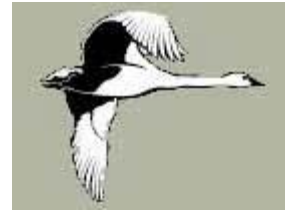


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Disenchanting Telescopes: The Columbus Project And The Second Biosphere



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Don't bother me with your conscientious scruples, after all, this is beautiful physics. Enrico Fermi

The "Columbus Project," mainly sponsored by the University of Arizona and the Arcetri observatory in Italy is the third telescope to be built in a series of observatories estimated to cost at least 200 million dollars. The Columbus observatory will be the largest telescope built thus far and will cost 60 million dollars. They will all be sited near the top (11,000 ft. level) of Mount Graham which is located in Eastern Arizona. The telescopes are to be placed in one of the most unique, old-growth spruce-fir forest ecosystems in the United States which is also the 2000-acre critical habitat of the red squirrel. The entire area is considered sacred by the Apache Indians of Arizona. There is considerable archaeological and ethnohistorical evidence of Apache habitation on the mountain. In May of 1993, the University of Arizona renamed the Columbus Telescope, calling it the Large Binocular Telescope after meeting with local Apache tribal leaders. This was allegedly done because the telescope was not completed during the 1992 Quincentenary year.

The issue of placing telescopes within the Mount Graham, red squirrel ecosystem has become politically charged, polarized and confusing. This is due, in great part to the hubris of scientists, the ideology of progress and general *environmental illiteracy*. Human beings who live and work in a technological civilization have become cut off from the workings of natural systems while at the same time, they are enamored and overwhelmed by technological "progress" and "big science." Environmental literacy, which every hunter and gatherer learned by experience is simply not a part of the consciousness of civilized folks. Environmental literacy is intimately connected with a more sustainable ecocentric paradigm which is most troublesome to the dominant anthropocentric worldview which is held by promoters of the technological society.

There are five environmentally literate and sensitive issues that need to be considered in regards to telescopes being built on Mount Graham. These are framed in the context that some of humanity's greatest successes may well be its undoing or as Aldous Huxley put it in *Brave New World*, ". . . the things we come to love may destroy us."

1) Is it necessary to tame everything in nature that is wild and free of human control?
Mount Graham is already over-tamed by human interventions. When humans build a habitat, must it be uninhabitable for other earthlings?

Approximately fifty to one-hundred-and-fifty living species are becoming extinct every day on planet Earth, a result of human interventions, and the number is increasing. Technological societies excessively cultivate and domesticate nature in the belief that its total control will best lead to human nurturing. This unfortunate, out of balance exercise in power and control has led to a "technofacist" perception of reality towards other

earthlings. If a species submits to domestication, they will be protected, otherwise, they are history! How many species must become extinct per day before the ancient lessons of balance and harmony with nature are relearned?

2) *What will we leave our descendants?* Perceived short-term gains must not outweigh long-term ecological integrity and/or meaning. The University of Arizona telescopes will be scientifically reliable, valuable and useful for a very limited time, even in human terms. Telescopes have planned obsolescence built into them. When they are no longer useful, it may well be too late for the Mount Graham ecosystem to recover! Telescopes should be but a blip in the life expectancy of an ecosystem. Otherwise the long-term environmental impacts and integrity of nature will be compromised for future generations of earthlings. In any event, the Mount Graham telescopes can be placed where others already exist.

3) *It is now very clear, when looking at the historical array of 20th century "big science" projects, that knowledge and scientific curiosity without social compassion is dangerous and ultimately anti-life.* Imperfect human beings can only make imperfect technologies, therefore, over a period of time, "accidents" become normal events. "Big science" projects also have become excessively costly (even when they perform poorly) and divert money away from more socially useful and meaningful areas. This is creating a major economic and ecological crisis in American society. An orbiting Space Station, the Superconducting Supercollider, the Hubble Space Telescope, the "Man on Mars" program, "Star Wars" and other astronomically expensive projects will cost 600 billion dollars or more. They all, to one degree or another, have some kind of military application and cater to the interests of relatively small and elite groups in American society which, in turn, will have control over them. It is in this sense that these technologies promote totalitarianism. These implications bode ill for social spending in the areas of public health, education, housing, homelessness, child care, environmental clean up and the prevention of species extinction, global warming, the greenhouse effect and acid rain. Humanity always has a waste problem to contend with after a "big science" project outlives its usefulness or becomes too dangerous for any life form to handle! Witness the entire nuclear fuel cycle. Technologies must not overwhelm life or the human spirit.

4) *The Mount Graham ecosystem and the endangered red squirrel are really a metaphor for the long-term threat to life and nature in the world.* The University of Arizona wants to impose powerful telescopes on the top of Mount Graham. This technology looks up into space, yet is not empathetic with the ecosystem it is going to reside in. The rhythms of the telescopes are not the rhythms of the ecosystem. *It is always tragic and ethically questionable when life must pay for knowledge.* Is it ethical to destroy one part of nature in order to study another? Is the Mount Graham ecosystem worth the price of a vivisection experiment? I do not believe that telescopes will ultimately sustain life and meaning on Mount Graham. In fact, the long-term costs of putting telescopes on Mount Graham are difficult to measure because they are so monumental.

5) *The "Columbus Project" was an apt name for one of the imposing telescopes atop the very unique ecosystem of Mount Graham.* The partnership and promotion of the telescopes by the Vatican adds a twist of irony. Mount Graham is a sacred mountain for the Apaches. Their religious meaning includes pilgrimages to shrines they have placed on the mountain. Mount Graham is considered an enchanted place. This fact has been entirely ignored and/or discounted by scientists, administrators and priests/astronomers who are associated with the University of Arizona and the Vatican. For the scientists and priests, only their observations of the cosmos may be considered enchanting. The land on which the observatories reside, i.e., the ecosystem and the non-western meanings associated with Mount Graham are disenchanting and desacralized. Therefore, as Columbus and Catholicism subjugated a people and meaning system, so the "Columbus Project" continues to subjugate a people and meaning system.

In July of 1993, the University decided that their meticulous and hard fought placement of the telescope was *incorrect* due to excessive atmospheric turbulence and they are attempting to change the citing to a nearby peak about half-a-mile away.

The original biosphere of the Earth had a self-sustaining life support system. Telescopes in and of themselves are not necessarily destructive, if they are kept to a human scale and are limited to specific areas where they benignly impact on the environment they reside in. It is rather the *intrusion* of a second technological biosphere which is *replacing* and *suppressing* the original, that is so destructive of natural systems. The construction of an artificial environment that both creates and needs a technological society in order to function appears to be a basic element in the progression of modern civilization. Technological progress is most seductive. Its elegance often times obscures the ethical, moral and political basis of its original and defining relationships.

The history of cultural development makes it very clear that no tools or technologies are *neutral*. They are shaped by human beings who are in turn shaped by their creation; the measurement of time by time-pieces is a good example of this. This process has become intensified as the value of labor, productivity, and efficiency have increased, the products have become greater than the producer. Technologies impact on the political, sociocultural, environmental and economic realms of existence. It would appear, from the vantage point of the end of the 20th century, that the greatest threat to civilization is technological civilization itself. The greatest threat to modern civilization are its cultural products. The products of modern technological societies threaten the quality of life of these same societies.

The successes of civilization have become dangerous and deadly for many living things. Human beings are coming to rely more on their technological products rather than nature and natural systems. The ambiguous implications are profound. While technology can be incredibly destructive, it creates, develops and builds a new culture. This new form of doublespeak (for example) destroys many existing species while scientifically attempting to resurrect those which are long extinct. Civilization may ultimately be building a new habitat that only a few species can inhabit. If technological civilization substitutes an artificial ecosystem for the natural one, will it be as comfortable and sustaining as the original? Who and what will be allowed to live in it? Will spontaneity and randomness exist? Will the second technological biosphere be more life affirming than the original? Will humanity be able to prevent the inner and external condition of totalitarianism? What will "nature," therefore, mean?

A long overdue public policy imperative is needed to begin to address many of the above listed issues. The form of the imperative might be called a *social impact statement* which would be democratically derived and modeled after environmental impact statements. A social impact statement would always precede any new technological development. A social impact statement would allow humanity some time and wisdom for making a technological assessment and understand, as Paul Goodman noted, that . . ."technology is a branch of moral philosophy, not science."

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