

THE CONSEQUENCES OF GLOBAL HUMAN DOMINANCE

The world in general seems to be gradually awakening to a realization that our long evolutionary story is, through our actions but not our intentions, coming to a turning point. A product of evolution ourselves, shaped by the environments of our past, we have attained dominance by increasing our numbers, divesting resources, and reshaping the world's environments to sustain our huge, still growing population. That dominance has now led to a progressive destabilization of the global systems that sustain us.

Ehrlich and Ehrlich (2008, p. 364)

Humans have only recently been a dominant animal. For most of the 4 million years that the genus *Homo* existed and the 200,000 years that the species *Homo sapiens* has been on Earth, humans did not dominate nature. Just a few thousand years ago, only approximately 150 million humans were on the entire planet (Tanton 1995). In contrast, "World population is believed to have been fairly stable at about 300 million people from the birth of Jesus to the year 1000 A.D." (United Nations Population Division 1999). Whatever the actual global human population total was just over 2,000 years ago, it was tiny compared to the 7 billion people existing in 2012.

Just over 10,000 years ago, the Agricultural Revolution began and humans displaced natural systems to develop agriculture and to raise domesticated animals. Between 1750 and 1850, human society became engulfed in changing from rural to predominately urban lifestyles. The Industrial Revolution was possible because humans had developed technologies using fossil fuel (e.g., coal) that gave them more energy per capita than any other species (e.g., the Iron Bridge 2012).

Appropriation of Biospheric Space

The Agricultural Revolution was really the appropriation of space from the Biosphere to devote to cultivating species of interest to a single species — *Homo sapiens*. The Biosphere had high biodiversity up to that point, but the cultivated tracts that were initiated by humans were dedicated to only a few species. The Biosphere was self-maintaining — the cultivated areas were not. The Biosphere provided a variety of ecosystem services — the cultivated areas produced primarily food.

The present Biosphere is a complex, multivariate system that consists of many regional components. However, many of these components are being lost or damaged by human artifacts such as shopping malls, road systems, housing developments, factories, surface mining, and removal of resources (e.g., fisheries, forests).

Not only has land been usurped, but the oceans are suffering changes that may not be conducive to the many species living there. The oceans, which represent about 71% of the global surface area, have changed from slightly alkaline to slightly acidic and, if "business as usual" continues, may become corrosive in some areas. Acidification has many deleterious effects upon marine organisms. At certain concentrations, many (arguably all) chemical substances produce observable, deleterious effects on global flora and fauna. Even more alarming, endocrine disruptors may have deleterious effects at very low concentrations.

Incremental Reductions of Biosphere

People often tend to discount biospheric catastrophes, such as the one at the Fukushima nuclear facility in Japan or the British Petroleum oil spill in the Gulf of Mexico, because they are remote and out of sight. However, even tiny, incremental losses can be significant over time. For example,

In March [2012], Nepal welcomed home an exhibition of plant and animal paintings drawn in the Kathmandu Valley over 200 years ago . . . Many of the plants pictured were once common in the Kathmandu valley but are now hardly seen at all. Some have declined due to habitat destruction and deforestation, but many, especially the orchids, have suffered greatly from over-collection for trade in ornamental or medicinal plants (Pulse 2012).

Humanity cannot continue to trash components of the Biosphere as if they were throwaway artifacts.

Short-term Memory Loss

Even in something of great interest to the general public, such as the financial meltdown of 2008, public outrage directed at the big banks faded quickly (e.g., Huffington 2012). Complex, long-term global crises will never be resolved with humanity's short-term memory and world view. Sustainable use of the planet requires holistic reasoning, scientific evidence, and a laser sharp focus on the common good. In addition, sustainability requires recognition that dominance and technology do not provide immunity from the universal laws of biology, chemistry, and physics. Also, dominance without humility can be fatal.

Resisting Scientific Evidence and the Consequences of Denial

Hamilton (2010) sums up the problem of resistance and rejection of scientific evidence as follows.

Let me begin with a pregnant fact about United States' voters. In 1997 there was virtually no difference between Democratic and Republican voters in their view on global warming, with around half saying warming had begun. In 2008, reflecting the accumulation and dissemination of scientific evidence, the proportion of Democratic voters taking this view had risen from 52 to 76 per cent. But the proportion of Republican voters fell from 48 per cent to 42 per cent — a four percent gap had become a 34 per cent gap. What had happened? The opening of the gulf was due to the fact that Republican Party activists, in collaboration with fossil fuel interests and conservative think tanks, had successfully associated acceptance of global warming science with 'liberal' views. In other words, they had activated the human predisposition to adopt views that cement one's connections with cultural groups that strengthen ones' definition of self. In the 1990's views on global warming were influenced mostly by attentiveness to the science; now one can make a good guess at an American's opinion on global warming by identifying their view on abortion, same-sex marriage and gun-control.

In 1948, when I acquired my first professional position, I believed that if I acquainted people with the evidence on pollution that they would come to conclusions identical or similar to mine. I soon realized that denial of pollution was not due primarily to a lack of evidence but rather due to their cultural beliefs. However, *Homo sapiens* did not become dominant by ignoring or attacking science. Dominance, coupled with ignorance about science and the scientific process, is very dangerous for the species *Homo sapiens*, the current civilization, and Earth's Biosphere.

Rejection of science and scientific evidence has long-term deleterious consequences, although denial of scientific evidence may have short-term political advantages, especially when people are told what they want to hear. Nature does not confer "rights" on any species. All species are subject to natural selection, which results in evolutionary processes. Humans can have conferences and set goals, but, if they are not congruent with the universal laws of nature, they will fail. The universal laws result in an "order" that is wildly different from human society's concept of "order." A paradigm is a body of scientific laws within which scientists work; however, periodically a paradigm shift becomes essential. Humanity will face paradigm shifts in the 21st century that will determine the future of civilization and the survival of *Homo sapiens*.

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LITERATURE CITED

- Ehrlich, P. R. and A. H. Ehrlich. 2008. *The Dominant Animal: Human Evolution and the Environment*. Island Press, Washington, DC.
- Hamilton, C. 2010. Why we resist the truth about climate change. A paper to the Climate Controversies: Science and Politics Conference, Museum of Natural Sciences, Brussels, Belgium 28Oct
http://www.clivehamilton.net.au/cms/media/why_we_resist_the_truth_about_climate_change.pdf.
- Huffington, A. 2012. JP Morgan, the Volcker Rule, and the extreme brevity of financial memory. *Huffington Post* 25May
http://www.huffingtonpost.com/arianna-huffington/jpmorgan-volcker-rule_b_1542420.html.
- The Iron Bridge. 2012. Industrial Revolution Overview. SchoolHistory.co.uk
<http://www.schoolhistory.co.uk/lessons/ironbridge/overview.htm>
- Pulse*. 2012. Buchanan-Hamilton: inspiration in Kathmandu. Linnean Society of London. 14:May
<http://issues.pageturninteractive.com/Pulse/Issue14June2012/PulseJune2012.pdf>.

Tanton, J. H. 1995. End of the migration epoch. *The Social Contract* IV(3) and V(1).
http://www.johntanton.org/articles/art_end_migration_epoch_tanton.html.

United Nations Population Division. 1999. *Briefing Packet: World Population Estimates and Projections 1998 Revision*.
United Nations, New York, NY.