

We Don't Know How Much We Don't Know
But We Go On
As If
It Surely Is Much Less . . . Than It Surely Is

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Poetry can have deep meaning. The above single brief stanza, consisting of 23 words, took me the following almost 1000 words to explain to myself . . . and I'm the guy who wrote it.

Among some major sources of folly that we humans are so well known for is the difficulty we encounter in being properly humble. And, in this discussion, I mean humble about our ignorance concerning every aspect of the world we live in. This includes all of science and all the fields of expertise that are built upon science. Medicine (the so-called western variety) comes to mind front and center. Medical Doctors (MD's) study long and hard for many years to qualify for holding their title and practicing medicine. In fact, the volume of what they study and, to some degree, learn is immense. Yet what we have learned in recent decades as a result of ever more powerful technology of observing and measuring everything—it seems—in our world, including Earth, life (e.g., our mind/bodies), outer space, and the physics and chemistry and, part and parcel of these, electromagnetics that pervade it all, is that we have barely scratched the surface of understanding any of this. What we have been seeing suggests that the extent of our ignorance is beyond our imagination—as it always has been. But our imaginations have developed tremendously, and still our degree of ignorance is unimaginable.

The trouble with not being humble about our degree of ignorance and, too often, actually being arrogant is that it is dangerous. Behaving as if we have a full understanding of whatever area of knowledge we have studied and are using when in fact we have far more unanswered and worse yet unasked questions than we do have solid answers, leads every day everywhere in just about every endeavor to mistakes with grave consequences. The extent of these mistakes in Medicine is a very delicate and guarded issue—understandably. But other areas of knowledge suffer similarly from extensive failures, and all of this tends to be swept under the rug out of human weakness to accept the truth about our limitations—the inability to simply be humble and be more concerned about truth than our image. I sometimes wonder if those MDs with more practiced arrogance have any idea of how off-putting their demeanor is for their patients who want to be trusting but find it quite difficult to overlook what I have heard referred to as arrogance, haughtiness, superiority, vanity, pomposity, pretentiousness, snobbishness . . . it's

interesting how many words our language has for this demeanor. This is a measure of how offensive it is.

I have chosen MDs here as my prime example because the general population has far more interaction with these knowledge-based experts than any of those in all the many fields of science and knowledge-based endeavors. Also, the failures of overconfident MDs are typically far more personal than those of, say, an astrophysicist or geologist or ichthyologist. There is a message here in that the focus of this discussion on knowledge-based human activity is on how much knowledge we do NOT have. If you want to be really impressed, read a little bit about our growing awareness of the level of our ignorance about the workings of our bodies—a system of systems all with levels of complexity and interaction that is truly, today anyway, unimaginable. I suspect the proper level of humbleness here would lead me to remove the qualifier “today anyway”. It is admittedly hard to face up to our limitations. But it is a worthy goal.

To take some of the heat off of MDs, I bring up Physicists—a group of people we have long considered to have more than their fair share of bright minds. How much thought do we proudly educated people give to the fact that the three prime driving forces in the universe, gravitational force, electric force, and magnetic force, are wholly unexplained phenomena. We can observe and measure the impact of these forces to great precision over huge ranges of magnitude, but we do not have even a clue as to the mechanisms responsible for these forces. We do not know why there is gravity, why positive and negative electric charges attract each other, and like-signed charges repel each other, or why magnetic forces of attraction and repulsion exist. It may not be too much of a stretch to say that we have not moved very far beyond the answers to stone age questions like a chemical explanation of what fire is and why rocks can be very hard.

Two revealing examples today of how stuck we are in trying to further our understanding of our world are subatomic physics and astrophysics, to consider both extremes of the range of sizes of matter and distances between things called subatomic particles in one case and galaxies in the other. In each of these fields of study, we have today what could be called mostly-silent warring factions—silent because they are too stubborn to talk with each other about their differences in belief. Each faction holds onto its own theory which contradicts the theory of the other. Opening their minds to enable practice of the scientific method with fidelity would require humbleness—an admission that they are not really as sure about their own theory as they claim to be.

It is exciting to think about how much smarter we would be if we could learn to be humble and admit that we do not know how much we do not know.