

The World in a Grain of Sand

Are there phenomena in our natural world that science can never explain? In the past century, scientific knowledge has accelerated to the point where it seems no answer is outside our reach — an astonishing array of facts powered by brilliant minds, potent computer technology and sophisticated measuring instruments able to look out to the far reaches of space, and down to the minutest sub-atomic particles. Consider: Physicists are homing in on the great secrets of the universe — what it is made of, how it began precisely 13.7 billion years ago in the Big Bang, suddenly expanding out of an infinitely dense, infinitely hot substance, releasing incredible amounts of energy, thus creating space and matter: galaxies, stars, planets, life.

Consider: We are closer to discovering how life originated on Earth some 3.4 billion years ago. Surely we will find the same conditions elsewhere in the universe — that necessary combination of radiant energy and chemistry that allowed creation of self-replicating and metabolizing organisms, which over billions of years have evolved into complex, sentient creatures like us. Consider: How the brain works to create consciousness, emotion, knowledge and learning is being increasingly understood with the sciences of neurology, psychology and neurochemistry. We now have direct methods of measuring brain function in real time.

But there seem to me to be three phenomena that may never be "explained. First, did that dense, hot substance "always" exist, with the Big Bang a once-only

event? Or has something similar happened before, in a time we can never know, in a space we can never access? Singular or not, if "something" has the potential to come from another "something," we have to accept the notion of infinity, which by definition is inexplicable. Second, at the sub-microscopic level, particles behave so strangely, making physicists scratch their heads and speak of "quantum weirdness." The behaviors can be observed, measured, described mathematically and put to daily use in practical applications such as mobile phones, computers and other electronic devices. What is "weird" is that we can't explain what's going on using everyday common sense. For instance, sub-atomic particles like photons and electrons can act either as little bullets — quanta — or as waves as in the ocean. Only when detectors measure for either characteristic — for one characteristic or the other — do the particles look like what was measured for (bullet or wave). It's as if the particle hadn't "made up its mind" what to be until the method of measurement was chosen (a popular depiction of this weirdness is: If a tree falls in the woods, it makes a sound only if there is someone nearby to listen). Particles also can leap from place to place without going through any intervening space and can even appear to be in two places at once. Finally, one of a pair of particles can instantly influence the nature of its mate even from miles away, seemingly at a speed much faster than light. Some scientists have decided not to try explaining the weirdness beyond the mathematics; they just get on with the practical applications. Others continue to think intensely about the underlying

causes. One explanation offered is that from our constricted and macroscopic three-dimensional view of matter, we don't realize that the whole of the universe is interconnected in some kind of unitary web, the true reality of which we see only a fraction. At the very beginning of the universe, all energy, space and time were in fact blended, like cream folded into pea soup. Perhaps this is the way the universe still works at its fundamental level.

The third phenomenon defying explanation is self-consciousness. By this I mean what makes it so that I can only see my own face by looking in the mirror; that I exist uniquely within a shell I call my body that has somehow been endowed with life, made from atoms cooked in the stars and returning to the stars. I can only take on faith that "others" have the same experience of selfness — in fact, on faith that "others" actually exist when absent from all my senses. The Eastern religions suggest an answer to this puzzle of selfness: Imagine each person is a large jar holding water from a great sea; each of us has the illusion that the water is singular, "ours" — but when the jar breaks, "our" water rejoins all other waters flowing into the great sea. We are thus part of a great web of existence, selfness being but an illusion. This explanation may suggest that something like a soul exists. (Would any other combination of egg and sperm have produced the same "me"?) Perhaps not the easy notion of one soul per person, but one Great Soul dividing itself into identical parts, interconnected, capable of instantaneous transmission across infinite space; in other words, a "quantum weirdness." As the

poet William Blake wrote, "To see a world in a grain of sand/
And a heaven in a wild flower/
Hold infinity in the palm of your hand/
And eternity in an hour."

Science may eventually solve these puzzles, though I doubt it, and surely not in my lifetime. Meanwhile, I take comfort in poetry, which because it combines inventive language, imagery and metaphor, is thus able to explore with delight and ease the unknowable. The poet John Keats defined the need for "negative capability": "when man is capable of being in uncertainties, mysteries, doubts without any irritable reaching after fact & reason." In poetry we realize that we don't have to understand or explain, but that we can still talk about eternal mysteries: smell them, taste them, touch them, breathe them in or spit them out.

Norbert Hirschhorn, a poet and retired physician, lives in London. He taught at the University of Minnesota and headed the Division of Family Health in the Minnesota Department of Health. His column appears occasionally on these pages. His e-mail address is bertzpoet@gmail.com. His new collection of poetry, *Mourning in the Presence of a Corpse*, has just been published; see www.bertzpoet.com.