Two Great Earth Scientists Embark on Their Final Journeys

Professors John Cairns and Walter Youngquist investigated humanity's relationship to Earth's resources and environment…and warned against overpopulation

LEON KOLANKIEWICZ

In recent months, two distinguished senior earth scientists, both academics and both contributors to *The Social Contract*, have passed away. Dr. John Cairns, Jr., a Distinguished Professor Emeritus of Environmental Biology at Virginia Tech, died in November 2017 in Blacksburg, Virginia, at the age of 94. Dr. Walter Youngquist, a professor of geology in the Department of Earth Sciences at the University of Oregon and a petroleum geologist who worked in scores of countries, passed in February 2018 in Eugene, Oregon, at the age of 96.

The venerable sister sciences of geology, paleontology, and biology have long overlapped because the history of Life on Earth is written into the sedimentary rock strata of our planet. Indeed, the primary divisions in the human classification of vast stretches of geologic time — eons, eras, periods, epochs, and ages — are delineated and distinguished primarily by the variable fossil records they contain. And of course those fossils were once living, breathing organisms which strode across the terrestrial surface of the planet like *Tyrannosaurus rex* or swam and slithered through its seas like trilobites. These ancient arthropods vanished during the unprecedented mass extinction at the end of the Permian Period 250 million years ago, but left behind trillions of fossils, to the enduring delight of schoolchildren and collectors everywhere.

Leon Kolankiewicz *is an environmental scientist, consultant, and author with more than three decades of professional experience in the public, private, and non-profit sectors. His clients have included the U.S. Department of Energy, Army Corps of Engineers, NASA, U.S. Forest Service, National Park Service, and U.S. Fish and Wildlife Service.*

Both Cairns and Youngquist enjoyed full personal and professional lives, rich with career and academic achievements and accolades. And they both possessed the knowledge and increasingly rare wisdom to warn their fellow heedless humans against the perils of overpopulation.

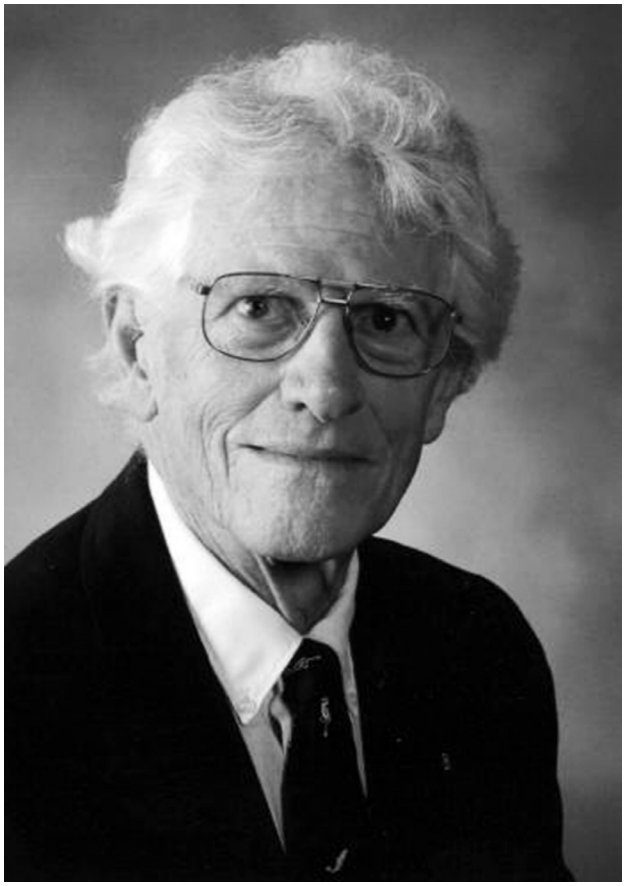
JOHN CAIRNS, JR., BIOLOGIST EXTRAORDINAIRE

When I was an undergraduate at Virginia Tech's Department of Forestry and Wildlife in the early 1970s, John Cairns was already an eminent professor in the Biology Department across campus, one who was rapidly making a name for himself as a leading environmental scientist. I heard him speak to a campus environmental advocacy group once or twice, but didn't really get a chance to meet and talk to him in person until more than two decades later. It was at a conference on the threatened future of Appalachian forests, in the heart of Appalachia, in Elkins, West Virginia, beside the rugged and rumpled ridges of the Monongahela National Forest.

The most iconic tree of the Appalachian forests, the American chestnut (*Castanea dentata*), had already been devastated decades earlier by the notorious chestnut blight (*Cryphonectria parasitica*), an invasive, pathogenic fungus brought unwittingly to America hidden inside Japanese chestnuts (*C. crenata*) imported for horticultural purposes. The conference's afternoon activity was an excursion on foot and off-trail along a rocky ridgetop to look for eastern timber rattlesnakes tucked away under boulders. Captivating his audience, John conveyed a commanding sense of the underlying and overarching ecological principles and processes profoundly affecting *Homo sapiens*' place and prospects in the ecosphere.

John earned a bachelor's degree from Swarthmore College and his M.S. and Ph.D. at the University of Pennsylvania. He also completed a postdoctoral course

in isotope methodology at Hahnemann Medical College of Philadelphia. He then worked as curator of limnology (the ecological study of inland waters such as lakes) at the Academy of Natural Sciences in Philadelphia from 1948 to 1966, and then as a professor of zoology at the University of Kansas from 1966 to 1968. He joined the faculty of Virginia Tech in 1968, and spent the rest of his career in the picturesque college town of Blacksburg, perched above the New River at 2,000 ft. elevation on a plateau between two of the great subranges in the central and southern Appalachians: the Blue Ridge Mountains to the east and the Alleghenies to the West.



John Cairns, Jr. (1923-2017)

John taught more than 20 different courses at Tech, including protozoology, limnology, ecotoxicology, restoration ecology, ethics in science, hazard evaluation, and ecosystem risk analysis. He chaired 49 Ph.D. and 25 M.S. graduate committees. He also spent part of every summer for more than three decades teaching classes at either the University of Michigan Biological Station or at the Rocky Mountain Biological Laboratory in Colorado, where he met fellow limnologist, frequent contributor to *The Social Contract* (*TSC*), and president of Scientists and Environmentalists for Population Stabilization (SEPS) Prof. Stuart Hurlbert in 1961. In addition, John served on a number of National Research Council panels and committees.

John's publication output was nothing short of prodigious, and I wonder how he ever had time to sleep or eat. Over the course of his career, he authored or contributed to 687 journal articles in 179 different scientific journals. He was the sole author and/or editor of 19 books, and the senior author of another 27 books. His total publications numbered 1,751 and his curriculum vitae ran to an astonishing 118 pages.

In 1991, John was named to the National Academy of Sciences, America's most prestigious scientific institution, and he received the Virginia Lifetime Achievement in Science Award. He was also an elected member of the American Philosophical Society and the American Association for the Advancement of Science (AAAS), as well as a foreign member of the Linnean Society of London. He was awarded the U.S. Presidential Commendation for Environmental Activities, among numerous other awards and honors.

At the same time, John was a proud World War II veteran of the U.S. Navy, in which he served from 1942 to 1946. He was also a devoted husband, father, and grandfather, ecological pioneer, tireless sustainability advocate, serious hiker, enthusiastic fly fisherman, and avid folk dancer.

John contributed to *The Social Contract* for the last couple of decades. He wrote a number of articles for *TSC* on topics ranging from Malthus, sustainability ethics, immigration, carrying capacity, and exponential growth, to resource wars and environmental refugees. In an article entitled "An Epic Struggle" in the Summer 1999 issue of *TSC*, John wrote:

> Human society is addicted to growth on a finite planet. As is often the case for psychological dependence, contrary evidence is ignored and wishes are confused with reality. When Malthus noted that exponential growth of the human population was a major problem, he was ridiculed and scorned — a practice that has continued for two centuries. Those who believe in infinite substitutability of resources show no concern for the concept of sustainable use of the planet…. None of these groups has paid sufficient attention to the consequences of exponential growth of either human population or affluence. If human society continues on the present path — as many advocate — and this direction turns out to be wrong, cataclysmic events are highly probable.

In retirement, John scarcely slowed down. He continued adding chapters to his online book *Earth's Biosphere in Peril* (available at the John Cairns website www.johncairns.net) into 2013. In the final one he posted, Chapter 47, "Oikos, Economics, Ecology, and the Future

of the Sixth Biosphere," he cited the oft-quoted, desolate line from T.S. Eliot's 1925 poem "The Hollow Men:"

> This is the way the world ends. Not with a bang but with a whimper.

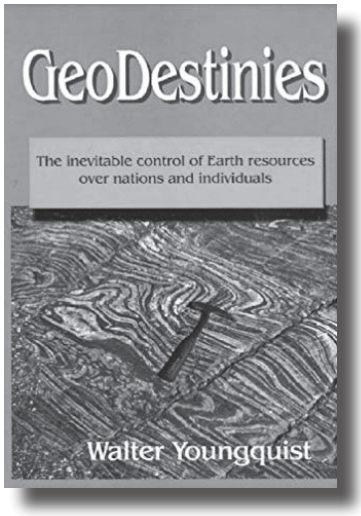
And he quoted a 1963 remark by Daniel Patrick Moynihan:

> To be Irish is to know that in the end the world will break your heart.

The productive, prolific, and ever-engaging Professor John Cairns, Jr. passed away peacefully on November 5, 2017 with his daughter Karen at his side. He is deeply missed by family, friends, admirers, and his intellectual companions on the road less traveled. His contributions to the science of ecology and his advocacy on behalf of Earth's imperiled biosphere outlive him.

WALTER YOUNGQUIST, INTREPID EXPLORER OF 'GEODESTINIES'

Back in 2012, I chaired a panel session at the annual fall Writers Workshop called "Geo Destinies in the Coming Age of Geo Scarcity." There were three panelists: yours truly; Chris Clugston, author of the recent book on non-renewable natural resources, *Scarcity: Humanity's Final Chapter?* and a *TSC* contributor; and former CIA analyst and Post Carbon Institute Fellow Tom Whipple, a well-known analyst of peak oil issues for the Association for the Study of Peak Oil and Gas (ASPO). The panel session title and topic, of course, were inspired by the seminal research and writing about depletion by the eminent petroleum and minerals geologist Walter Youngquist. At the outset of my talk, I extolled his landmark 1997 book *GeoDestinies: The Inevitable Control of Earth Resources over Nations and Individuals*.



GeoDestinies was one experienced earth scientist's refutation of the patent nonsense and magical thinking peddled by so many science-challenged mainstream (neoclassical) economists over the years, to wit, that innovation, technology, and free markets would ensure that there is essentially no limit to economic and population growth — even on a finite planet with dwindling natural capital. Professor Julian L. Simon was the most famous and ubiquitous of these gurus of growth. Yet another is MIT's Robert M. Solow, winner of the 1987 Nobel Prize in Economics, who infamously remarked in a 1974 lecture that: "The world can, in effect, get along without natural resources, so that exhaustion is just an event, not a catastrophe." Depletion? Big deal! The price signal in a free market will always spur innovation and substitution so that progress — narrowly defined as rising GDP, or rising production and consumption — can continue unimpeded forever.

Walter L. Youngquist (1921-2018)

Not so fast, responded Youngquist and a bevy of dissident physical and life scientists. The expanding human enterprise of the last two centuries, since the Industrial Revolution, is utterly reliant upon a host of renewable and non-renewable natural resources as well as essential ecosystem services. Ecologists refer to this condition as "obligate dependency." No water, no food. No soil, no food. No oil, no food — at least not in the abundance and variety that we now take for granted. It is delusional, argued the "limits" camp, to believe that human ingenuity is so omnipotent that it can simply wish and will resources into being, as Julian Simon fantasized in his homage to irrational exuberance, *The Ultimate Resource* (Princeton University Press, 1981). Simon's "ultimate resource," of course, was the human mind nestled within the human brain, which trumped all other natural resources combined.

Walter Youngquist's vast store of knowledge and his insights on oil, gas, and mineral resource depletion were derived less from abstract theories and arcane equations in dusty academic libraries and more from authentic experience on the ground as a petroleum geologist in more than 70 countries, working for the Exxon Corporation and as a consultant to Sun Oil, Shell Oil, and Amoco.

Yet his scholarly bona fides shone as well. He attended Minnesota's Gustavus Adolphus College, graduating in three years with honors. He received his M.S. and Ph.D. in geology from the University of Iowa and was Emeritus Chair of the Geology Department at the University of Oregon, where he had taught Physical Geology, Invertebrate Paleontology, and Petroleum Geology. He wrote more than 150 articles and 10 books, two of which on natural resource investments were published by *The Wall Street Journal*. Youngquist was also an emeritus member of the American Association of Petroleum Geologists, as well as a Fellow of the Geological Society of America, and the AAAS.

Walter was a friend, colleague, and admirer of the late ecologist Garrett Hardin, author of the influential 1968 essay in the AAAS journal *Science*, "The Tragedy of the Commons," and more than a dozen books, and the late geologist L.F. "Buzz" Ivanhoe, of the Colorado School of Mines. These three now-departed giants of the biological and earth sciences belonged to a generation of outstanding, heretical American scientists and scholars who came of age in the cauldron of World War II, and in the latter half of the twentieth century challenged the previously unquestioned dogma that infinite population and economic growth were possible on a finite planet.

Youngquist also collaborated on several energy studies with electrical and systems engineer Richard C. Duncan, Ph.D., creator of the "Olduvai Theory" and director of the Institute on Energy and Man.

It almost goes without saying that Walter was long troubled by the human population growing unsustainably and exponentially, outstripping the capacity of natural resources ranging from oil to freshwater aquifers to support this growth. In this, he followed in the footsteps of another legendary geologist, Dr. M. King Hubbert — the "oracle of oil," who initially predicted the phenomenon of what is now called "peak oil." Hubbert's "peak oil" theory predicted first a domestic and then a global peak, followed by an inevitable decline, in the production of hydrocarbons — the life-blood of industrial, globalized civilization.

As a freshman at Virginia Tech four decades ago, I vacillated between majoring in forestry and wildlife management or geology. I took, enjoyed, and aced three undergraduate-level classes in geology, but I ultimately turned away from this major because I realized it would mean going to work for an oil or mining company. At that idealistic and innocent — no, naïve and sanctimonious — stage of my life, I wanted to "Save the Earth" and not subject it to further degradation and exploitation. Not ignoble goals, for sure, if a bit too exalted in their zealous idealism. Fortunately, long ago I recognized the error of my thinking and its various little hypocrisies and inconsistencies. Over the years, I grew increasingly grateful for the breakthroughs and backbreaking work of geologists, engineers, miners, and drillers in enabling the energy-intensive, mobile, wide-ranging lifestyle I and millions of others enjoyed.

Yet I also became increasingly aware of the dire admonitions issued by some of these same far-sighted geologists — for whom a million years is but the single beat of a hummingbird's wings — that the era of fossil-fueled energy abundance and economic affluence that is now cresting is but a fleeting phase in the long, sweeping

Ecologist Garrett Hardin

arc of geologic and human history. What will follow this era of unparalleled, fossil-energy-fueled plentitude? Collapse into chaos, war, suffering, and die-off — or a relatively benign transition to an enduring and humane future powered by renewable, post-carbon energy sources? The answer is not at all yet clear amidst all the noise and clamor of clashing perspectives and contradictory data. The quote often attributed to philosopher Bertrand Russell springs to mind: "The trouble with the world is that the stupid are cocksure and the intelligent full of doubt."

In recent decades, one of the most attentive, astute, and original thinkers and writers on the compelling topic of human and civilizational survival was Walter Youngquist, whose command of geology gave him a long-term perspective and a sense of the ages often lacking in other analysts and writers. But unlike many thinkers and visionaries pondering prospects for the human condition from the safety and comfort of their sheltered armchairs, Walter's life was that of a widely traveled, inveterate explorer, and intrepid adventurer.

Like John Cairns, Walter was a U.S. Navy Vet who served in World War II. His later work and peregrinations as a geologist, combined with his interest in population growth and natural resources, carried him to every continent and nearly four-score countries. Among his Asian destinations were Japan, China, and Mongolia. He traveled to every European country, plus Russia and all the South and Central American countries, as well as Iceland, Senegal, Libya, and New Zealand. On one series of extraordinary journeys, Walter crossed all of Siberia and into Mongolia, climbed over the Andes Mountains, and boated 500 miles down the Ucayali River, a major tributary of the Amazon in Peru, and then descended the length of the Amazon to its mouth at Belem, Brazil. From there it was on to Trinidad in the Caribbean, and thence to Baffin Island in the Far North to collect fossils, a far-flung expedition later recounted in a memoir for the Geological Society of America.

When Walter's wife Elizabeth died in 2010 after a marriage that spanned nearly seven decades, he sold his house and sixteen acres on the outskirts of Eugene. He used the proceeds from this real estate sale to establish college scholarships in memory of his parents, his wife, and a deceased son.

Walter and I corresponded and spoke occasionally in the last years of his life, along with his friend Chris Clugston. Yet as a fellow adventurer who once myself explored the Earth's marvels in far-flung archipelagos, misty valleys, and soaring mountain peaks, I wish that I could have joined Walter for some "geologizing" on one of his remarkable earlier journeys. You can never know enough about invertebrate paleontology in the Paleozoic.

Farewell on your final journey to the Great Beyond, Walter. ■

John D. Rockefeller III Presidential Commission on Population Growth

After two years of concentrated effort, we have concluded that, in the long run, no substantial benefits will result from further growth of the Nation's population, rather that the gradual stabilization of our population would contribute significantly to the Nation's ability to solve its problems. We have looked for, and have not found, any convincing economic argument for continued population growth. The health of our country does not depend on it, nor does the vitality of business, nor the welfare of the average person.

—John D. Rockefeller III, Chairman,
Presidential Commission on Population Growth and the American Future, 1972