



“Summary of article by Lynn White Jr.: The Historical Roots of Our Ecological Crisis” in Frontier Issues in Economic Thought, Volume 1: A Survey of Ecological Economics. Island Press: Washington DC, 1995. pp. 36-39

**Social Science Library: Frontier Thinking in Sustainable Development and Human Well-being**

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All forms of life modify their natural environment as a basic condition of their existence, and man is of course no exception. Indeed, since becoming a numerous species he has vastly altered his environment. The history of ecological change is still so rudimentary that we know little about what has really happened. From the extermination of the monster mammals of the Pleistocene to the reclamation of land from the North Sea in Holland, unknown numbers of species of animals, birds, fish and plants have died out, with uncertain implications for the quality of human life. The threat today has expanded many orders of magnitude beyond the pre-industrial destruction of French forests or the smog problem in London. Our present levels of fossil fuel consumption and overwhelming deposits of sewage and garbage threaten the entire ecosphere. What shall we do? No one knows for sure, and unless we carefully consider the fundamentals, our best measures may provoke ecological backlashes with dire consequences. As a beginning, we ought to try to clarify our thinking by looking at the historical presuppositions that underlie modern technology and science.

### **The Western Traditions of Technology and Science**

It is important to stress that both modern science and technology are distinctly Occidental. It is beyond question that Western technology has inherited crucial knowledge in mathematics, optics, medicine and navigation from the great civilizations in Asia, and that it continues to absorb elements from all over the world. Yet today, around the globe, all significant science is Western in style and method, whatever the race or language of the scientists. It is also important to emphasize that the leadership of the West in science and technology considerably predates the so-called Scientific and Industrial Revolutions of the 17th and 18th centuries. (These terms are outmoded and tend to obscure the true nature of what they seek to describe.)

Between 800 and 1000 A.D., the West had begun to apply water power to industrial processes, and by 1200 it was harnessing wind power as well. From these simple beginnings, the West rapidly expanded its technological skills in the development of power machinery, labor saving devices and automation. In basic technological capacity, the Latin West of the latter Middle Ages far outstripped its elaborate, sophisticated and esthetically magnificent sister cultures, Byzantium and Islam. "In 1444 a great Greek ecclesiastic, Bessarion, . . . [upon visiting Italy is] amazed by the superiority of Western ships, arms, textiles, glass. But above all he is astonished by the spectacle of water-wheels sawing timbers and pumping the bellows of blast furnaces. Clearly he had seen nothing of the sort in the Near East."(1204) By the end of the 15th century the technological superiority of Europeans was such that they were capable of sailing the globe and conquering, looting and colonizing the world over.

Modern science is supposed to have begun in 1543 with the publication of the great works of Copernicus and Versalius. These brilliant works did not, however, appear overnight. The distinctive Western tradition of science begins, in fact, in the late 11th century, with the translation of Arabic and Greek scientific works into Latin. Within 200 years, Greek and Islamic science was being avidly read and criticized in new universities. Out of this criticism arose new observation and speculation, and a growing distrust of the ancient verities. By the late 13th century the West had seized the mantle of scientific leadership from the faltering hands of Islam. Prior to the 11th century science had scarcely existed in the West, but from the late 13th century onward the scientific sector of Occidental culture has increased in a steady crescendo.

### **The Medieval View of Man and Nature**

Since Western science and technology as we know them today acquired their distinctive character during the Middle Ages, we cannot understand their nature or their present impact upon ecology without examining medieval assumptions and developments. Human ecology is deeply conditioned by beliefs about our nature and destiny, beliefs which in turn are profoundly influenced by religion. In its Western form, Christianity is the most anthropocentric religion the world has ever seen. The Judeo-Christian tradition is one in which the whole of nature and the planet itself were created for the distinct purpose of serving man's needs. Man, created in the image of God, is not a part of nature, but is its master. Christianity, in contrast to paganism and the Asian religions, not only creates a pronounced dualism between man and nature, but also insists that it is God's will that man exploit nature for his own purposes.

This view has implications for the everyday conduct of people. In antiquity it was believed that every hill, tree and animal had a guardian spirit that had to be honored and placated before using the resource. By destroying pagan animism it became possible to exploit nature with absolute indifference to the feelings of these natural objects. Man thus developed a monopoly over the spirits of this world, and the old inhibitions surrounding the exploitation of nature crumbled. Moreover, the Christian dogma of creation and rapture suggests that there is a discreet beginning and end to man's existence on earth. This creates the basis for a linear concept of time and existence, in contrast to the more cyclical perceptions of existence in antiquity. This linear concept is accompanied by an implicit faith in perpetual progress, which was unknown in our Greco-Roman past or in the Orient.

It is significant that all of the great Western scientists - Copernicus, Grosseteste, Bacon, Galileo, and even Newton - cast their scientific inquiries within a matrix of Christian theology. It was not until the late 18th century that scientists began to dispense with God in their scientific inquiries.

### **An Alternative Christian View**

The implications of this argument may be unpalatable to many Christians. If modern science and technology are historically an extrapolation of Christian theology, and if this science and technology is judged to be out of control in terms of its ecological impact, then Christianity bears a huge burden of guilt. It is doubtful that the further application of science and technology alone will enable us to evade the disastrous ecological backlash with which we are confronted. Our science and technology have evolved from Christian attitudes about man's relation to nature, and

even today, despite all of our progress in the natural sciences, we continue to view ourselves as the center of the cosmos, as beings apart from the natural process. We are superior to nature, contemptuous of it, and entirely willing to use it for our slightest whim. The whole concept of the sacred grove is alien to Christianity and thus to the ethos of the West.

What we do now about ecology depends upon our ideas today about the man-nature relationship. More science and technology will not relieve the ghastly ecological pressures we confront until we find a new religion, or rethink the one we have. Perhaps we should ponder the theology of the greatest radical in Christian history since Christ: St. Francis of Assisi. St. Francis' heresy lay in his belief in the virtue of humility, not merely for the individual, but for mankind at large. He endeavored to dethrone man from his monarchy over creation, to establish a democracy, a brotherhood of all God's creatures, from the smallest ant to man himself. His view of nature and man rested on the idea that all things, animate and inanimate, were created for the glorification of God, and are thus equal in God's eyes. Our present science and technology are still tainted with the orthodox Christian arrogance toward nature. Instead, "we must rethink and re-feel our nature and destiny. The profoundly religious, but heretical, sense of the primitive Franciscans for the spiritual autonomy of all parts of nature may point a direction. I propose Francis as a patron saint for ecologists."(1207)