How to Know the World

Roger K Howe, 2008-05-01

Having decided that the world is (or should be treated as being) real, the question is as to how we get to know what kind of place the world is, how it functions, what kind of beings we are, and how ought I (or we) to behave?

The basic question here is how can we come to understand what kind of place this world is? In classic philosophy, there are two answers – either one observes and understands the world through experience or one understands the world through logic. To me it seems that neither is sufficient unto itself. Observation without logic may create a large jumble of observations, but will not assemble them into a deeply functional view of the world. Logic alone can create understanding of abstract concepts, but the world is not an abstract thing. Together, they can effect a view and an understanding of the world that has lasting value.

As we have studied the world, we have learned much about it and about ourselves. We have learned that we see only a small portion of the spectrum of light, and we hear but a small spectrum of sounds. Just these two observations should be enough to inform us that our view, our un-informed view, of the world is incomplete and potentially deceiving.

Add to this our observations of human beings that indicate that several people observing the same event may give different accounts of it. If our senses are as unreliable as this, how can we ever come to have any reliable conception of what the world truly is? This is a question which has plagued philosophers down through the ages.

I believe that three aspects of each person combine to create that person's understanding of the world – the genetic predisposition, what one is taught, and what one experiences. Since only rarely do two people carry the same genetic makeup and virtually never do two people share the same experiences, this suggests that no two people will experience the world in the same way. This is beginning to be a bit frightening and seems to lead back toward the realm of "the world is an illusion imposed by a malignant being."

But not so. The issue is to understand a real, objective world. To understand it, we must move past the frailties of our individual perceptions to the strengths of common perceptions. The challenge is how to do so. Several things contribute to this process. To get to our common perceptions, we must be able to communicate our perceptions and we must develop methods of objectifying our observations. The selective nature of our perceptions is an impediment, but not a bar to clear understanding. And so the third element contributing to individual perception (education) becomes important.

Communication and education are clearly linked. There are many human languages, but only one human genome. Language differences reflect and drive different world-views. The Eskimos, it is said, have many words all of which translate to the English word "snow." To the Eskimo, slight variations in the moisture content, temperature and compactness of snow may indicate significant differences in the implications in terms of travel, hunting or shelter-building. Many words for snow are needed to signify these subtleties, to which the English speaker is oblivious – both by linguistic training and by social inclination.

If we live in a society which accepts, for example, “natural causes” – including old age – as being an acceptable rendition of the cause of death for anyone over age 65, we are going to find death statistics that look remarkably different from those in a society for which “natural causes” is not an acceptable categorization of a cause of death.

So one of the necessities in understanding the world is to collect observations from a number of people and compile them. To do this requires having a common vocabulary in which to describe our observations. To have this common vocabulary requires some effort in creation and considerable effort in education.

Then, we need to agree on standards for judgment of experimental purity. If I decide to observe a particular phenomenon, I must be able to describe the phenomenon itself, and how I measured it, and what the results were. Thus, if I am testing various hypotheses about gravity, I may understand that a heavier object should fall faster than a lighter one. So I climb to the top of the tower in Pisa with a bowling ball and a billiard ball. I drop both at the same time, intending to study the rules governing gravity by looking at the difference between the speeds of these two objects. To my surprise, I find that both balls reach the ground at the same time! I record carefully the height from which I dropped the two balls and the time it took for them to drop and their weights. The point of this is that this same experiment may be repeated by anyone else in any other location on the surface of the earth and the results should be exactly the same.

Thus is derived the scientific method, which is designed to minimize observer bias by describing the experiment in detail and promising reproducible results. From this, an agile mind may extrapolate to general principles. Or, as mathematics developed, one may develop mathematical statements which are found, on testing, to be good or exact descriptions of physical phenomena.

The generalities become the rules by which we come to know the world. No generality, no “law” can stand if anyone can produce a countervailing actuality (experimental result) that is reproducible.

So powerful is this method that it has produced our modern society. Much that we take for granted is there only because the rules have been postulated and tested then applied to issues of daily living.

This applies to electricity and all of its marvels – which sustain our daily lives. But there is nothing about electrical current that is directly visible to our senses. We derive our knowledge of electricity through the use of instrumentation to determine its properties. Observations, repeatable and repeated, combined with logic and generalization, have produced technologies unimaginable to one whose knowledge is restricted to the unassisted senses.

That the method works is attested by the results. That the results are fantastic to the knowledge and imagination of someone from an earlier age is beyond question. Because the results of the scientific method, combined with the careful use of instruments to help us to “see” the world that is not open to our native senses, the world of science produces results that are astonishing to our senses. The results are also not directly accessible to those who lack the instruments or the knowledge to work them. To many, this may seem to make the statements of science seem fantastic. The fact that the hypotheses of science are constantly open to question and revision may also cause them to seem less reliable. What we know (by being taught) may seem familiar but under attack by newer, less intuitive statements from science. But the conversation exploring

the nature of reality does not close – it continues to refine the understanding. The laws of Isaac Newton give way to the more sophisticated understandings derived through theories of relativity and quantum dynamics.

Nonetheless, whether we can understand or appreciate (or believe in) atomic theory, it produces atom bombs and nuclear power plants. Regardless of our perceptual biases, we have sufficient evidence to make clear the reality involved in scientific interpretations of the world around us. Whether quantum mechanics will ever produce the same technologic advances I don't know – but the absence of the technologic consequences does not negate the understanding of reality.

The point of this discussion is not to establish what it is that we know of our world, but to establish that there is a method by which we can come to know more of the world than our senses will tell us. It is called the scientific method. And that the scientific method demonstrates repeatedly that it is producing valid understandings by way of the technologic advances that it spawns. We can overcome the limitations of our senses and of our personal interpretations through the careful adherence to the methodology described as the scientific method.

