

## Global warming: Scientific literacy must be part of the solution

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Hobson, A.: 2019, 'A Realist Analysis of Six Controversial Quantum Issues'. In M.R. Matthews (ed.) [\*Mario Bunge: A Centenary Festschrift\*](#), Springer, Dordrecht, pp.329-348.

He is also interested in physics literacy for the general public and has published [\*Physics: Concepts & Connections\*](#) (Pearson, 5th edition 2010), a physics-literacy textbook for non-science college students.

He publishes a regional newspaper op-ed column and is active in such science-related social issues as global warming.

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I began my professional life as a jazz musician, obtaining a music degree in 1955, but was soon disappointed to discover that I didn't have the talent to make a living this way and switched to, of all things, physics. This led, in 1964, to my joining the University of Arkansas Department of Physics.

Having a fondness for teaching physics to musicians and other creative people, I volunteered to teach the "Physical Science" course. It satisfied a general sciences requirement for non-science students, including students from the arts and humanities.

I loved teaching this course. My broader interests soon led me to include several new social topics on the grounds that such issues are of interest to globally aware students (the Vietnam War was raging). These topics included environmental threats, global energy resources, the philosophy of science, nuclear weapons threats, and transportation in a car-cluttered nation. I agitated for an entirely new course titled "Physics and Human Affairs" that would continue to

satisfy the general sciences requirement for non-science students. Other faculty scientists were skeptical of such social relevance. When I started teaching that course in 1977 only 10 students signed up because faculty resistance prevented the course from satisfying the general sciences requirement for non-science students. More agitating got the course approved for general science credit, and within a couple of years the one-semester course was filling a 220-student classroom every semester. Today, course enrollments run nearly 600 students per semester.

In 1983 I had the good fortune to publish a textbook titled "Physics and Human Affairs" based on this course. The course expanded and spread to other campuses. In 1994 I published an improved textbook, "Physics Concepts and Connections," that appeared in five editions over a 20-year period and was used on 150 campuses.

A non-technical physics course focused on scientific literacy issues is not only a good idea: In view of a plethora of global stresses, scientific literacy is precisely what the world needs now.

Thus, I go back many decades with topics such as global warming, which first achieved widespread public attention during the 1970s.

The "Keeling Curve," a graph of the rise of carbon dioxide (CO<sub>2</sub>) in the atmosphere, was first published in 1960 and quickly became an environmental movement icon. The graph, based on CO<sub>2</sub> measurements at Mauna Loa Observatory in Hawaii, showed that, unless humankind radically changed its energy habits, the planet would warm up disastrously. The curve followed a straight-line or "linear" rise during 1860 to 1980, when it began bending upward in an even more dangerous "exponential" manner. The CO<sub>2</sub> rise and the accompanying warming were inexorable.

But this scientifically illiterate world paid little attention.

By 1980, anybody who understood that graph and claimed that the world was not in danger was fooling themselves. The oil companies did not fool themselves. Exxon and Shell had good scientists who concluded that global warming was real and would be disastrous, but these scientists were complicit with their companies' sinister desire for profit even at the cost of future disaster. See Naomi Oreskes and Eric Conway's timely book "The Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming."

Tighten your seat belts, folks: We have just installed a monumentally science-illiterate president, and we are just beginning the horror of global warming.

Consider: 2024 was the hottest year on Earth since record-keeping began in 1880. The 10 hottest of those 144 years were 2015 through 2024. The average global temperature has increased by 1.8<sup>0</sup>F since 1880. Sea level has risen by six inches since 1901. Glaciers are retreating. Snow cover is decreasing. Birds are migrating earlier. Plants are blooming earlier every spring.

Warming is real and will affect everything we hold dear. We are entering an era of pain such as humankind has not experienced since 1948-1945. Severe warming will endure through the rest of this century.

We heard a lot, and rightfully so, about the horrors of the recent Los Angeles fires, but we "ain't seen nothin' yet." The worst will probably be flooding from melted Arctic ice. We are in for decades of pain. Most creatures will suffer even more than Homo sapiens.

If humankind cannot gather the knowledge, rationality, and political will to quickly phase out all fossil fuels, our dear planet is in for not decades but centuries of pain.

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References:

- Keeling curve: Google it.
- Exxon and other companies knew about global warming: Naomi Oreskes and Erik Conway document this in their book "The Merchants of Doubt."
- The hottest year and the ten hottest years: Google this.