Introduction

A scientist's approach to the study of physical nature uses models, analogies, and philosophical perspectives that are embedded in established culture. The culture cannot be pre-formed to suit science but science can be made a bigger, more significant part of culture, one that seeks truth.

In ancient times, through observation of the physical world, its dynamic eventually led to a distinct separation of science and philosophy. Now, we observe not the externalism seen by 20th century science historians, but world-wide externalities.

Only when beginning to witness the coarse impact humans imposed on our planet, have we been troubled with the purity of science not just in pursuing truth but also in addressing the ravages we have imposed on planet Earth. There are now ample signs that science, especially in endeavors to save our planet, could and should be different.

The inordinate human imprint on Earth and its threatened demise is so evident that we have named this period the Anthropocene age. In fact, the human planet-altering influence tends to mock us each day with commercial messaging that reflects agendas alien to human nurture. Our actions have helped to shape an intemperate planet, a planet which for ten thousand years has had climate stability.

Self-serving, planet-harming, humans are using and manipulating science to achieve personal goals. Riddling our lives daily are transactional exchanges from rude and reckless politics in the pursuit of election or re-election, incessant solicitations in the pursuit of profit, and ads for the sale of personal-comfort products.

The daily transactional din and its affronts to science suggest the ironic twist of a simple human scientific experiment in 1964 on a hill in New Jersey. That experiment revealed no less than the cosmic echo of the universe, not common pigeon droppings, not New York City human radio noise, not manmade defects in the radio antenna, and not the after-effects of a nuclear bomb test over the Pacific.

Robert W. Wilson and Arno A. Penzias had to discount various human activities, one frightfully destructive, one a city's noise, and one a creature of nature to make a colossal human discovery. Their efforts led to the Nobel Prize in Physic in 1978.

It demonstrates that scientists must ignore, reject, or discount the influence and interference of human activities while conducting an independent pursuit of discovery. At different levels, we already know the need for the scientific method in all endeavors, especially science. Not often realized is the measure of control the business community has over politics, media, production, and even consumption. It extends to the use and manipulation of science.

Science and scientists can help direct the formation of a more effectual science that tends to seek truth rather than agenda.

The Character of Scientists and the Terrain

Pure Science is best practiced by those able to divorce themselves from the dominant cultural forces who inhabit the institutional space and roil the fauna and flora of our planet. In democratic countries, corporate actions are at the root of interference in science. Their commercial influence has an omniscient reach infiltrating scientific thinking, and penetrating education, religion, government, the economy, and even family. In dictatorships, the enterprises guiding scientific pursuits are structured at the whims and command of tyrants. Thus, the sustained efforts of managing science differ due to the nature of that control.

Powell Manifesto sought a cultural coup

In the early 1970s, alarmed by a broad spectrum of American society attacking the corporate system, Lewis Powell, prior to accepting President Nixon's nomination to the Supreme Court, called on corporate moguls to stage a cultural coup against forces he called "Communists, New Leftists and other revolutionaries[1]."

The influence of the manifesto was quickly felt sweeping into the Reagan administration which instituted a Science for Profit Model[2], championed by a new think tank, The Heritage Foundation. Foundation economists still falsely claim that supply-side economics and corporate tax cuts encourage job creation and business expansion. Corporations pour any largess into buying company stock to buoy stock prices.

With neoliberalism now as their science – the Chicago School, no less, corporations justified cartels and monopolies in all industries, having a huge impact on institutions of control, including government, the economy, labor, and the media. Ultimately, they have had a great deal of sway over global science that helped to justify privatization and trickle-down economics with little to back it up.

Such a philosophy has masqueraded as science in many forums, well-financed by the increased booty gained through tax-cut legislation and favorable treatment of business interests during the Reagan administration and thereafter, including a blight on the environment.

Corporate Science for Profit Model

The National Institute of Health (NIH) does recognize the negative social costs of the production of goods and services in air and water, as well as consumption in the form of noise, light and passive smoke pollution. In terms of publishing the threat, its National Library of Medicine through PubMed Central (PMC) issued a challenge for science to establish more "prevention science" to influence organizational practices in reducing these costs. Its publication was entitled, "Corporate Externalities: A Challenge to the Further Success of Prevention Science[3]."

The problem is publications do little to effect change. And with climate change, threats only seem to increase. A new one involves the concept of natural capital and nature as infrastructure.[4] In Florida, for example, rising seas, savage hurricanes and urban sprawl combine to flood and erode the land and structural foundations. This cost burdens homeowners and government well beyond insurance, restoration, and development projects.

Certainly, actual prevention science should be at work in planning and preventing such costs. For a century, industries have failed to pay for social costs, burdening government, and the people at all levels.

For generations, according to a University of Bath report[5], eight industries -- alcohol, chemicals and manufacturing, extractive, food and drink, fossil fuels, gambling, pharmaceuticals and medical technologies, and tobacco -- have used science to maximize profits at the expense of the lives of millions. Alcohol and gambling industries have deflected blame from addiction and harmful effects to “problem” drinkers and gamblers. Massive profits were used by tobacco, fossil fuel companies and pharmaceuticals to publish false studies and discredit opposing scientists. In all such efforts, richly-funded “think tanks,” legions of lobbyists, and so-called “experts” were paid to push their wares while hiding unfavorable evidence.

Scientific publications like Scientific American center their reporting, more and more, on the need to harness industries that affect science and our health, now and for the future. One of the latest articles cautioned government to regulate drug misuse in food animals, something that contributes to antimicrobial resistance.[6]

When not deterred by GOP budget cuts or hampered by the corporate for-profit mania, the NIH does good research for public health. Even before the pandemic, in 2013, it created the Antibacterial Resistance Leadership Group (ARLG), now with 100 leading experts worldwide. Since the pandemic, it illustrates the need for a One Health approach to antimicrobial resistance (AMR), this with global participation. Still, a larger footprint for basic public health science is sorely needed in the United States.

Cultural influences tend to abound as the forces that dominate our culture like monolithic corporations pursuing their agendas globally, withholding financial resources for independent scientific research and defining common good to fit their profit scenario. Science must recognize and deal with this while it develops its own rules and infrastructure.

Orthodox approaches and biases

Scientists can form the science they want, but science itself must not be driven by bias. There is still gender bias and racial bias, and even an “easier-road bias.”

Slighting female scientists is so rampant that even the 2022 Nobel Prize award ceremony for quantum entanglement work by 3 male physicists failed to credit female

scientist Chien-Shiung Wu for discovering quantum entanglement in 1949. Even then she got little credit for such a remarkable achievement 73 years before.

Regarding the “easier-road-bias,” graduating scientists are often advised on what theories to follow for funding and for acceptance.

Years ago, one cosmologist Stephon Alexander received life-changing advice: “to discover real physics, he needed to stop memorizing and start taking risks.” In *Fear of a Black Universe,* Alexander shows that great physics requires us to think outside the mainstream -- to improvise and rely on intuition. His approach in cosmology featured three theoretical principles: invariance, the quantum principle, and the principle of emergence.

Alexander uses them to explore some of physics' greatest mysteries, from what happened before the Big Bang and the universe’s role in consciousness. Furthermore, exclusions as a black physicist drew him to diversified scientific communities. His work has proven that diversity in science can promote new discoveries and different approaches.

Big Bounce rather than a Big Bang?

Two universities, America’s Dartmouth, where Alexander serves as a Cosmology professor, and China’s Fudan stray from the Big Bang theory to the Big Bounce concept, called Fermi-Bounce Cosmology,[7] which avoids the usual Big Bang singularity. This represents a risky departure from standard cosmological thinking, something marking deviations from a historical approach. Following the pioneering direction of Hawking and Penrose, his theory avoids the singularity and is ghost-free (having negative probabilities)[8].

The Scientific Approach

Scientists must not only rebuff cultural interference with science but should refine their own methodology to suit the problem and the study approach. One size, one approach, does not suit all. The common features of discovery are systematic observation and experimentation, inductive and deductive reasoning, and the formation and testing of hypotheses and theories.

A canonical form of scientific method or methods should be used, suitable for reaching the designated solution. We often think of the conventional approach, rather than the out-of-the-box approach. Being the usual starting point, the standard model does not have all the answers.

Even a standard clock speed does not fit into many processes we study. In some cases, inductive reasoning for cosmology does not suit study needs.

The axiomatic method

An axiom is a statement or proposition which is regarded as being established, accepted or self-evident. It helps mathematicians seek out patterns and thus formulas for new conjectures from appropriately chosen axioms.

For scientists, it must be emphasized that axioms are about process, not answers, but are usually a starting point for reasoning. Applied math tends to inspire new math discoveries and leads to new and refined disciplines. Accepted science, however, must always be open to change. New theories must never be discarded because of outside pressures, whether schools of thought, finances, schedule, or agenda.

In 1900, David Hilbert's sixth problem declared the axiomatic method should exist outside of existing mathematical disciplines, physics and beyond[9]. Albert Einstein did just that in his visualization of gravity being imbedded in a geometrical picture of space and time. His thought experiment helped to visualize the global structure of the universe and introduce geometry into its structure.

In fact, Einstein's natural physical world reveals God and truth in its harmony. For him, God is not personal, but doing what nature does[10]. Contrarily business interests in our world see nature as something to use for their own purposes, which sets science in seeking truth at cross-purposes with the corporate power structure.

The truth is that axioms are built on current knowledge, something causing us to cling to truths we deem fundamental to that knowledge. For fear of losing jobs or standing, observers of any phenomena beyond those truths tend to be ridiculed rather than studied like reports of UFOs performing seemingly impossible maneuvers witnessed and recorded by pilots in our most advanced aircraft.

Derided even more vociferously is the hypothesis of an advanced ice age civilization that taught hunter-gatherer people to build roads and monuments like Gobekli Tepe and Karahan Tepe discovered in Turkey. Radio-carbon dating does trace the former to near 10,000 B.C. and the latter to about 11,000 B.C.

Calling *Ancient Apocalypse*[11] the "most dangerous show on Netflix," *The Guardian* labels Graham Hancock a charlatan. Hancock does muddy the waters of credibility due to his meager credentials and his strident assertions. His claims about the two monuments and the Bimini Road in the Bahamas, for example, are not considered credible. For established archeologists, the "starting point" for the most advanced early civilization is Sumerian, back to 4500 B.C.

For Hancock, a few supporting facts are established but to counteract what seems like a confirmation bias that oozes from his dialogue regarding forays into multiple historic sites, archeologists should determine if full pictures and more key points from at least some sites can stand, applying the scientific method.

Cosmological Models

For cosmology, two central theories tend to capture most of fundamental thinking: Quantum field theory, included in the math framework for the Standard Model, and General relativity describing space-time and gravity at the macroscopic level. New discoveries and technologies punched a few holes in these assumptions.

Thus, before more intense black hole studies and cosmological observations using gravitational waves, induction usually inferred the same local space-time regularity to the unobservable space-time regions. These observational refinements refocused studies that followed.

New Directions for Dark Matter and Dark Energy Solutions?

For decades, scientists have searched for answers to the force responsible for expansion of the universe and the force/mass behind the additional gravity observed in the galaxies of the universe. The mindset was a new particle/matter for each, something in the realm of a new product that our commercial world introduces periodically to sell improved products.

For corporations the onus is *new* and perhaps science tended to occupy that same mental space. No experiment could find these proposed phantom particles, but grants seemed to be committed only to their various theoretical jaunts, high mass (WIMPS), then low mass for dark matter. Novel ideas did not seem to find funding. Looking beyond a new particle[12] seemed risky.

Mindsets are not just established by the dominant cultural force; they are set by the thinking born of current knowledge. That seems to explain the ridicule and levity ascribed to observations of hovering UFOs that defy the rules of our own scientific era. The Kardashev scale defines our own scientific era as a Type 0 civilization on an extended scale of Type V, which the scale describes as having multiverse energy access and knowledge.

The new proposals regarding the comparative increased mass-composition of supermassive black holes over roughly nine billion years and the presence of vacuum energy[13] may or may not violate the energy-momentum relation of our era but little is understood of that type of new physics. Still, that “non-new-particle” explanation of dark energy seems to have some viability, and, perhaps, some relationship for dark matter. If they continue to offer promise, the pursuit of such theories should continue.

Stochastic modeling for uncertainty as knowledge expands

Science (e.g., weather forecasting) and industry (e.g., irrigation) both model probabilities with stochastic modeling, giving sets of outcomes based on varying conditions and scenarios. Biological studies have lattice gas models that will get more refined, simulating intercellular fluid flows in types of cellular automatons. Time dilation, space travel, general relativity – all give variability and difference to context and motion

relative to scientific truths. It illustrates the change scientists must always look for as knowledge expands and horizons open.

Axioms for molecular motors[14], a class of proteins driving intracellular trafficking by converting chemical energy to mechanical work involve a different time frame and motion. Smart nanomachines are developed to follow light-driven rotational motion in detail. This involves scientists matching modelling to biological timing.

In the early 1900s, General relativity (GR**)** challenged a long-standing, accepted theory of gravity by Isaac Newton. GR was not immediately accepted, but science and commerce did not offer overwhelming resistance to Einstein's studies.

The GPS satellite orbits about 20,000 kilometers above the Earth's surface. At this distance from the center of mass of the Earth the satellite's clock experiences a GR-recognized time dilation of .000015 seconds[15] which keeps accuracy over time for dependent Earth vehicles. Such knowledge will keep space probes on target as well.

Great Number of influences to account for

Money, point of view, culture, politics, the knowledge base, and motivation influence science. They are all factors that can affect scientific independence, validity, and progress.

Gender and culture influence what we choose to study, our perspective regarding how we approach the subjects of our study and our strategies. In studying primate behavior, male primatologists are more apt to focus on competition of males for female access and expect female passivity. Female primatologists like Jane Goodall thought females might play more active roles. Cultural differences find Japanese primatologist seeing rank as a factor in alpha male dominance not just strength. In relationships of humans and nature, Native American see themselves as part of nature and European-Americans as apart from nature.

For most scientists, there is a powerful psychological motivation of curiosity and a need for intellectual stimulation. However, other motives and practical concerns affect what they study and their approach, whether it is forming intellectual alliances, seeking respect and/or rewards, power, grant money or honors. In the US, money, power, and agenda often guide what is studied, especially if you did research for a pharmaceutical company, for example. In the Soviet Union, Russian biology centered on the correct ideology, Marxist-based in the research programs of Lysenko.

Another area of concern for a difference in science centers on the government secrecy regarding UFO sightings and observation, many recently by pilots on advanced aircraft and military on aircraft carriers. UFOs were able to reach extreme velocities, had no visible means of lift or propulsion and performed stunning maneuvers at g-forces beyond human tolerance. Often such observations are covered up with silence by airline and military pilots, for fear of retribution, with media jokes following any reports.

Conclusion

Obviously, whether a democracy or a dictatorship, the impetus of science and discovery helps drive a country's cultural development. While scientists are motivated by a thirst for discovery and a curiosity about "how things work," development leaders are mostly driven by results. The mistress for one was curiosity and nature; for the other, it was progress and the control it requires. The latter usually had the means to achieve development, too often, a self-centered financial need as well.

Many scientists fled countries due to this conflict of interest. The genius of an Albert Einstein fled Germany rather than succumb to the oppression of Nazi leadership. Still, scientific discovery was tied to war efforts technology before and after development: radar, the atomic bomb, jet engines, blood transfusions, poison gas, gun powder, to name a few.

In asking how science can be different, we are, in effect, asking if human evolution and development can be different. Both the answer and the solution are in science which has the means to turn science and discovery toward a more independent course where human mind and spirit can be guided to a more healthful and human-centered science.

Does such a course sound utopian when it could help rid us of imaginary grisly dystopian-like schemes like QAnon which accuse political opponents of sexually using children – and worse? Such a fantasy is still believed by millions.

Overall, a more definitive study of how we continue to evolve and how we can stamp out any dystopian course and replace it with a healthy nurture of ourselves and our environment is required.

The social side of science can develop ways to address problems that contribute to aberrant behavior and irrational thinking with prevention or treatment programs. With adherence to science and reason, It can improve health care systems and its access, improve longevity, health, and the quality of life. Pandemic health and death outcomes cry out for change, as do statistics showing a steep decline in life expectancy from 2019 to 2021, from 78.8 years to 76.1 years.

On the physical side, neuroscience can study the brain and its impact on behavior and cognitive functions, using current technologies like fMRIs, MRIs, and PET scans to discover congenital disorders, and use science to create new technologies.

Scientists, perhaps, neuroscientists and psychologists, need to consider how for-profit cable news and social media so effectively conditions the thinking of millions of Americans to the point of supporting a misanthropic con-man even after his commission of a violent seditious act. In too many cases, people of intelligence are otherwise in a cocoon of ignorance and conspiracy.

And why do so many revere past ideas, social and scientific? Why are we so unwilling to share riches and privilege? Why so willing to abandon reason for tribalism? And

generally, humans seem to have an inability to see actions that imperil our distant future. These problems might seem to have conventional explanations, but more can be done to research and find solutions that could remove fogs of human irrationality that infect and thus imperil us? This vector of reason can penetrate the dust clouds of agenda with resources of science and scientific inquiry.

Should scientists embrace neurodiversity,[16] considering the savant syndrome connected with disorders like autism or the three-dimensional thinking abilities of dyslexia disorders.

Do psychopathologies have evolutionary advantages? For example, was the ADHD syndrome passed on with adaptive traits from hunters and gatherers? These may be approaches that are ridiculed by scientific orthodoxy, but could help to further scientific progress.

Much human interference in different forms has held back or altered scientific progress. Certainly, the combative proclivities of destructive war have changed the course of scientific study. Furthermore, the tendency to underfund basic science has given preference, for example, to the macro world of commercial or even military scientific endeavors.

Though advancing knowledge of the hidden quantum world is considered basic science in corporate thinking, the funding provided has brought lasers, electron microscopes, magnetic resonance imaging (MRI) devices and computing components.

Quantum physics is still an area of abstract inquiry with little understanding. It provides an unknown promise of discovery that could open doors to a new century of thinking and achievement**.** Even Einstein mused: "I have thought a hundred times as much about quantum problem as I have about general relativity theory.[17]**"**

His quote: "… physics should represent a reality in time and space, free from spooky action at a distance" perhaps, only helps to entice research about whether molecules (then, macro-objects) can be entangled, for example[18].

Many think it could provide answers to the observed mysterious performance of UFOs. Further pursuance of molecular entanglement could open the door to the possibilities for an, in effect, superluminal travel and greatly enhance quantum computing capabilities. It would also mean a revolution in computing felt in all scientific endeavors.

Ultimately, the science we need is brought about using scientific method to identify and eliminate human and social qualities, whatever evolutionary form they take, which tend to strip science of purity. It could go a long way toward eliminating human frictions – social, personal, and commercial -- that reduce the effectiveness and the truth of science.

In a perfect world, such science can be part of a new culture, replacing all agendas and biases, but, realistically, let's at least strive for most.