal combustion engine or the submarine. In fact, human inventions are impossible without the existence of natural laws and systems. Nature with its systems and laws embodies ingenuity, uniqueness, and plenitude. To the extent that it embodies an Idea, it too is an invention.

Of course we can give the physical, chemical and, where relevant, biological conditions that gave rise to every one of the things in nature. And, of course, we can delve into their subatomic antecedents so as to thoroughly chronicle and predict their wavefunctions and world-lines. And we can further classify them under different categories: phylum, genus and species; igneous, sedimentary and metamorphic rock forms; infrared, ultraviolet, gamma and X ray radiation; quarks and leptons, and the like. And to terminate further inquiry we can take final refuge in the cosmic cauldron that was the Big Bang, the primordial ooze of prebiotic evolution and the fiery hand of natural selection.

But the fundamental dimension we are concerned with here goes beyond any description of the development of a thing and its classification under some scheme. Our focus is on the blueprint of its being. If a set of primordial states and initial conditions gradually unfolded to produce a given thing or being, these states and conditions were programmed at the start to produce this end-result. *Who or what wrote these programs? Who holds the patent on the process and its products?* If we ask why grass is green, our question is not about chlorophyll or molecular structure or energy sources. Given that certain ultimate physical processes gave rise to a blade of grass, then its greenness and other properties were contained in those processes from the very beginning. Who invented the greenness, or for that matter the blade of grass, which were, so to speak, thus implanted in the fabric of physical reality?

There's no escaping this question by attributing it to the "genius" of evolution. Let us grant this appeal to evolution and theorize that all things emerged through processes of evolution driven by some mysterious mechanism. But our question is not about the particular pathway taken by the raw materials of the physical world as they proceeded toward the present day, which is the eminent domain of any theory of evolution. Rather, our inquiry concerns the inherent capability and potentiality of these raw materials to end up where they are today. The multifarious manifestations of mass/energy that we encounter today would not have been possible if mass/energy did not start off with the acorns that would later become oaks. Moreover, there would also have to be a systematic set of laws governing all things. How were these laws conceived, and just as important, how were things forced to follow the laws?

What compels the protons and neutrons in an atom to be bound by strong nuclear forces that are strong enough to overcome the positive charges that could blow apart the nucleus? How is it that mass-energy is always conserved?

On any account of the world, then, we have to acknowledge that there's a blueprint underlying the existence of all the things that constitute it. Moreover, it's an inventor's blueprint because each thing with its particular conjunction of properties and its ability to follow certain specific laws is framed in terms of an idea, and it's an idea that comes to life. Every petal, every quark, every molecule of gas was thought up before it was materialized.

> **"...SCIENCE BECOMES ESPECIALLY EXCITING IF WE RECOGNIZE ITS TRUE MISSION AS THE STUDY OF AN INVENTION GENERATED BY AN INFINITE MIND.."**
>
> *—Guru*

There's yet another level at which the world may be thought of as an invention, and that's simply the very fact it exists. We start with the hard fact that the universe just happens to be here, when it might very well not have been since there's no logical necessity that it should exist, and that we don't know how it got here. We might have theories about vacuum fluctuations or big bangs but we have no idea how, to begin with, any of this happened to be around, why there were laws that governed all things at all times. Atheist scientists like Steven Weinberg admit with barely concealed embarrassment that the initial conditions responsible for the formation of the universe are just "given," which is just a way of saying this is the way it happened to be and we don't know how it got to be that way. As a matter of fact, it is not just these initial conditions but all subsequent events in the history of the universe that are given, since there's no reason why one event should cause another. The universe itself is the "given." But given by whom?

Every atheist says that the given is simply a "brute fact." We should accept it as "just there." But why should I stop here? Why cannot I wonder how a reality of such depth and diversity came to be? *If it was brought into being then it was invented, for to invent something is to make or design something that didn't exist before.* Thus the universe is either entirely inexplicable or it's an invention. The rational mind can't be satisfied with the idea that the world is simply a brute fact. The scientist can't consistently believe that everything has an explanation, but that the chain of explanation begins and ends with facts that can't be explained. In addition to its very existence, the universe discovered by science bears all the hallmarks of any invention: creativity, innovation, a unifying theme coupled with diversity of expression. And it is clearly the invention of an Artist!

As I've tried to show, great scientific minds, from Isaac Newton to Albert Einstein to Stephen Hawking, have in fact recognized that the universe is indeed an invention, the invention of infinite Intelligence. As these scientists see it, science becomes especially exciting if we recognize its true mission as the study of an invention generated by an infinite Mind. Einstein said that it is the cosmic religious experience that is the strongest driving force behind scientific research.

To grasp the inventedness of the world, we need to both reflect on the big picture and look at the universe as if we were seeing it for the first time. Now you've described this as a poetic vision pre-dating science. Let me remind you that many of the greatest modern scientists were driven more by the beauty they discovered in the structure of the world than by any other consideration. Richard Feynman, for instance, said that truth can be recognized by its beauty and simplicity. The poets have much to offer as well. William Blake talked of seeing a world in a grain of sand. Gerard Manley Hopkins sought the dearest freshness "deep down things." These may have been pre-scientific intuitions, but they seem to me perfectly compatible with all that we've learnt about fields, particles and space-time.

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