Geoengineering: carbon dioxide removal

- by Holmes Rolston, III, 2024/2025

Removing more greenhouse gases from the atmosphere than nature currently does. For example, ocean fertilization involves adding iron or nitrates to ocean waters to stimulate the growth of phytoplankton, which absorb carbon dioxide from the air.

Solar radiation management. Reducing the amount of solar radiation that the Earth absorbs. For example, satellites in space could be used to deflect sunlight.
Geoengineering has been debated for a long time. While it was once considered a scientific taboo, more researchers are now running computer simulations and proposing small-scale outdoor experiments.

Some legislators are also discussing the role these technologies could play:
Ocean fertilization phytoplankton blooms - summertime bloom of oceanic phytoplankton near the Río de la Plata estuary of the Rio Grande Rivers.

Geoengineering, also referred to as climate engineering, is the deliberate and large-scale intervention in the Earth's climatic systems.

"Geoengineering," is the intentional large-scale intervention in the Earth Systems - Union of Concerned Scientists

MIT Technology Review
https://www.technologyreview.com
Aug 9, 2019 — The word geoengineering suggests a planetary-scale technology. But some researchers have looked at the possibility of conducting it in localized experiments.

Readers ask: What is an example of geoengineering?
What are the three types of geoengineering?
Geoengineering is conventionally split into two broad categories: The first is carbon geoengineering, often also called carbon dioxide removal (CDR). The other is solar geoengineering, often also called solar radiation management (SRM), albedo modification, or sunlight reflection.

Those who call themselves Ecomodernists say:
An Ecomodernist Manifesto:
"To say that the Earth is a human planet becomes truer every day. Humans are made from the Earth, and the Earth is remade by human hands. Many earth scientists express this by stating that the Earth has entered a new geological epoch: the Anthropocene, the Age of Humans.

As scholars, scientists, campaigners, and citizens, we write with the conviction that knowledge and technology, applied with wisdom, might allow for a good, or even great, Anthropocene. A good Anthropocene demands that humans use their growing social, economic, and technological powers to make life better for people, stabilize the climate, and protect the natural world.

In this, we affirm one long-standing environmental ideal, that humanity must shrink its impacts on the environment to make more room for nature, while we reject another, that human societies must harmonize with nature to avoid economic and ecological collapse.

These two ideals can no longer be reconciled. Natural systems will not, as a general rule, be protected or enhanced by the expansion of humankind's dependence upon them for sustenance and well-being.

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Intensifying many human activities particularly farming, energy extraction, forestry, and settlement so that they use less land and interfere less with the natural world is the key to decoupling human development from environmental impacts. These socioeconomic and technological processes are central to economic modernization and environmental protection. Together they allow people to mitigate climate change, to spare nature, and to alleviate global poverty.

Although we have to date written separately, our views are increasingly discussed as a whole. We call ourselves ecopragmatists and ecomodernists. We offer this statement to affirm and to clarify our views and to describe our vision for putting humankind's extraordinary powers in the service of creating a good Anthropocene."
An Ecomodernist Manifesto, pages 6-7.

Christopher Preston argues:
"My research is moved by the Anthropocene, the epoch in which human influence on the planet is everywhere. I have a passion for wildlife and I study emerging Anthropocene technologies for their impact on the human-nature experience. The technologies include climate engineering, de-extinction, and biotechnology. My award-winning book The Synthetic Age details some of what is at stake. My work is now focused on restoration and rewilding, which I see as an antidote to the claustrophobia of a synthetic age. A book about wildlife recoveries, Tenacious Beasts: Wildlife Recoveries that Change How We Think About Animals, argues that the public-facing aspects of environmental philosophy are very important to me.

The rapid rise in interest in geoengineering the climate as a response to global warming presents a clear and significant challenge to environmental ethics. ... what I call the 'presumptive argument' against geoengineering from environmental ethics, a presumption strong enough to make geoengineering almost 'unthinkable' from within that tradition. Two rationales for suspending that presumption are next considered. One of them is a 'lesser evil' argument, the other makes connections between the presumptive argument, ecofacism, and the anthropocentrism/non-anthropocentrism debate. The discussion is designed to prompt reflection on how environmental ethicists should orient themselves to the rapidly moving geoengineering debate and what they should think about the moral significance of the earth's large-scale biogeochemical processes compared to the moral significance of individuals, species, and ecosystems."

Preston, Christopher J. (2011). "Re-Thinking the Unthinkable: Environmental Ethics and the Presumptive Argument Against Geoengineering." Environmental Values 20 (4):457 - 479.

China: Monster Dam, Killer River

The Three Gorges Dam is, by most counts, the largest dam in the world. This gargantuan dam on the Yangtze River is about a mile and a third wide and impounds more water than any other dam, creating a lake 400 miles long, about the length of Lake Superior.

The dam generates more hydro power and provides more flood control and agricultural water than any other dam. Three Gorges is regarded as China's most ambitious project since the Great Wall.

The Yangtze River, along with the Yellow River, are China's two major rivers, both vital and both killer rivers. Chinese peasants have needed to live close to the rivers for their rice paddies, which left them especially vulnerable. A 1998 flood here killed 4,000 people and left 15 million homeless.

Yangtze floods in 1931 killed 3.7 million people by drowning, water-borne diseases, and starvation, perhaps the worst natural disaster in the last century. The Yellow River has killed more people than any other river in human history.

Millions of people were forced by the dam to move. Thirteen major cities, 140 smaller cities and towns and 1,352 villages, 1,600 factories, and 700 schools were submerged. This was a gigantic relocation project, building thirteen replacement cities, sometimes with their famous temples dismantled and reconstructed. Many newly built apartments, were chiseled into mountain sides just above the present lake level.

The dam is placed below three narrow gorges: the Xiling Gorge, the longest and most perilous, above that the Wu Gorge, the deepest, the Witches Gorge, and most upstream the Qutang Gorge, only five miles but the most beautiful. There were cliffs 2400 feet high, fantastic rock towers, crags with ferns, trees growing in cracks on ledges. The canyons were weird and grotesque. Remnants remain above the lake, but most of it is now drowned.

Before, hundreds of men called "trackers," typically barefoot in harnesses at the stream's edge, without any path, pulled long ropes to get the junks upstream against raging currents. These trackers were often abused, treated like draft animals, whipped if they failed - though the Communists stopped the latter practice.

The construction created a lake named Emerald Drop Lake. Since the lake is filling gorges, it is never very wide but is quite long. The cruise is still scenic but one has to imagine what was lost with this monster dam on a killer river.

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In the 38 million centuries of life on Earth, the odds of evolving intelligent life on Earth are quite low, quite rare. Homo sapiens does not wish to be and ought not be that species!!!

The Xiling Gorge, earlier was the most dangerous. Only a few years old, the lake is already seriously polluted by pesticides, fertilizers, and sewage from the boats on it. The river is loaded with sediment, caught by the lake, deposited in the still water. This could fill the lake in less than fifty years.

One of the overlook sites displays a huge granite boulder taken from the bedrock on which the dam is constructed, found to be especially well-suited for situating the dam and for use in building the foundations of the dam. They claim this excellent granite makes the Three Gorges "a divine dam site," an interesting turn of phrase for a Communist government.

My grandparents recalled how in the horse and buggy days, a man wanted to hire a coachman to drive his carriage. There were three applicants. He asked the first, "My house is up a long hill and at several places there is a cliff at the edge of the road. How close can you drive to the edge of that cliff?" The first applicant replied, "Sir, I can drive your carriage within a foot of the edge." Then he interviewed the second applicant. "Sir, I can drive your carriage within six inches of the edge." Then he interviewed the third applicant: "Sir, I don't know. But I would stay just as far from the edge as I could get." He got the job. Preston seems fascinated with engineering a synthetic Earth as close to the edge as we can get without tumbling over into disaster. I prefer to stay as far from the edge as we can.