

Truth and Authority in Scientific Discovery: Implications for the Religious Quest

Chris Le Bas
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Trusting something is *true* really comes at the point when your life depends on it.

An astronaut trusts the engineers who made the rocket and calculated the trajectory to the Moon *and back*. In turn, the engineers trust the scientists who told them how cold it would be on the Moon and what force of gravity they would have to work against to take off from its surface. And the scientists trust the theories behind the solar panels that would power their return.

In the same way, a patient trusts the surgeon preparing to cut open his heart, the surgeon trusts the medical experts who weighed the risks of not operating against the dangers of open heart surgery, and the medical experts trust the interpretation of gamma camera scans and calculations made by

microchip-based computers.

When our theories are correct, namely, they resonate with nature and identify natural processes, then we can predict (or at least know the degree to which we can predict) the outcome of our actions.

"Truth" in the scientific sense means we have a description, a pattern, law, or principle accurately matching the nature of the world around us.



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This may come in the form of an image or model of something we are unable to see, such as a molecule or subatomic particle, or a mathematical equation that provides the link between different quantities we can measure. Or it may be the explanation of a technique or process that takes place in nature or can be made to happen under the right conditions.

Those who act as guarantors of the reliability of such information are often called "scientific authorities," be they individuals like Isaac Newton, or institutions such as the Royal Society. Teachers and lecturers act on behalf of these authorities, relying on the historical hand-me-down record of constantly

edited information from senior teachers, books and articles.

Some aspects of this knowledge can be tested and observed in classroom experiments, considered in the light of "common sense" and logic, but the majority of it relies on the authority it came from.

In today's age of universal education and immediate access to almost any information, we are generally less likely to base our actions on the directions of an "authority." We would rather filter what we are told or what we read through the grid of our reason and experience to come to our own conclusion as to what

is true.

To clarify these ideas, we can look at the progress of scientific understanding over the ages. Certainly in the area of physics, and widely accepted across all the sciences, there are two key turning points: the Renaissance, in particular the contributions of Galileo and Newton, and the beginning of the 20th century, starting with Einstein's discoveries. This divides the history of science into three stages:

1. The age usually regarded as pre-science in the European framework, in which the "great" thinkers, such as Plato and Aristotle, were idolized (one might say "ossified" into church doctrine by Aquinas) and became *the* authority in all scientific questions. A similar mode of thought existed in most areas of life: in religion and public life, an elite authority determined *the truth*, overruling most other opinions. This mode continued well into the second millennium.

2. The emergence of access to more experimental data, both from the rediscovery of ancient Arabic and Greek libraries as well as the observational information available from better telescopes and microscopes, enabled scientists like Galileo and Newton to break away from the ancient authorities and establish the precedence of experiment and observation as the test for scientific truth. This was the era of *reason* and discovery through experimentation. At the same time, new philosophies and streams of religious thought broke the monopoly of the Catholic Church's authority. This initially led to a proliferation of scientific and religious ideas, building the increasingly confident Newtonian view of the great (and increasingly predictable) clockwork machine of the universe. However, this diversity of ideas soon began to relapse into a new uniformity of authority, in the Royal Societies and empires of the 19th century, prior to the massive changes that took place at the beginning of the 20th century.

3. What is described as the "New Physics" began with Einstein and his Theory of Relativity and the key role of electromagnetic waves in defining the universe, raising various paradoxes that cannot be "solved," only accepted (such as the wave-particle nature of light and the curvature of space-time). This fundamentally undermined the seemingly perfect rationality of the Newtonian world. It was further undermined by the appearance of Quantum Mechanics, showing how "reality" and observation are inseparable and forcing us to accept a vague probabilistic idea of what "is." As Bohr put it, "... an independent reality in the ordinary physical sense can be ascribed neither to the phenomena nor to the agencies of observation." The change of thinking is put succinctly by Zukav:

"Scientific 'truth' has nothing to do with 'the way that reality really is.' A scientific theory is true if it is self-consistent and correctly correlates experience (predicts events)."

The point is not that a "reality" does not exist, but that our operation in the midst of it relies on the way in which we interact with it. In fact, "interaction" has emerged as a key word in the description of particles. Hence Zukav, together with many modern physicists, was drawn towards the Eastern mystic ways of thinking to describe our new view of reality; rather than a fixed objective mechanism "out there," the universe is integrally a part of us (or rather we are a part of the universe) and we seek to resonate with it. I like Zukav's description of scientists in the title of his book: the Chinese characters *Wu Li* mean "patterns of organic energy." We resonate with this energy if we master the "dance." (In this context the character *Li* means pattern or principle -- cf. Divine Principle "Won-Li" -- original principle, while *Wu* means organic energy)

These three eras could be seen as the scientific equivalent of Old, New and Completed Testament ages in Unification theology and probably more parallels could be drawn in this way, though I am not convinced how helpful that would be.

The most valuable conclusion from all of this is that our understanding of truth emerges from a

combination of trusted authorities and individual reasoning. Both these sources, however, are subservient to the test of experience rooted in our interactions: namely, our experience guides us both in deciding which authorities to trust and also overrides our reasoning if our logical conclusions do not match or resonate with our interactions with the people and environment around us.



Ultimately, we make life-changing decisions based on our relationships with God (does this mean our intuition?), with the significant "others" around us, and with the natural world. These are more "real" and self-defining than any abstract idea of *truth* or reasoning we may come across, and will usually surpass the advice of any *authority*.

From a personal perspective, I find myself now prone to avoid the fundamentalist tendencies I had when first discovering the Divine Principle; I see myself perhaps as having come through the first two stages, as I described in the development of science, and hopefully entering the third.

Thinking of the Principle as a "worldview" seems flawed since it implies everyone should accept "it," the equivalent of the mechanistic view of the Newtonian universe. Just to be told that such-and-such is the way everything should be is an automatic "turn-off" for all except those who have convinced themselves this is their mission in life. Telling my teenage children their room should be tidy certainly never worked.

The key to achieving real development is interacting with the way things are, engaging and finding resonance with a deeper sense of original nature that has to be discovered with an open-minded trust rather than a set of preconceived ideas. Having seen the successful application of good principles by people of all religions and none, I see religious life as a series of prompts and reminders to seek truth and allow that search to guide us in our interactions, with God, people and nature.

This resonates with the conclusion of Peter Vardy in his book *What is Truth? Beyond Postmodernism and Fundamentalism*:

"Truth is something that will not be arrived at easily but only by struggle, by searching and by a willingness to be open to alternatives. It will only be found by those willing to live the Truth and reject the easy option of living a lie. These individuals will stake their lives on the search and, with passion and commitment, seek to pierce through the veils and illusions, the masks of falsehood, the constructs of society and the self."

The "Kingdom" will never arise from the imposition of an order but from our resonance with patterns of organic energy as we seek to make harmony with God, our neighbors and our world.

After graduating from UTS, Chris volunteered for missionary work in the USSR through the time of its collapse, working in Lithuania, then Russia. After moving back to England in 2000, he built on his earlier physics degree from Edinburgh University and took a one-year teacher training course, becoming a secondary school science teacher specializing in physics, and has continued teaching for the past 16 years.

Photo at top: *The Horsehead Nebula, taken in part by the Hubble Telescope (courtesy NASA).*