Democracy and Science

What, you might well ask, do democracy and science have to do with one another? In its generally accepted civilized form, democracy began in ancient Greece, around 700 B.C., and also around that time, so did the roots of scientific inquiry. But the commonality only begins there.

Democracy and science share the same values. Democracy thrives on the free exchange of ideas, as does scientific inquiry. Democracy cannot exist if information is kept secret, which is why a free press figures so prominently in our U.S. Constitution. The same requirement applies to science. Being able to observe and discover, document and share scientific findings is important to the expansion of scientific understanding.

Democracy, journalist Molly Ivins wrote, can be messy. Scientific inquiry can be messy and disorderly, and humbling. Scientific study exposes the researcher to a gantlet of criticism. Peer review can be brutal, and yet the scientific method requires, and even encourages this process. When Charles Darwin timidly put forth his heretical "theory" concerning natural selection, he was subjected to the scrutiny and questioning of not only his peers, but derision from all manner of nincompoop. His "theory" was put forth before DNA and an understanding of the transfer of genetic information were available to support Darwin. Notice I did not say "prove"; Darwin's theory remains open to challenge, even after over 150 years of being put forth. That's how science works. I'm betting on Darwin.

A ruling body that suppresses such collaborations, or prohibits scientific study altogether if it conflicts with the reigning ideology or doctrine can be inimical to a healthy culture. When scientific inquiry is suppressed, over time, entire empires can stagnate and become functionally archaic. In elementary school, we learn arithmetic, using the numbers zero through nine. Did you ever wonder why they are called "Arabic numerals"? There was a time when scientific and academic inquiry in the Islamic countries were second to none. Some scholars argue that the fragmentation of empire and an indifference toward science led to decline of this once marvelous font of knowledge. Fortunately the knowledge was saved. Much of that acquired learning migrated west to Europe and was eagerly seized upon by a handful of inquisitive individuals who eventually shared their knowledge with one another. From this emerged the scientific community that gave us names such as Copernicus and Newton. When we look up at the stars and planets and their moons, we learn of Jupiter, Saturn, Mercury, and other named bodies. Had things gone differently, these planets might very well have been named for Islamic legends instead of the gods of Greece and Rome.

Even the most rudimentary science books in grade school speak of Galileo and his conflict with the ruling religious leaders about where the earth is in relation to our nearest star (the sun). To this day science is in conflict with influential religious leaders over dogma concerning the age of the earth and the origins and evolution of life. Autocratic or totalitarian organizations or governments are rigid in their positions, and this is antithetical to scientific inquiry. Democracy encourages questioning. As astronomer Carl Sagan wrote, "One of the greatest commandments of science is, "Mistrust arguments from authority. Authorities must prove their contentions like everyone else. [Science's] independence, its occasional unwillingness to accept conventional wisdom, makes it dangerous to doctrines less self-critical, or with pretensions to certitude."

The problem is, skepticism does not sell well. People want concise, easy and simple answers. Science should arouse a soaring sense of wonder. In too few it does, perhaps because of a sparse popularization (one such rare example is astro-physicist Neil deGrasse Tyson). Rather, the popularity is devoted to best sellers in the pseudo-sciences. Examples of pseudo-sciences are: astrology, conversion therapy, faith-healing, homeopathy, parapsychology, and healing crystals. Some surveys suggest that 95 per cent of Americans are "scientifically illiterate" even though the U.S. has some of the best research universities in the world.

Those who are old enough will remember Sputnik. It was an artificial satellite about two feet in diameter, launched in 1957 and which orbited the earth for about three weeks, sending a radio signal to earth until its batteries ran out. The problem was, it was launched by our arch-enemy at the time, the Soviet Union, not the U.S., and it scared the heck out of just about everyone here. It prompted a massive injection of science study into the American educational bloodstream, resulting in a moon landing about ten years later, and it put the U.S. far ahead in the space race. Today, we have Starlink, an Internet constellation owned by Elon Musk's Space X Company, with 5,000 satellites providing Internet to 60 countries, and with as many as 12,000 more satellites planned.

Maybe our democracy, at least what's left of it, should stop praying for change and again inject another dose of science into the bloodstream of our country to inoculate us from mental lethargy. Otherwise, we may find ourselves in a situation that was portended by Carl Sagan back in 1996:

*I have a foreboding of an America in my children's or grandchildren's time—when the United States is a service and information economy; when nearly all the key manufacturing industries have slipped away to other countries; when awesome technological powers are in the hands of a very few, and no one representing the public interest can even grasp the issue; when the people have lost the ability to set their own agenda or knowledgeably question those in authority; when, clutching our crystals and nervously consulting our horoscopes, our critical faculties in decline, unable to distinguish what feels good and what's true, we slide, almost without noticing back into superstition and darkness.*

Richard Waterman

For more information about the importance of scientific study in a free society, I would suggest reading Carl Sagan's, *The Demon-Haunted World: Science as a Candle in the Dark*.