

Philosophy over Science, Cosmism over Spiritualism

Henry H. Lindner (rev. March 29, 2015)

Abstract

Philosophy is being suppressed by the Judeo-Christian-Islamic ideational complex, by the Science it produced, and by the authoritarianism it supports. Instead of philosophy we have Science, religion, and authoritarian government. This is why nothing makes sense and society is being progressively dumbed-down. Science is inferior to philosophy; it is cognitively deficient. It limits knowledge to the mere description and prediction of sensations and measurements. Science is incapable of criticizing ideas and creating better theories about the nature and causes of things. Bishop Berkeley created Science in order to preserve religion and authority. His ideology, via Ernst Mach and Albert Einstein, produced Relativity and Quantum Theory. This modern physics merely models the observer's measurements. As all other disciplines try to ape modern physics, they become progressively impoverished. The cumulative result of a century of Science is that philosophical competence is disappearing from society; and this is having a devastating effect on all aspects of human life. We must regain our philosophical competence in order to build a shared understanding of the Cosmos and of ourselves so that we can live together in peace and prosperity on this planet. In this paper, the deleterious effects of Science on human intellectual competence are reviewed, and an outline of a philosophically-competent society is drawn.

Key words: absolute space, Cosmism, Idealism, mass-energy, mathematics, motion, philosophy, Relativity, religion, Science, spiritualism, subjectivism, time

“Yet this very philosophy it is that ought to be esteemed the great mother of the sciences. For all arts and all sciences, if torn from this root, though they may be polished and shaped and made fit for use, yet they will hardly grow...let no man look for much progress in the sciences—especially the practical part of them—unless natural philosophy be carried on and applied to particular sciences, and particular sciences be carried back again to natural philosophy.”¹

1. Introduction

Today, we are offered two paths to truth: Religion or Science. Those who are not religious believe that Science¹ is the only arbiter of truth and scientists the ultimate seekers of truth. They believe that the only meaningful judgment one can pass on any idea or statement is whether or not it is scientifically valid. Science does have its merits. It is disciplined—it gets the facts right and makes certain that the numbers add up. Yet we know that Science is lacking

¹ I capitalize “Science” and other specific ideologies. I do not capitalize “sciences” or “scientists” as those refer to branches of natural philosophy.

something. It is merely technical, it provides mathematical models, but does not explain things. It increases our knowledge of facts but not our understanding. Notice that scientists repeat statements like: "Science doesn't ask why, but only how". "Science only describes what is, it cannot say what should be". Indeed, Science offers no theory of the nature or causes of the most fundamental physical phenomena; and so it provides us no way to understand the evolution of complexity in this Cosmos. Science also does not help us decide how to live: it cannot help us to analyze or resolve the biggest problems we face--poverty, exploitation, violence, war, mental disorders, authoritarianism, etc.

It's hard to get a handle on Science because it is a mixed bag of ideas. It tries to wear the cloak of natural philosophy, but it doesn't fit. Some sciences (little "s") like biology stride from strength to strength because they are based on working theories of the causes of things. Copernicus philosophical theory of the motion of the Earth put astronomy and astrophysics on the right path. Darwin's philosophical theory of evolution replaced the merely descriptive creationist biology and put biology on a productive path. The combination of Darwin's theory with Mendel's gene theory led us to the blueprint of life--DNA. Molecular biology--the study of DNA and its changes through time and between species--has reinforced the theory of evolution by natural selection. Of course we don't know everything about biological evolution, but at least biology is in the right ballpark.

On the other hand, on the fringes of our knowledge about the physical and human world, religious and political ideas dominate. There the sciences are distorted by false ideas so much that they can only describe what exists. They are not based upon working theories of the cause. Such theories would threaten religion and/or authority. The "meaning" questions, the big questions, are thus being left to religion, government and the plutocracy. Our ideas about the nature of the physical Cosmos are corrupted by Relativity and Quantum Mechanics. Our ideas about human nature, behavior and society are corrupted by spiritualism--the religious belief that we are eternal spirits in material bodies. Spiritualism has produced false and inadequate assumptions in anthropology, medicine, psychology, sociology, economics and political science. The journals of these sciences are full of technobabble articles in which things are counted and mathematical correlations discovered, but there is no serious discussion of underlying assumptions. Journals, by their nature, will not print new theories of the causes of the phenomena. The human sciences try to ape Relativity and Quantum Mechanics. They attempt to pose as "hard sciences" Psychiatry, for instance, tries to reduce complexity of human thought and behavior to descriptive diagnoses and drugs, all based upon false theories of genetic and biochemical causation. Psychiatry has no theory of the actual nature of the human child or of how children should be raised or how children should learn. It is reduced to treating symptoms and deviations from social norms with drugs.

To understand Science and its relationship to philosophy, we must embark on a brief tour of philosophy and history--and in particular of the eternal war between religion and philosophy. I will focus on the evolution of ideas in theoretical physics as physics is the science of the ultimate constituents of matter and therefore is foundation. The methods of modern physics are held to be ideal--the way in which every science should be conducted.

2. A Brief History of Philosophy and of Science

Philosophy originated in Ionia in the 6th century B.C when Thales of Miletus theorized that all physical entities and processes were the result of changes in and of water. Prior to this, mankind had explained the Cosmos on the basis of simple anthropocentric myths. Thales' historic conjecture replaced traditional mythological Cosmologies with naturalistic theory. It began a program of open-ended, non-dogmatic theorizing about the nature of the Cosmos and of the causes of things. Thales' own colleagues posited other substances as fundamental to the Cosmos. Later, on the Greek mainland, Leucippus and Democritus theorized that the Cosmos and all its manifestations were the result of invisible atoms flying through a void. Of course, these early theorists had little of the knowledge we have today. Their theories were thus inadequate and full of difficulties.

Socrates' early interest in Cosmic theory gave way to a disappointed skepticism. The problems he encountered in such theories made him doubt the efficacy of all materialistic explanations and even of his own senses. He decided to "take recourse to the world of mind and seek there the truth of existence."² Aristippus, a follower of Socrates, developed Socrates' skepticism. His Cyrenaic school rejected Cosmic theory, arguing that humans could only know their own sensations and experiences and could not have any knowledge of the external world. Protagoras, the earliest known sophist, argued further that "Man is the criterion of all objects, of those which exist that they exist, and of those that exist not that they exist not." Of him it was said "he posits only what appears to each individual, and thus he introduces relativity."³

Aristotle opposed the skepticism, subjectivism, and relativism of these thinkers with many arguments. He said,

"For sensation is surely not the sensation of itself, but there is something beyond the sensation, which must be prior to the sensation; for that which moves is prior in nature to that which is moved,..."⁴

He demonstrated that subjectivism produces contradiction since it cannot account for illusions and because subjects must always disagree on what they experience and measure. In another passage, he states,

"But if not all things are relative, but some are self-existent, not everything that appears will be true; for that which appears is apparent to someone; so that he who says all things that appear are true, makes all things relative."⁵

Aristotle argued that gravity was proof that all motion was not merely relative, as objects gravitated Earthward regardless of the position of the observer or the choice of frame;⁶ an argument against Relativity that is no less cogent today. Later, Isaac Newton also rejected subjectivism in physics:

"But because the parts of space cannot be seen, or distinguished from one another by our senses, therefore in their stead we use sensible measures of them...And so, instead of absolute spaces and motions, we use relative ones; and that without any inconvenience in common affairs; but in philosophical disquisitions, we ought to abstract from our senses and consider things themselves, distinct from what are only sensible measures of them."⁷

Aristotelian philosophy and Christianity were married in the Dark Ages, but with the discovery of Aristotle's works of natural philosophy, medieval churchmen perceived a threat to their beliefs and the marriage became strained. Thomas Aquinas attempted to reconcile the partners, but could not prevent the inevitable divorce. In 1277, just three years after Thomas's death, the Bishop of Paris issued a condemnation of many Aristotelian-Thomist theses. This divorce was accompanied by a religious backlash against Aristotle and all natural philosophy. However, it was due to this early marriage between the Western religion and Aristotelean philosophy that the West learned to think rationally and was able to develop philosophically—to a degree.

William of Ockham (b. 1280) tried to completely free theology from Cosmic philosophy. To do so, he limited philosophy to the mere description of experience. Against physical causation and evolution, he stressed the omnipotence of God and the radical dependence of all created things upon God for both their existence and interaction. For Ockham, there was a created world, but there were no God-independent physical entities or processes. Therefore, to study nature was to study God's free acts. Ockham therefore insisted that man should only describe his actual experiences using the fewest propositions necessary; he should only note the regular sequences of observed events, not hypothesize about any God-independent natural causes or mechanisms. For Ockham, experience-based propositions, not Cosmic entities and processes, were the proper objects of knowledge.⁸ The purpose of Ockham's Razor was clear—to eliminate all complex, hypothetical theories of physical entities and causation in favor of the *simplest* explanation of the cause of all experienced phenomena—God. Yes—it is the simplest explanation for everything!

René Descartes went one step further towards spiritual subjectivism. He sought to confine knowledge to what was given to us by God and about which we could be certain—the “clear and distinct ideas presented to the senses”. His *Cogito*, “I think, therefore I am”, tacitly assumed idealism—the primacy of consciousness—that consciousness existed prior to, and independent of the human body and the physical Cosmos. The apparent Cosmos could, he supposed, be a hallucination produced in his mind by some demon.⁹ Descartes was persuaded to believe in the existence of the physical Cosmos because it appeared to exist and he believed that God would not so deceive him if it were not so. However, he believed in “external” things only insofar as they were manifestations of geometrical and mathematical forms. In order to avoid error, Descartes asserted that we must shun all theorizing about physical entities and causes and confine ourselves to mathematical descriptions. He implied that theorizing about the final (Cosmic) causes of things was a sin.¹⁰ He advised that we pursue the only certain, indubitable knowledge available—the mathematical description of our sensations—universal mathematics. To this purpose, Descartes invented the familiar three-axis coordinate system that represents space as a three-dimensional geometric matrix.

John Locke was also more certain of spiritual than of physical existence.¹¹ He claimed that we could only know the ideas that were presented to us by our senses and could never pass beyond them to any knowledge of the nature or hidden causes of things.¹² Descartes and Locke were thus dualists, believing in the existence of two substances—spiritual and physical. Since they knew very little about physical reality or the human mind, they could not produce a good theory of how these two kinds of reality coexisted and interacted. They could not explain what

matter was or how it interacted with our spirits. They therefore defaulted to the simpler, immediately accessible, conscious/spiritual perspective (idealism-subjectivism) and tried to discourage all theorizing about the unseen physical causes of phenomena.

Bishop Berkeley (circa 1710) completed the move toward idealism and subjectivism and away from Cosmic philosophy. In his post-Copernican, post-Newtonian world, he feared that as more and more phenomena were explained by natural causes acting in a physical Cosmos, faith in the God of Christianity would gradually give way to materialistic natural philosophy (and this was before Darwin). He saw *all* philosophical explanation as a slippery slope leading to atheism, so he tried to replace Cosmic philosophy with a purely descriptive approach to knowledge that had no need for the Cosmos or for physical causation. He rejected Descartes and Locke's dualism because it admitted the existence of a physical Cosmos and thus left the door open to natural philosophy. He argued instead that since we humans know only our own conscious experiences and have no *direct* knowledge of any material Cosmos, we must not assume that it exists.¹³ He argued that we should accept the simpler theory that all reality is purely spiritual,¹⁴ that our experiences are not caused by any physical world but are a "virtual" reality provided directly to our (disembodied) minds by God.¹⁵ Berkeley argued, for instance, that people would not worship the Sun once they realized that it was not an independently existing physical entity, but merely a God-given apparition.¹⁶ Berkeley asserted that the laws of optics were God's means of creating the visual illusion of distance in our hallucinatory consciousness, an illusion properly coordinated with illusions of our own motion and action within this virtual space.¹⁷ (An analogue of Berkeley's theory of consciousness was recently presented in the film, *The Matrix*.¹⁸ In it, humans believe that they are experiencing normal life in the physical world when in reality their bodies are lying in vats, their brains are hardwired to a master computer, and their minds are interacting with each others' within a computer-generated virtual reality. Berkeley's Matrix likewise consisted of individual human spirits interacting with each other within a God-generated spiritual reality.)

Berkeley publicly accused Newton of advocating an atheistic theory, because Newton's absolute space, absolute time, and physical matter were supposed to exist "without the mind" and thus without God.¹⁹ Echoing Ockham, Berkeley argued that since God alone makes one experience follow another, philosophy should merely note these regularities and not pretend to explain things by corporeal causes.²⁰ He argued that gravity was not an essential quality inherent in bodies but was simply a motion entirely dependent on the will of the God—who causes some bodies to tend towards each other, others to stay at fixed distances, and others to fly asunder as He sees convenient.²¹ Against Newton, he argued that we should treat motion not as absolute, Cosmic, or real but as merely *relative* to ourselves and to any other objects in our sensoria,²² and treat time as the mere succession of events in our consciousness.²³

David Hume, following Berkeley in this "Enlightenment", denied that we could know any Cosmic causes, saying that our belief that an effect will follow from a cause is merely a "custom" we have acquired through repetitive experience.²⁴ He denied that we could ever know the cause of such a "custom" as gravity.²⁵ Like Berkeley, he reduced the Cosmos and its causes to correlations among experiences. Immanuel Kant agreed that we could only know the *phenomena* presented to our senses and could never pass beyond them to any knowledge of the *noumena*—things in themselves. Kant claimed that the mind imposed its own order on

phenomena using *a priori* categories like space, time, and causality. These categories were ideals that were not inductively gained from experience but were innate mental structures.

Ernst Mach admitted his debt to Berkeley and Hume.²⁶ He stated, “The world consists only of our sensations”.²⁷ He asserted that the aim of Science was to describe our sensations, and that the laws of Science merely stated general relationships among our sensations. Anything not directly perceived did not exist; inapparent entities posited to cause sensations were mere “metaphysical speculations”—nothing more than convenient fictions. Therefore Mach, as late as the early 20th century, denied the existence of atoms because they could not be seen, even though they were a necessary postulate in any attempt to *explain* our experiences. Mach redefined physical theories as mere quantitative instruments—mathematical models for facilitating the mental reproduction and prediction of facts. Mach wrote extensively and greatly influenced the scientists and philosophers of the late 19th and early 20th centuries. His idealist ideology, under the names “sensationalism”, “phenomenalism” and “positivism”, was considered the modern and enlightened approach to Science at the turn of the last century. In 1883, Mach followed Berkeley in branding Newton’s theory of absolute space and motion as “devoid of content”, saying that we have knowledge only of *relative* spaces and motions.”²⁸ He called those who shared his view “relativists”.²⁹ The Science we have today is Berkeleyan-Machian, because of the work of Albert Einstein.

Albert Einstein had a lifelong interest in philosophy—he had read Kant as a boy; he had read Berkeley; and he admitted that Hume and Mach influenced his development.³⁰ So we can understand why he asserted:

“The only justification for our concepts and system of concepts is that they serve to represent the complex of experiences; beyond this they have no legitimacy.”³¹

Following Berkeley, Einstein eschewed Cosmic theory and natural philosophy in favor of descriptive Science, which he regarded as “methodical thinking directed toward finding regulative connections between our sensual experiences”³² Einstein shared Berkeley’s belief in God as “a superior mind that reveals itself in the world of experience.”³³ Like Descartes, Einstein was a mathematical idealist—believing that “nature is the realization of the simplest conceivable mathematical ideas.”³⁴ He sought, therefore, to grasp the mathematical ideas by which God created our experiences by discovering the fewest and simplest “laws” that could account for them. Following Berkeley, Einstein defined the “real external world” intersubjectively, as the sum total of all experienced events about which subjects can agree.³⁵ Following Berkeley and Mach, Einstein initially refused to believe that space itself had any physical qualities because it was not directly evident to our senses or instruments.

Einstein’s Relativity and the Quantum Theory were thus faithful implementations of Bishop Berkeley’s vision of Science. They merely described the observer’s experience with no reference to any physical Cosmos or causes—as if humans were experiencing a shared hallucination and wanted only to discover its rules. These models’ only reality was consciousness and its contents. They dealt with the observers’ “information”, not with the Cosmos. Their “laws of physics” were just mathematical correlations of the observers’ measurements; their “space” a number of the observers’ measuring rods; their “time” a number of ticks of the observers’

clocks; their “mass” a measured or calculated quantity, their “light” just a probability that a future quantized event will be observed. The foundations of Einstein’s model of reality, “mass-energy” and “space-time”, were nothing but quantities and geometries invented by the observer to model the mathematical order behind his measurements. Thus we are saddled today with a theoretical physics that does not and cannot theorize about the Cosmos or the causes of physical phenomena; a physics based upon a spiritualistic theory of the relationship of our minds to the Cosmos.

3. The Purpose of Science

Why did Christian men in the “Enlightenment” create this subjectivistic-descriptionistic Science? What is the use of this anthropocentric, anti-Cosmic ideology? We need only realize that the Enlightenment thinkers lived in a Christian Era, prior to Darwin and his theory of evolution. They believed in the existence of a spiritual reality apart from physical reality. They believed that a spirit-God existed prior to the Cosmos, created the Cosmos and controlled the Cosmos. This was a projection of their consciousness upon the Cosmos. They had no other way to explain their consciousness. They had no knowledge of biology, neurology or linguistics. There was an era of universal superstition where philosophy was brutally suppressed by the cooperation of Church and State. In Descartes' time, offering a naturalistic explanation for miracles could get one killed. Free-thinking women were killed as witches. These men were far more delusional than the Greek philosophers. They were theists and mystics. Having experienced the stifling dogmatism of the Aristotelian/Religious Schools, and having witnessed the crisis of faith caused by the Copernican and Newtonian theories, they invented a purely descriptive, atheoretical, mathematical Science as a way to pursue knowledge and yet avoid threatening their societies' or their own religious beliefs.

Contrary to propaganda, Science didn't abandon religion and mysticism; it preserved them. By eschewing causal theory, Science temporarily rescued the mystical, spiritualistic core of religion from the threat of philosophy. So the religious scientists are right: there is no conflict between Science and Religion. Science, containing no explanation of the causes of things, leaves it to the individual to believe in whatever causes he or she prefers--be they gods, demons, powers, alien-visitors, mathematical ideals, other universes, particles, etc. Having dispensed with the Cosmos and its causes, Science leaves reality wholly dependent on the conscious observer and his activity. It makes reality relative to consciousness. Since subjects will always disagree on what they perceive, subjectivistic Science produces contradictions (i.e. paradoxes); it thus further erodes philosophical cognition whose primary rule is non-contradiction.

Thus the rise of Relativity and Quantum Mechanics was not an isolated aberration. It is part of a deep trend in the history of Western thought. Whole areas of Cosmic phenomena have been viewed as incomprehensible mysteries requiring the "God hypothesis". Man, in his ignorance, has explained Cosmic phenomena with myths that ranged from simplistic animism to the more refined anthropomorphic theisms of today. Even today, Judeo-Christian theism depends on the existence of phenomena that "cannot be explained" naturalistically. These phenomena can thus be viewed as the "work of God". Opposing this conservative religious tendency, freethinking persons have, through the ages, introduced theories that eliminated the need for

God by explaining phenomena as due to natural processes--inherent in the Cosmos itself. These philosophical theories about the causes of things, such as Bruno's Cosmism, the Copernican theory, Newton's Mechanics, Darwin's evolution, genetic theory, and the latest theories of language and consciousness all have had the effect of reducing the extent of the mysteries that require the "God hypothesis". They are all a threat to religion; and Science is the way that this threat is neutralized.

It is thus no coincidence that modern Science with its Relativity and Quantum Mechanics has supported a revival of mysticism and spiritualism--they were designed to do so. Special Relativity tells us that light and matter, and thus all reality conforms to our consciousness. Light moves at c and matter at $<c$ relative to us--no matter where we are or how we are moving in the apparent "Cosmos". Four-dimensional space-time offers tantalizing topological bizarreries such as singularities, wormholes and time travel. These produce fantasies of crossing vast distances in an instant, traveling to other dimensions and universes, and traveling backwards in time in order to undo the past and alter the future. Quantum Mechanics gives *Homo sapiens* a god-like role in Nature. Our act of observing is supposed to create reality in some occult way. Particles supposedly pop in and out of existence for no reason. Particles are in two places or more at once until our act of observing fixes their location. The mystical Nature and implications of Relativity and Quantum Mechanics have been, and are being extensively discussed and exploited in popular fiction and non-fiction literature, on television, and in film. Science feeds the popular demand for magic, mystery, and immortality. Without philosophy--without a disciplined process or conversation about the most important questions in physics, biology, and human society--authorities are free to impose their own ideologies on the population. Science thus supports authoritarianism in all its forms. Science is the cause of the progressive intellectual deterioration of Western Civilization that we are witnessing today.

4. Cosmism over Idealism

Science has no justification unless spiritualism-idealism is true. Is spiritualism a good theory of the nature of consciousness and its objects? Is all of reality essentially spiritual or mental? Is the Cosmos, its matter, and its evolution all an illusion? Perhaps spiritualism seemed plausible in mankind's infancy, when there seemed to be no explicable connection between mind and matter, but not anymore. The simplest, non-contradictory explanation for how we came to exist and why there appears to be a material Cosmos is that there is indeed a material Cosmos from which we evolved and which causes our sensations. Against Idealism and spiritualism, I assert that Cosmism is the superior theory of what exists and of how we experience it. Cosmism holds that the physical Cosmos is all that exists, and that we humans and our reflective self-consciousness are products of its evolution. We now have very plausible naturalistic theories of the evolution of language and of consciousness.^{36,37,38,39,40} The evidence indicates that we are intelligent primates who acquired language, and with it a new kind of self-consciousness and ability to understand the Cosmos that is absent in other animals. There is no longer any need for the hypothesis that consciousness arises from an unknown spiritual reality that was "added" to our physical bodies. Our consciousness no more requires the spirit hypothesis than does that of any other animal. We have animal consciousness plus language. With language we weave a

web of understanding and interpretation that other animals lack. There is thus no need to restrict our knowledge to the mere description of our conscious. We can and must form theories of every aspect of the Cosmos and its evolution.

Here are the foundational metaphysical and epistemological hypotheses of an evidence-based theory of the Cosmos and its relationship to human consciousness:

- 1) The Cosmos exists and evolves. It has produced hierarchical levels of complexity:
 - a. Astrophysicochemical
 - b. Biological
 - c. Neuropsychological (higher animals)
 - d. Linguo-mythic (early *Homo sapiens* and most people today)
 - e. Consciophilosophical (where humans should be).

At each higher level of complexity, pre-existing entities combined and interacted in new ways to produce new entities and new processes. (See [Hierarchical Cosmism](#) for an outline of this evolutionary process.)

2) The nervous system of *Homo sapiens*, like that of other animals, has evolved via natural selection to capture certain Cosmic motions which it synthesizes into mental representations of Cosmic entities and events.

3) As the result of evolutionary selection, *Homo sapiens* acquired the information-processing tool of language.

4) *Homo sapiens* learned to use language not only to name and describe things, but also to create theories of the underlying and inapparent causes of the entities and events they perceived. This ability to theorize evolved from mythology to Cosmology.

5) *Homo sapiens'* increasingly sophisticated use of language produced an increasingly sophisticated knowledge of self and Cosmos--an increasing awareness and self-consciousness.

5. Philosophy over Science

I am saying that we can judge between Idealism and Cosmism, subjectivism and objectivism. On what basis do I do so? How do we judge theories in general? What do we call this act of cognition? What do we call our attempts to gaining knowledge and theorize about the causes of things? What do we call the methods and standards that we use? What do we call this most advanced and difficult intellectual endeavor?

We call it "philosophy". The birth of philosophy in Ionia in the 6th century BC was a pivotal event in the evolution of human consciousness. It was the first use of the human intellect to create theories to explain the world, without resort to gods and spirits. It was an open-ended, non-dogmatic use of human theory-making intelligence. It replaced the myths of the Greek religion. This naturalistic method was most evident in the work of the Presocratic philosophers, the Milesian school, the Atomists, the Epicureans, and Aristotle. They created a philosophy that consisted of theorizing in the broadest sense--attempting to explain everything and to discover the inapparent causes of apparent phenomena. Their philosophy was scientific--beginning in the facts of sensation and measurement--but went beyond the facts to try to explain the facts.

The philosophy they created is not arbitrary whim or wish; its theories are based upon the Cosmos which it seeks to explain. It has "rules" to assure that our ideas do represent Cosmic reality. Consider the first rule of philosophy: non-contradiction. Since the Cosmos is a coherent system and contains nothing like a "contradiction", neither can philosophy. Since the Cosmos is an interacting whole of entities and causal processes with hierarchical levels of complexity, so must be our ideas about it. Knowledge cannot be separated into non-communicating scientific specialties as it is today. As the Cosmos is a single physical entity evolving by cause and effect, so must be our representation of it. Just as all phenomena are the product of a single Cosmic substance, so must our sciences be branches of single Cosmic philosophy. The sciences gather evidence and create, criticize and test theories dealing with specific aspects of the Cosmos. As no aspect of the Cosmos is isolated from the rest, neither can the various sciences thrive in isolation. An improvement in our understanding of any aspect of the Cosmos affects our understanding of all others. We must all be philosophers first, scientists and specialists second.

Philosophy has its own cognitive principles. Only philosophy allows us to compare alternative theories. The best theories have these qualities:

- 1) Non-contradiction
- 2) Comprehensiveness - explaining all aspects of the phenomenon
- 3) Coherence with all other good theories
- 4) Correspondence to the facts of observation and experimentation
- 5) Simplicity - containing no unnecessary postulates
- 6) Predictive power
- 7) Testability

(This is not an exhaustive list.)

In addition, philosophy contains many conventions and rules which are an aid to linguistic human thought. These are the rules of logic, which have no meaning apart from their proper role of helping us to assure that our verbal formulations correspond to Cosmic reality. The identification of fallacies is a task of philosophy. Mathematics is just logic applied to the treatment of quantities and geometries. We invented mathematics to deal with quantities, just as we invented philosophy to deal with the nature and causes of things.

Philosophy, not Science, can integrate all good scientific data, models, and theories into a comprehensive, coherent theory of the Cosmos and everything in it. This overarching theory can then be used to inform and criticize our sciences - creating a feedback loop which is crucial to the advancement of knowledge. This overarching theory must deal with such questions as the origins and nature of human consciousness and its relationship to the Cosmos, the physical constituents of the Cosmos, the hierarchical levels of Cosmic complexity, the nature and usefulness of mathematics and theories, the existence and types of causality, the relationships of the various sciences, the natural foundations of human morality and society, etc. Philosophy, not Science, is the most productive and powerful application of our human intuition and intelligence, the only way to satisfy our innate desire for understanding, and the best way to assure our survival and happiness as a species.

6. Conclusion

As Francis Bacon observed, we live today in the old age of our civilization. We have a very special vantage point. We can study all that has gone before and should thus can know more and understand more than any previous generation. We ought not to slavishly follow ideas that are hundreds if not thousands of years old. We must question every belief that we have inherited from the past. We must look most critically at the foundational ideas that form the basis of our thought and our society. All ideas must be corrected and brought up-to-date. We should incorporate the latest data and best theories into a new and better theory of everything. This wonderful, awesome, sometimes frightening task is philosophy. It is the open-ended, anti-dogmatic, uninhibited search for truth. It is the natural and proper religion of all mankind. Philosophy is the only means whereby we can understand our Cosmos, and understand ourselves.

-
1. Francis Bacon, *Novum Organum* (1620) secs.1xxix and 1xxx.
 2. Plato, *Phaedo*, 100.
 3. Sextus Empiricus, *Outlines of Pyrrhonism*, I. 216 sq.
 4. Aristotle, *Metaphysics*, Bk . IV, chap. 5, 1010b, 35.
 5. Ibid., Bk. IV, chap.6, 1011a, 18.
 6. Aristotle, *Physics*, Bk. IV, chap.1, 208b, 14-24.
 7. Newton, *Mathematical Principles of Natural Philosophy*, Definitions, Scholium, para. 8.
 8. Ernest A. Moody, "William of Ockham", in *The Encyclopedia of Philosophy*, 1st ed.
 9. René Descartes, *Meditations on First Philosophy* (1641) Med. I, para. 10.
 10. Ibid., Med. IV, para. 5, 9.
 11. John Locke, *An Essay Concerning Human Understanding* (1690) Bk. II, chap. XXIII, para. 15.
 12. Ibid., Bk. II, chap. XXIII, para. 29.
 13. George Berkeley, *Principles of Human Knowledge* (1710) body, para. 18.
 14. Ibid., para. 6.
 15. Ibid., para. 26.
 16. Ibid., para. 94.
 17. Berkeley, *An Essay towards a New Theory of Vision*, 1709.
 18. *The Matrix* (Warner Bros., 1999).
 19. George Berkeley, *Principles of Human Knowledge*, paras. 92, 117.
 20. Ibid., para. 66.
 21. Ibid., para 106.
 22. Ibid., para. 112.
 23. Ibid., para. 98.
 24. David Hume, *An Enquiry Concerning Human Understanding* (1748) sec. V, pt. II, para.11.
 25. Ibid., sect. IV, part I, para. 12.
 26. Peter Alexander, "Mach, Ernst", in *The Encyclopedia of Philosophy*, 1st ed.
 27. Ernst Mach, *Analysis of Sensations* (Translated by C.M. Williams and Sydney Waterlow, Chicago, 1914) p. 12.
 28. Ernst Mach, *The Science of Mechanics* (Open Court Publishing Co., La Salle, Ill., 1960) p. 283.
 29. Ibid., p. 293.
 30. Einstein, letter to M. Besso, March 6, 1952; found in *Albert Einstein-Michele Besso Correspondence 1903-1955* (Hermann, Paris 1972) p. 464.

-
31. Einstein, *The Meaning of Relativity* (Princeton University Press, Princeton, N. J., 1922), p. 2.
 32. Einstein, *Ideas and Opinions*, p. 50.
 33. *Ibid.*, p. 262.
 34. *Ibid.*, p. 274.
 35. *Ibid.*, p. 363.
 36. Julian Jaynes, *The Origin of Consciousness in the Breakdown of the Bicameral Mind* (Houghton Mifflin Company, Boston, 1976).
 37. Derek Bickerton, *Language and Species* (The University of Chicago Press, Chicago, 1990).
 38. Merlin Donald, *Origins of the Modern Mind* (Harvard University Press, Cambridge, 1991).
 39. Daniel C. Dennet, *Consciousness Explained* (Little, Brown and Company, Boston, 1991).
 40. John McCrone, *The Ape That Spoke* (William Morrow and Company, Inc., New York, 1991).