Thad Box

Can You Believe That?

John Box was a God-fearing man. Alcohol and playing cards were not allowed in his house. He prayed for God's help with everything he did. But his crops were seldom different from those of George Hasty, who never entered a church house door, drank a hot toddy to keep a cold away, and helped neighbors with their crops on Sunday. Both believed in "signs." Corn was planted, calves castrated, and life decisions made to signs of the Zodiac. Harvesting grain, curing hams, and catching big catfish were related to the phase of the moon.

My grandfathers' lives depended on how they interacted with the world they knew. But what they knew consisted primarily of personal experience and what was passed on by others in their culture. Too much or too little rain, rain at the wrong time, or a hailstorm ruined their crop. A late freeze killed newly shorn goats, and the garden had to be replanted.

Sometimes good rains produced a bumper crop, but it also brought insects or other pests that destroyed a promising harvest. A calf born late in the season or pigs castrated at the wrong time died from screw worm infestations. Mother Nature was not kind to those who lived off the land in their Texas hills.

There was no scientific journal or weather forecast to warn them of coming disaster. They depended on hard work, experience, luck, and faith to get them through one natural event after another. Their personal experience was enhanced from two standard sources: the Holy Bible and the *Farmer's Almanac.* These were supplemented by stories and sayings handed down orally from generation to generation. The things not understood by men resided in the province of God.

For major things, such as surgery, both granddads checked the signs and the phase of the moon. In early spring, before screw worm flies were active, both would castrate calves and lambs only in the dark of the moon when signs of the Zodiac were below the loin. The major difference was Granddaddy Box prayed before the event and Granddaddy Hasty just sharpened his knife.

It was believed, both by the general population and by folks like my grandfathers, that following the signs gave better results. They had no evidence that was the case, but most everyone they knew thought following signs was helpful. They acted from belief, not science. Results were a matter of fate, not faith.

Today we do not have to be guided by what people around us believe to be true. We have a vast and rapidly increasing body of scientific knowledge stored, documented, and available at our fingertips. A few clicks of a mouse can bring thousands of pages of commentary and analysis on most any subject. The majority of Americans are literate. Most have had a least one science class in the minimum education requirement of their state. Many have college degrees.

Yet many Americans do not make use of science available to them. They still operate on what people of influence say. Marketing firms and policy makers poll people to find out what they believe. And the results of what people believe are passed on as if their value was equal to that supported by fact. Following such polls treats science about like my grandfathers did.

That makes no survival sense. Ignoring facts is not in our genes. And ignoring truth does not lead to sustainability. Operating on faith was part of our ancestors' culture. Their belief was based on their fathers' teachings, not on evidence or science.

An alarming number of people today still base their lives on what other people believe instead of evidence. Some people in positions of power, such as elected representatives and some aspiring presidential candidates, say they do not believe such scientifically settled processes as evolution or climate change. Apparently they think they can safely make such statements because polls show that only about half of Americans believe organisms evolve, or that our changing climate is related to human activities.

As long as a significant number of people allow their belief to trump fact, snake oil salesmen will capitalize on public ignorance, hoping anti-science or anti-authority rhetoric will attract disgruntled people to their product. If we are to survive as a free country in the global economy, it is essential we educate people of all ages who, like my grandparents, operate primarily on faith.

My ecologist friend Fred Wagner has spent decades successfully applying science in MX missile siting, climate change, wild horse management, 1080 poison, and other issues where belief clashed with science. He suggests one reason people act on faith rather than science is caused by the way we teach science: "Mostly, we make kids memorize the stuff of science: energy, chemical reactions, cells and genes. But we don't have them understand the fact that science influences every aspect of their lives, and have them learn how scientists think: opinions based only on evidence…"

The fault lies not with public school teachers. It resides in people who understand science but remain silent. It exists in a cultural system that gives equal weight to opinions based on faith, on evidence, or on nothing at all. To be "fair and balanced" schools are often required to give equal time to folk tales, holy books, ideological creeds, novels, and "facts" passed off as true regardless of the evidence. We land-care professionals—soil conservationists, foresters, wildlife biologists, range managers, watershed managers—are scientists whose most important role may be in teaching science to their friends and neighbors.

Many scientists shy away from "science versus faith" discussions for fear of being branded elite or anti-religion. Others are uncomfortable criticizing anything in a field other than their own brand of science. Science comes in many forms along a continuum from exact science such as physics, supported by experiments, to "soft" sciences such as sociology or economics supported by data analysis.

We land-care professionals, like most "applied" scientists, may use physics, ecology, sociology, and economics in understanding and managing change on a single watershed. We want our science to stack up with the best, to be published in prestigious peer-reviewed journals, and to be a contribution to important scientific knowledge. But we exist to have it used to solve societal problems.

Our applied mission does not permit our science to be less good than the exact sciences. The nature of our work often means that our science is implemented by others. Good science will not solve problems if it is applied by someone who does not understand the difference between science and faith. This means our major activity may be teaching almost half the people we deal with what science is and how it can work for them.

Our professions deal in both art and science of managing change. Art does not mean being "fair and balanced" is accepting the signs of the Zodiac as equal to a controlled experiment. It does not mean rejecting a proven fact when it conflicts with cultural or religious belief. The art is melding the goals of a culture, the experience of successful practitioners, and sound science into an acceptable practice that ensures a sustainable system.

Meanwhile, millions of people on the Horn of Africa are starving. People in other areas of the world go hungry. As the climate changes and population grows, we will face increasing problems of human carrying capacity. Fortunately we do not have to face these problems with the tools my grandfathers used. We have science that will help us in developing policies. But we live in a scary world where about half our people do not accept even well-documented areas of science such as evolution and climate change. Our biggest job may be in teaching science to our fellow citizens.

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