

On Useless Nature

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Seminar: Making Nature Useless? Global Resource Trends, Innovation, and Implications for Conservation.

Iddo Wernick, Ted Nordhaus, and Michael Shellenberger have provided both facts and theory for a strikingly different perspective on future use of the environment. For many generations, most Americans, and most others, have expected that humanity will use more and more of precious Nature, that rising use will cause scarcity and higher prices, and that higher prices will help protect what remains. Consistent with this view, the field of Ecosystem Services has emerged, and attempts to assign astronomical prices to them. Deluxe prices must show that much Nature is more valuable unused than used.

What if we turn this entire argument on its head? What if the future entails not more use of precious resources but flat or falling use? Not because they cost so much, or even because of taboos, but because the resources are not needed. Their price might fall to zero, as has the price of most of the timber in the state of Maine. Such drops could also lead to massive conservation, indeed restoration, of Nature, not only because protectors can acquire Nature cheaply, but because Nature is useless, or nearly so, at least in a traditional market sense.

Let me follow this argument even further than Iddo, Ted, and Michael. Suppose households and businesses keep lifting their efficiency, and rebound or revenge offsets only a little of the gain, so that demand stagnates. Suppose we dematerialize, and suppose the materials we use are not scarce but the most common elements in the crust such as magnesium, aluminum, and notably silicon. Silicon makes not just chips but stone and glass. I personally love glass bricks.

And instead of weaving ourselves ever more tightly into the biosphere, suppose we decouple not only from energy and materials but from the biosphere itself.

Human ancestors, such as *Australopithecus*, were completely immersed in the biological system of the savannah and forests, and depended on the negentropic flux of solar light, captured by chlorophyll. Subsequent agricultural humans came to control some of the biological system, to augment productivity and consequently number. Technological and scientific humans could largely cut ties with the biosphere and construct an internal world.

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In fact, one can frankly ask whether resources and environment matter anymore, even the climate about which so many now demonstrate and negotiate. As I have written, “High incomes, great longevity, and large population concentrations have been achieved in every class of environment on Earth. We manufacture computers in hot, dry Phoenix and cool, wet Portland. We perform heart surgery in humid Houston and snowy Cleveland. Year round we grow flowers in the Netherlands and vegetables in Belgium. The metro in Budapest runs regardless of the mud that slowed Hungarians for a thousand years. In Berlin and Bangkok we work in climate-controlled office buildings. We have insulated travel, communications, energy generation, food availability, and almost all major social functions from all but the most extreme environmental conditions of temperature and wind, light and dark, moisture, tides, and seasons.”²

Humanity’s goal is to render ourselves independent of the natural system. For all the poetry about Nature, we have basically retreated into walled cities, autarchic except for the input of energy or negentropy. Most of this no longer arrives by chlorophyll. Indeed, some is now furnished by uranium, and most, indeed nearly all, could be, as we get better at manufacturing hydrogen to carry energy around. The profound importance of nuclear power, as Einstein and other atomic scientists realized, is its facility to decouple us from the biosphere.

In practice, the natural trend toward the megalopolis is creating zones of great density, leaving the possibility of creating very low density patches or “sanctuaries” where people might go when they wish or simply observe through millions of GoPros. The built environment could grow from 5-6% of the land surface today to, say, 10%. Meanwhile, we will continue the shift, described by Iddo and Michael, toward landless and vertical agriculture. Eventually, the microbes will do the work of most food production. We can never decouple from the microbes. I hope they know how to form political action committees.

Cities will function essentially as closed systems where most materials, including water, will be recycled. The only physical input need be free energy and the only output heat, or negentropy.

From the point of view of the materials balance, the main factor that must be accounted is the dowry, that is, the materials locked into the system and the losses in the recycling process. My mentor Cesare Marchetti estimate a generous and manageable dowry of 100 tons of materials/person, of which 30 tons are “high energy” materials such as metals and organics and 70 tons are “low-energy” materials such as concrete. We will never dematerialize completely but we can stop grinding up new crust.

A highly efficient hydrogen economy, landless agriculture, industrial ecosystems in which waste virtually disappears during this silicon century -- these can enable large, prosperous human populations to co-exist with the whales and the lions and the eagles and all that underlie them. The primeval forest can tranquilly regrow for the amusement of naturalists. Ponder the

² Jesse H. Ausubel, *The Liberation of the Environment*, *Daedalus* 125(3):1-17, 1996.

walled city as the prototype of the spaceships we may eventually send to other parts of the universe.

The 1952 Paley Commission Report that started Resources for the Future famously and correctly wrote, “The growth of demand is at the core of the materials problem we face.”³ We may still worry for a few decades about exhausting primary resources and overloading the environment, as we pass peak child and peak use of just about everything except information. We will keep doubling our use of information every ten years, and that will liberate the rest. And within another 60 years we may smile, because our actual achievement will have been to achieve conservation by establishing an enduring trajectory of making Nature useless.

³ *Resources for Freedom*, A Report to the President by the President’s Materials Policy Commission, Washington DC, US Government Printing Office, 1952.