ESSAY 32 : SCIENCE AND PSEUDOSCIENCE

Science comes from the Latin word for knowledge and may be defined as the objective study of nature using data. A theory is intended to understand these data in the simplest possible way with the minimum of hypotheses. In the view of Aristotle, theory came first and the natural world had to conform to human thought. For example the Greeks thought that the four elements were earth, air, fire and water. The Greek classical thought reached Europe from very few extant manuscripts, how much of that classical thought has been lost is unknown. It persisted in Europe up to the sixteenth century, when dogmatism was challenged by the renaissance, humanism, and scepticism. The renaissance reached Britain through thinkers like Shakespeare, whose writings contain no dogma and reflect the human condition with metaphor. Shakespeare was influenced by de Montaigne in France. Francis Bacon was influenced profoundly by Shakespeare and by Plato and produced his idols of the cave philosophy from Plato=s cave, whose inhabitants lived in a world of darkness. At around this time the scientific enlightenment began to dawn in Europe with the work of Copernicus, Brahe, Galileo, Bruno, Kepler and Newton.

From the perspective of the twenty first century the Aristotelian approach to nature is pseudoscience, because the human mind creates idols (dreams) of the cave (the darkness before the enlightenment). These dreams or fantasies are not put to the test of data. In the twenty first century data come first. For example, orbits before the enlightenment were said to be circles, but the data of the astronomer Tycho Brahe were analysed by Johannes Kepler who found that the orbit of Mars is an ellipse, not a circle. This elliptical orbit was explained in terms of three simple laws, Kepler=s planetary laws. Later, Newton showed that the three planetary laws could be reduced to one, the inverse square law or universal gravitation, and Newton went much further than that. He inferred the idea that universal gravitation applies in all kinds of situations, and not just to orbits. From the perspective of the twenty first century the inverse square law is science, the use of epicycles is pseudoscience.

However this perspective has been forged very slowly over several hundred years, in Kepler=s time the idea of force was unknown. According to Arthur Koestler in his book AThe Sleepwalkers@ it was Kepler who first sensed that Athere is a force in the sun@. At that time many scholars would still insist, dogmatically, that the sun went around the earth and would have dismissed Kepler as a crank, even though he was Imperial Mathematicus in Prague. So what is science and what is pseudoscience is a product of the era. Closer to our time, science and pseudoscience are not clearly distinguished because we are too close to our own time, being near contemporaries. The thing that seems to be accepted without too much demure is that science is based on data. An empiricist of our time would use data and fit them with parameters that can be adjusted. In fact, that is exactly what the twentieth century pseudoscientists and dogmatists used to do all the time. They did not forge an exact science in the manner of Kepler and Newton.

For example, string theory has been heavily criticised by contemporary thinkers such as Anderson and Smolin as being a retrogression into Plato=s cave, as being an Aristotelian throw back. This is because string theory has failed to produce a unified field theory and contains far more adjustable parameters (called Adimensions@) than the epicyclists ever invented. Idols and dreams defeated the scientists in the twentieth century and threw away nature for dogma. Exactly the same thing happened in the long era of darkness between Aristotle and the scientific enlightenment. String theory was actually forced upon the scientific community by influential individuals. Compared with ECE theory it is hideously complicated and obscure. Similarly, Einstein=s general relativity is no longer accepted as science, deep flaws having been found in its structure. The dogmatists of the

twenty first century are fighting a losing battle as they try to defend the incorrect geometry used by Einstein, a geometry without spacetime torsion. Quantum electrodynamics is based on adjustable parameters again reminiscent of epicycles, these are given long Latin based names barely understandable as English: renormalization, dimensional regularization, the virtual reality of particles that no one can ever observe, and all the rest of the jargon. The pseudoscientists had the effrontery to use James Joyce to hype its own image into quarks. James Joyce became an adjustable parameter. He would have described this as in ADublines@ - ugly child=s play. Feynman dismissed his own quantum electrodynamics with pseudoLatin: Ahocus pocus@, in other words Feynman admitted that his own contrivances were idols of the cave. The delusional precision of quantum electrodynamics is based on this pseudoLatin. All would be fun were it not so expensive.

The twentieth century in science was accompanied by a grotesque intolerance of new ideas, an intolerance starkly reminiscent of what happened to Bruno in 1600 and starkly reminiscent of the twentieth century, that most violent and barbaric era in human history, an era that made Attila look like a choir boy. I would extend the dictionary here and define pseudoscience as something that encourages barbarism. Pseudoscience is what it always has been, self delusion, the idea that an idea can impose itself on nature in all its infinite variety. Science is the simple study of nature based on data that can be accepted by all.