What Science is

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Written for and dedicated to the Kiwi Farms

The purpose of this text is to inform the Kiwi public of the nature of science. “Popularizers’, “Communicators”, and liars discredit science for their own personal gain, either for payment or popularity.

What Science is not

Science is not truth. It is not a verification of truth. Science is not the repeatability of experiment, it is not uncontroversial; it is not testable proof. It is certainly not objective, and no two people ever see it the same way. The limits of our human lives prevent us from ever fully exploring the available contents of human knowledge. The average university library may contain fifty thousand books and a dedicated reader may complete fifteen thousand in their lifetime. Every scientist will be left with gaps in their knowledge, no matter how dedicated they may be. Human experience, the sum total of human sense perception, is too much to ever possibly be understood by a single person. The absence of knowledge is two fold: an unaware person is unaware that they are unaware. Therefore no human can ever contemplate all of science. And if no human fully understands science, then why does the study stand as it is? The reason is because science is not the repetition of facts, it is not the ability to recite taught lessons, or to find solutions to known questions. Science does not depend upon a knowledge of already known facts. Science does not require formal training in procedures, traditions, dogmas, or other explanations. Just as no one human can ever contemplate all of science, no one can ever construct a single unifying theory or easily communicated explanation.

It seems that the postmodern public has taken science to be their new religion. They attach to science all the old ceremonial robes that religion used to wear: truth, verifiability, access to knowledge, control over nature, fate and destiny, man's place in the world, the existence of higher life and the afterlife. In my exploration science has led me to none of these conclusions. If anything, science is far too subtle for such grandiose treatment. I also do not buy the implication of innocent knowledge either: every act of knowledge is an act of violence or at the very least has the capability of being such. Knowledge is power.

This kind of limited thinking is exactly the opposite of the kind of thought fostered by scientific exploration. Such complexity does not bring understanding, much less a marker for future exploration.

Human Experience

The origin of science lies in human sense perception. Lacking any other tools to meaningfully explore the world, man used his senses. The situation is the same today. No further progress has been made in actually SEEING nature, and not just seeing it. Man must arrange the experiences he receives in his own mind, and with a mental map he may then be able to understand nature.

The Error of Sense Perception

Fools may try to argue against the assertions that I have made above: they may try to argue from sense or instrument perception. Every mercury thermometer works in exactly the same way, given similar composition, they say. The microscope allows us to visibly perceive microorganisms. Ah, but the information that is lost! The mercury thermometer is merely a relation between two sense perceptions that humans have interpreted as meaningful. The instrument has been calibrated subjectively, and gives no objective measurement. Observing the microorganism from one perspective denies the observer all other perceptive possibilities! Opportunity cost is built into nature! Heisenberg has already helped us understand this phenomenon on a physical level, with the uncertainty between position and momentum. No one, EVER, will ever be able to fully perceive the situation as it truly is. Information, and a significant part of the available observational information, will inevitably be lost. Accuracy and precision, supposed columns of scientific rigor, are nowhere to be seen.

Our perception of reality hinders us from seeing as it really is. So why not put on some blinders and try to look ever more carefully at the object? Is that not what science is? An exclusive exploration of a subject at the expense of others? This makes the situation worse! The observer becomes more blinded to the reality that surrounds him than before. Excluding some parts of reality at the expense of others is sure to lead to ignorance.

Can the scientist not just construct instruments that more precisely measure nature than our own senses? The problem then is one of precision, and if science purports to understand the truth, or in other words perfection, then the precision of analysis also needs to be perfect. An imperfect description is just another guess with limited applicability. Does science not claim to be universal? A universal understanding with universal applications? No! This is the result of fools who speak and yet understand the subject little.

It is critical to understand that information is never contained, and is only ever interpreted. As a consequence of this simple fact, there is no inherent information IN any sense or perception or instrumental reading: these results can only ever be interpreted. Here lies the issue, the object and the subject. Personal subjective experience is held to be the antithesis of scientific methodology and understanding.

Because of the nature of information, inner experience can never be communicated with anybody else. Both the transmitter and the receiver of information must interpret, and therefore no object information can be received. This is a very tricky situation and has led to the confusion, arrogance, and ignorance of today.

What Science is

Science is any formal exploration of a domain of nature. This could be for any human experience but is best known for Physics, Chemistry, and Biology, the hard sciences. This has been occurring for nearly two centuries, and started with the greeks. Science is also the personal relationship that man has with nature. This is frequently revelatory, most often described as “ah ha!” moments, sudden glimpses of brilliance that flash in the scientists mind upon connection of some idea. I don't view science as being a collective or group action. Because of the reasoning above, I see science as a highly personal experience that is very difficult to communicate to others and (almost?) never understood correctly by others. I will cite Marx here, in that he claimed to not be the marxist that his interpreters thought he was.

Science is frequently expressed in the form of ideas, mathematics, logics or abstract forms. It is also becoming more common for science to be referred to as poetic. Journals, monographs, textbooks and universities are all just meta formalizations of this highly personal experience.

Scientists in the course of their lifetime will package these ah ha! moments into commodities and put them onto the market for other scientists. While somewhat obscured by fancy and self important writing and presentation, scientific products are most often theories.

The Nature of Theory

The best way to understand the nature of science is to understand nature through theory. A theory is a classification, sequencing, arrangement, and hierarchical organization of facts. Just as a house is not just a pile of bricks, a scientific theory is not just a disorderly pile of learned facts.

While no fact by itself ever proves anything, many facts can be arranged into a structure of theory and can produce understanding. When this is done nothing new is learned, new ideas are only implied. Implication is very important in scientific exploration.

These ideas need to be arranged into a classification, or a web of interconnecting ideas and their relations. This classification will be a three dimensional abstract structure with inevitable loose ends and holes. These are your markers for further study. Consumption is the act of arrangement, balancing, and alignment of ideas. Care needs to be taken in the exact ordering and sequencing of ideas, of their relation between each other and as a whole. Absence also needs to be acknowledged, either as implication or as structure in itself. Ontology is crucial here, the sequencing of ideas, their origin and end. Finally, ideas themselves need to be understood: this is self reflection.

The Difference Between Theory and Application

While theory is the arrangement of facts in man's mind or on paper, man needs to gather those facts in the first place. Fortunately enough nature seems to be just overflowing with facts. In fact there are so many facts that for many people the importance of the fact is its verifiability or authenticity, rather than its presence or lack thereof. So how do we prove facts found in nature? While there is no assured way to prove anything, there are a few methods to at least ensure reliability.

Before we begin we need to understand that science is only ever explained in part. Because of the limitations expressed above, we must live with partial explanation.

One of the ways to prove theory is to find relevant factors of the same underlying phenomena in two or more different parts of nature. It is highly unlikely that the same phenomena is acting in two parts of nature and is unrelated. A familiar example is the phenomena that makes both the planets move around the sun and for the apple to fall on Sir Isaac Newton's head. These phenomena or natural experiences are explored in experiments.

In an experiment the scientist attempts to limit the outlying factors of investigation to more thoroughly examine the phenomena under inspection. Again, while no limit is ever good enough, a degree of exactitude is achieved and a measurement is taken. Further experiments refine the arbitrary measurements taken. This becomes fact.

Application is merely the repetitive and casualized use of scientific instruments. Fact becomes concrete in the natural world, and nature regularly proves the fact.