

21st CENTURY SCIENCE & TECHNOLOGY

Vol. 21, No. 1

Spring 2008

Features

- 10 **WHAT, EXACTLY, IS A HUMAN BEING?**
Analog, Digital, and Transcendental
Sky Shields
The reason your laptop doesn't have any brains.
- 17 **HOW NORBERT WIENER ATTEMPTED TO KILL SCIENCE**
Only Diseased Minds Believe in Entropy
Creighton Cody Jones
A review of the evil birth of that devil in your laptop.
- 23 **Where Your Computers Really Came From**
Peter Martinson
Any operation that can be performed by a machine, cannot be attributed to a human trait.
- 29 **LIFE WITHIN THE NOÖSPHERE:**
What Is the Human Mind?
Lyndon H. LaRouche, Jr.
A commentary on the accompanying LaRouche Youth Movement articles on analog vs. digital, which takes the argument further to consider how the universe is organized for creative human intervention.
- 40 **THE HISTORICAL DATA THE IPCC IGNORED**
**180 Years of Atmospheric CO₂ Measurement
By Chemical Methods**
Ernst-Georg Beck
Thousands of direct chemical measurements of CO₂ concentration in the atmosphere since the mid-19th Century show that the current claim of human-induced CO₂ increase is a willful fraud.



We Can Feed the World!

This issue's articles concerning how to feed the world include:
Editorial, p. 2
Viewpoint, p. 9
Special Report, p. 3
Book review, p. 63

News

- SPECIAL REPORT**
53 **Malaysia's Agricultural Breakthrough, and Nuclear Desalination, Can Feed the World**
Mohd Peter Davis
Large grass farms that produce fast-growing food for animals, and enclosed, climate-controlled animal houses can provide the protein to feed the world.

Departments

- 2 **EDITORIAL**
Yes, We Can Feed the World!
- 5 **LETTERS**
- 6 **NEWS BRIEFS**
- 9 **VIEWPOINT**
- 58 **GLOBAL WARMING UPDATE**
Compiled by Gregory Murphy
- 61 **BOOKS**
**The Science of Low Energy Nuclear Reaction:
A Comprehensive Compilation
Of Evidence and Explanations
About Cold Fusion**
by Edmund Storms
Reviewed by George H. Miley
- 63 **The Man Who Fed the World**
by Leon Hesser
Reviewed by Gregory Murphy
- 64 **Six Degrees: Our Future on a Hotter Planet**
by Mark Lynas
Reviewed by Gregory Murphy

ON THE COVER: USDA field assistants Carlos César Gomes and Célio de Almeida discuss wheat experiments at the Brazilian Agricultural Research Corporation's Maize and Sorghum Research Center in Sete Lagoas, Brazil.

Photo by Scott Bauer/ARS/ USDA; cover design by Alan Yue.

EDITORIAL STAFF**Editor-in-Chief**

Laurence Hecht

Managing Editor

Marjorie Mazel Hecht

Associate Editors

Elijah C. Boyd

David Cherry

Christine Craig

Marsha Freeman

Colin M. Lowry

Gregory B. Murphy

Richard Sanders

Charles B. Stevens

Books

David Cherry

Art Director

Alan Yue

Advertising Manager

Marsha Freeman

SCIENTIFIC ADVISORY BOARD

Francesco Celani, Ph.D.

Hugh W. Ellsaesser, Ph.D.

Lyndon H. LaRouche, Jr.

Wolfgang Lillge, M.D.

Ramtanu Maitra

Thomas E. Phipps, Jr., Ph.D.

B.A. Soldano, Ph.D.

Jonathan Tennenbaum, Ph.D.

21st Century Science & Technology

(ISSN 0895-6820) is published 4 times a year by 21st Century Science Associates, 60 Sycolin Road, Suite 203, Leesburg, Va. 20175. Tel. (703) 777-6943.

Address all correspondence to **21st Century**, P.O. Box 16285, Washington, D.C. 20041.

21st Century is dedicated to the promotion of unending scientific progress, all directed to serve the proper common aims of mankind.

Opinions expressed in articles are not necessarily those of 21st Century Science Associates or the scientific advisory board.

We are not responsible for unsolicited manuscripts.

Electronic subscriptions are \$25 for 6 issues or \$48 for 12 issues. Back issues (1988-2005) are \$5 each (\$8 foreign). Electronic issues from 2006 on are \$5 each. Payments must be in U.S. currency.

Copyright © 2008

21st Century Science Associates**ISSN 0895-682****www.21stcenturysciencetech.com**

Yes, We Can Feed the World!

To ensure that we can feed all the world's population, we must double world food production, starting right now. We already have the science and technology available to do it. We focus here on some of these exciting technologies, but note also that to accomplish the task, there must be an immediate scuttling of the "free trade" insanity that dominates the world organizations, especially the World Trade Organization. Abolish the WTO and end the stranglehold by Monsanto, and a few other cartels, on genetically modified seed stocks—that mankind may eat.

Reviewed here are some of the technologies available now—first the agricultural methods, and second the broader problems of power, water and transportation infrastructure. Biotechnology and Genetic Engineering.

As Norman Borlaug, the man responsible for the first "Green Revolution," has emphasized, the second Green Revolution will be a "Gene Revolution." We are just at the beginning of technologies for breeding new and better plants and animals. Advances in creating nutrient-dense, pest- and disease-resistant plants, plants that will grow in saline soil, or dry soil, or wet soil, all have the capability to increase crop yields.

Future issues of *21st Century* will cover some of these developments.

Here are some highlights:

Quality Protein Maize. This maize has significantly improved amounts of the amino acids lysine and tryptophan, making it a more complete and digestible protein. Right now, protein malnutrition is rampant in African and other Third World children, leading to stunting and intellectual deficiencies. In many of these areas, maize makes up most of the calories of the population,

so a more nutritious maize is vital.

The photos from the International Maize and Wheat Improvement Center demonstrate the difference in the growth of pigs fed with quality protein maize (QPM) vs ordinary maize (p. 3).

New Rice for Africa. NERICA, as this rice is known, is a hybrid between Asian and native African rice varieties, which brings higher-yielding rice to areas in which Asian rice could not thrive. NERICA is higher in protein than both its parents, is weed resistant, can thrive on poor and dry soil, and has the ability to resist weeds, survive droughts, and thrive on poor soil. It also has both a higher yield and a shorter growing season (three months to harvest).

Dr. Monty Jones of Sierra Leone, the executive secretary of the Forum for Agricul-



© Sadio Barry/UNDP

A Nerica farmer in Guinea: Nerica yields are two to three times higher than those of standard rice varieties.

tural Research in Africa, shared the FAO World Food Prize in 2004 for his work on NERICA.

Already, NERICA has shown its worth in feeding people. In Guinea, for example, NERICA allowed the country to reduce its imports of rice by 50 percent in three years, and by 2005, Guinea became a net rice exporter.

Chinese Super Green Rice. The co-winner of the 2004 World Food Prize was Prof. Yuan Longping, whose pioneering techniques have produced a hybrid rice that achieves a 20 percent higher yield than older varieties. Almost half of China's rice production land is now planted with the new hybrid, thus providing rice for 60 million more people than if that land were planted with former rice varieties. The new hybrid rice is also grown in more than 20 other countries, and Prof. Yuan's method is being used to create hybrid sorghum and rapeseed with increased yields.

To develop this super green rice, the Chinese used the International Rice Research Institute paradigm for creating a better rice plant by design at the drawing board, followed by finding plants that meet those criteria, and testing them. The Chinese added to this their own long-term push for better rice through hybridization, but not between such distant relatives as in the African new rice hybrids.

New Wheat Seed for Africa. The Kenya Agricultural Research Institute (KARI), in collaboration with the International Atomic Energy Agency, the U.N. Food and Agriculture Organization, and the regional AFRA program, has developed a high-yield drought-resistant wheat seed, using radiation-breeding techniques. (AFRA is the African Co-operative Agreement for Research, Development, and Training Related to Nuclear Science and Technology.)

The new wheat seed, Njoro-BW1, was developed over the past decade with mutation plant breeding, which uses radiation techniques to modify crop characteristics. It was bred to use limited rainfall efficiently, and it also has a "moderate

susceptibility to wheat rust," high yields, and good quality grains for bread baking. With this new seed, farmers have greened the hot and barren dry lands of Kenya, making use of land that was formerly considered unfit for crops.

Wheat is the second most important cereal crop in Kenya, after maize, but the country currently imports two-thirds of its wheat, at skyrocketing prices. Thus the new wheat is vital for Kenya's food security.

A second wheat variety, DH4, is expected to be released soon. This shares the qualities of Njoro-BW1, and is also hard and red, with high protein and good bread-baking qualities.

In the past five years, in Africa alone, six new varieties of crops using radiation breeding have been officially released, including new varieties of sesame in Egypt, cassava in Ghana, wheat in Kenya, banana in Sudan, and finger millet and cotton in Zambia. The same type of techniques have been also used to develop crops that can tolerate saline soil.

Best Practices Agriculture. This simple concept is based on developing new methods for producing higher yields. For rice, this is the system of rice intensifica-

tion (SRI) put forward by Cornell scientist Norman Uphoff. SRI turns entrenched practices of rice cultivation upside down, and manages to obtain significant productivity increases from existing seed types and soils, without genetic manipulations.

Traditional rice growing (even by scientists) uses older seedlings planted in clumps after transplantation, and flooded in rice paddies. In contrast, SRI uses younger seedlings planted singly, with wide spacing after transplantation, and the seedlings are allowed to dry out between waterings. The result, according to many studies, is more secondary shoots, bearing more and better panicles (the seed-bearing structure), larger plants, and hardier plants. There is much less seed usage per area, and the plants produce better yield with less water. The yield increases occur with both old types of seed and the new hybrids.

For more information, see <http://ciifad.cornell.edu/sri/>.

What Has to Be Done

This very brief list of agricultural technologies represents a fraction of the known, workable methods for increasing food production. To put them into practice



CIMMYT

Pigs raised solely on quality protein maize (larger animals) have a visible advantage over their sibling pigs raised solely on conventional maize (smaller animals). The photos are from separate feeding studies conducted in Guatemala, El Salvador, Colombia, and Ghana in the years indicated.

requires funding for research organizations to continue development of improved plants; government commitments to provide the means for farmers to procure seeds, fertilizer, pesticides, and necessary equipment; and international commitments to provide agricultural specialists to work with farmers, training them in new agricultural methods. All of this could start immediately.

Where these measures have been used (as in Malawi), against the diktats of the “free market” World Trade Organization, food production has more than doubled, and food self-sufficiency is within reach.

Also required is the building of roads and rail lines to provide for transportation of crops to market, and proper storage materials and facilities to make sure that harvested crops safely reach their intended consumers, human and animal. Part of this infrastructure has to be a network of food irradiation centers, of the sort China has developed, to disinfect and preserve foodstuffs, to delay ripening of fruits and vegetables, to inhibit sprouting in potatoes and onions, and to keep bugs and rodents out of grains.

Currently 25 percent and more of harvested crops in the developing sector are destroyed by insects, rodents, and disease before they reach a human consumer.

The Other Infrastructure

We cannot feed the world using greenie-cherished forms of energy. Treadle pumps for irrigation, the Al Gore carbon-offset solution for the Third World,¹ won't provide the required irrigation. Yet we have at hand the technologies needed to lift all of mankind out of disease, poverty, and backwardness. A brief review:

Fission and Fusion. The 21st Century requires fully human methods, meaning those that involve the human brain, not



H. Agbogbe/IAEA

Prof. Miriam Kinyua (left), former chief plant breeder and director of KARI, led the drive to produce new varieties of crops in Kenya, including Njoro-BW1 wheat. Here she is walking with farmers and KARI staff in fields seeded with the new drought-resistant wheat.

muscle power. This means the full development of advanced fission and fusion. Looking 50 years ahead, we need 6,000 new nuclear plants by the year 2050, in order to supply electricity and process heat for industry, water for agriculture and human consumption, and hydrogen-based fuels to replace petroleum in transportation.²

This includes large plants for metropolitan and industrial centers, smaller modular plants for nations that now have smaller power grids and will be able to add more units as they develop. It includes high-temperature reactors, fast breeder reactors, new experimental reactors, reprocessing plants, enrichment plants, fuel fabrication plants, and infrastructure for all of the industrial processes that nuclear can power: desalination, hydrogen production, steel-making, and so on.

We also must look beyond fission, and fund the development of nuclear fusion now at levels that will allow the science and technology to develop. In 1980, the Congress passed, nearly unanimously, the 1980 Magnetic Fusion Energy Engineering Act, which would have built an engineering model reactor by 1990 and a demonstration tokamak reactor by the year 2000. This law was passed because

at the time, Congress and scientists had the foresight and confidence that the goals of the Act were achievable in that given time-frame.

President Carter signed the Fusion Act into law, *but the money was never allocated to fund what the law specified.* Instead, the U.S. fusion research program continued to be chopped down, accompanied by complaints that the nation couldn't afford to keep putting money into a program that could not produce instant results.

While South Korea and China, to take two exam-

ples, have the foresight to fund fusion research and build experimental reactors, the United States has not even come up with the budget contribution it pledged to the international collaborative fusion effort, ITER, the tokamak now being built in Cadarache, France.

We need to fully fund ITER, as well as a variety of alternative concepts for achieving fusion (including the stellarator program that was just killed in midstream by the Department of Energy, because it cost too much). We must also support vastly expanded research into the basic science of Low Energy Nuclear Reactions (“cold fusion”), and stop the witchhunt against this important field of research. Only a broad program, combining fundamental research and technological development, will enable the nation to advance, and in the process spark the optimism and enthusiasm that will create a new generation of scientists and engineers.

Space Development. You can't get to the Moon or Mars on windmill or wave power. It can be done using chemical energy, as we have been doing, but fission- and fusion-powered rockets will get us there faster (and therefore more safely), and permit space vehicles to carry more cargo, because they won't be burdened with large amounts of liquid fuel.

What does a robust space program

Continued on page 60

1. For a graphic view of why carbon offsets are genocide, see www.21stcenturysciencetech.com/Articles%202007/GW_genocide.pdf.

2. See James Muckerheide, “How to Build 6,000 Nuclear Plants by 2050.” www.21stcenturysciencetech.com/Articles%202005/Nuclear2050.pdf.

Pollution Sources In Ice Cores

To the Editor:

In studying the excellent paper by Zbigniew Jaworowski, "CO₂: The Greatest Scientific Scandal of Our Time," [Spring-Summer 2007], I would like more explanation about Figure 2 on p. 18, "Changes in CO₂ Concentrations in Vostok Ice Core Similar to Changes of Extreme Pollution." I have searched the sources noted, but I would like to have particular explanations of pollution interferences.

Rui G. Moura
Portugal

Zbigniew Jaworowski Replies

Figure 2 is composed from two sources: Figure 11 in Jaworowski, et al. 1992b ["Do Glaciers Tell a True Atmospheric CO₂ Story?" in *The Science of the Total Environment*, Vol. 114, pp. 227-284] in which seven curves represent seven phenomena occurring *in situ* and in the ice cores. Among them, only the CO₂ curve is relevant for discussion of the 2007 paper.

The new curve added to Figure 2 are data on lead concentration from Boutron et al., 1987 ["Preliminary Data on Changes in Lead Concentrations in Antarctic Ice 155,000 to 26,000 Years BP," Vol. 21, No. 5, pp. 1197-1202], covering the same depth (and ice age) as the CO₂ curve.

Figure 2 shows that the highest concentration of lead in the ice core appeared at the same part of the core as the lowest concentrations of CO₂. This reflects the effect of horizontal cracks formed in the ice at the moment of drilling the core. Through these cracks, the drilling fluid, highly contaminated with lead and other heavy metals, penetrated to the very center of the core, and CO₂ escaped to the fluid from the cracked ice.

The cracking is due to the sheeting phenomenon, which is caused by a difference of pressure between the rock (or

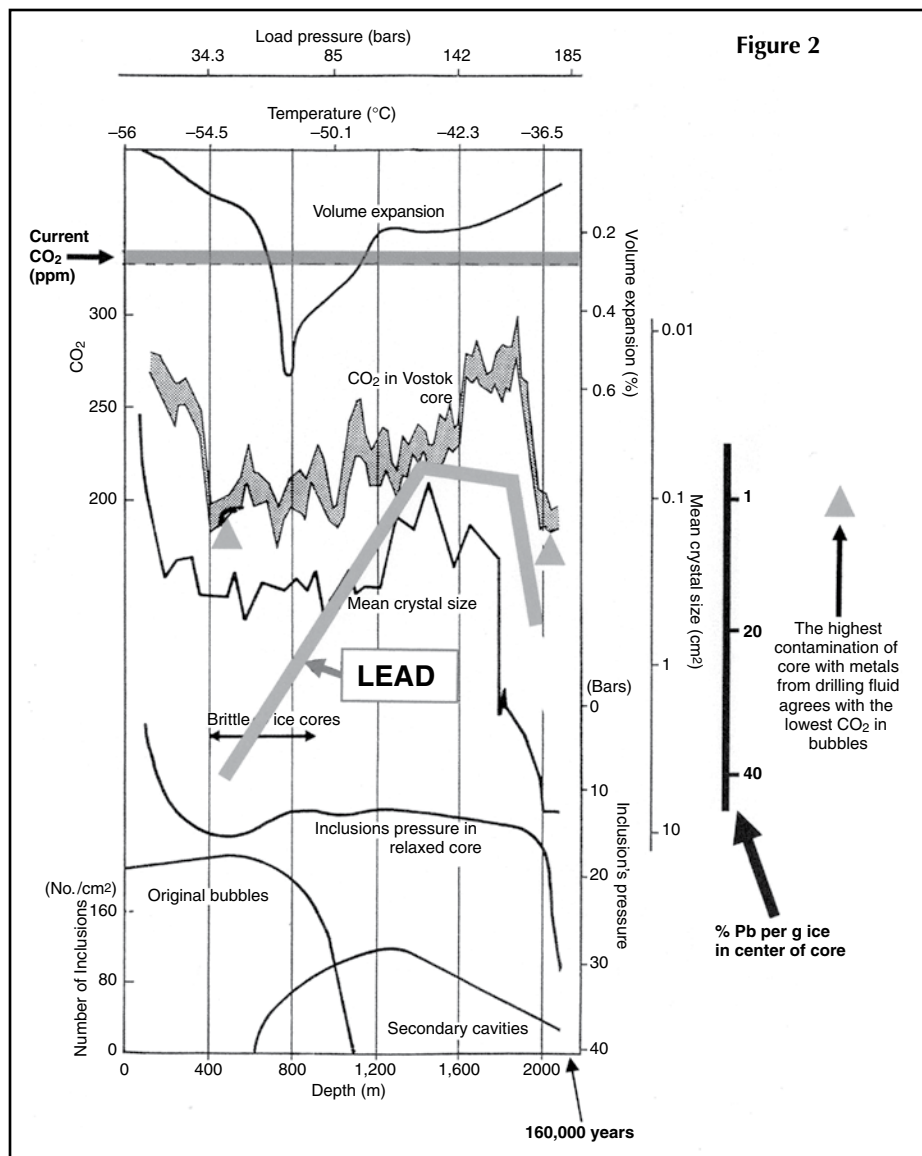


Figure 2

ice), and the bottom of borehole filled with the drilling fluid. The corrosive drilling fluid is filling the borehole not to the surface of the ice, but to about a level of 200 meters below the surface, at which the porous firn is already changed into solid ice.

This causes a pressure difference at the bottom level of the borehole in ice of about 15 bars. Sheeting starts at a pressure difference of 8 bars.

The lead curve is more or less parallel to some other effects, such as formation in the ice core of secondary cavities from the expanding clathrates, due to pressure relaxation, decreasing pressure in the gas inclusions, crystal size, and perhaps also

core volume expansion. This is what Figure 2 says.

Correction

In "CO₂: The Greatest Scientific Scandal of Our Time" (Spring/Summer 2007, pp. 14-28), the statement on p. 22 (left column) that "the Sun has been the dominant cause of the strong warming during the past three decades" is that of the author, Zbigniew Jaworowski, and is not from the quoted reference Solanki et al. 2004. The reference to Solanki et al. 2004 should have appeared just after Figure 7, for it refers only to Figure 7. *21st Century* apologizes for this editorial error.



EIRNS

Members of the Philippines LaRouche Society and the Philippines LaRouche Youth Movement pose in front of the mothballed Bataan Nuclear Plant. They are preparing a report on their tour of the plant for the Energy Department.



Clean and Safe Energy Coalition

Moore: "We have no right . . . that here we enjoy these benefits of modern technology . . . and yet some people among us think it is their duty to prevent other people from having those very technologies which have made it possible for themselves to have good and long lives."

PHILIPPINES TO REVIVE SHUT-DOWN NUCLEAR PLANT

The International Atomic Energy Agency gave its okay to the Philippines to revive its mothballed Bataan Nuclear Plant, built under President Marcos in the 1980s. The decision was announced by Gen. Angelo Reyes, Secretary of Energy, on June 7. The IAEA estimates that structural repairs and other work on the plant could be completed for about \$800 million, General Reyes said, and the plant could be running within five years.

The issue is politically explosive, not only for the Philippines, but for Asia and the world. The Bataan plant was a primary target of the 1986 coup against Ferdinand Marcos, run directly by then-Secretary of State George Shultz and his Deputy Paul Wolfowitz, and it marked the beginning of the anti-nuclear policy of the neo-conservatives, who were moving to take over U.S. policy. The plant was ready to begin operating, but it was shut down completely as soon as Marcos was deposed.

Members of the Philippines LaRouche Society and Philippines LaRouche Youth Movement toured the plant in May, and are preparing a report on the tour for the Energy Department. They were happy to learn that a small team of dedicated engineers has manned the plant for the past 22 years, turning on the turbine occasionally to prevent its decay.

The reopening of the nuclear plant will be a declaration that its 1986 closing was entirely a political act of destruction against the Philippines and the Third World generally, and that it is now possible to revive the "Atoms for Peace" momentum that was destroyed by the Greenie/neo-con anti-nuclear hoax.

LAND-GRAB AT CHERNOBYL TO GROW BIOFUEL CROPS

The May issue of *Ethanol Producer* magazine features the multi-billion-dollar plan of Greenfield Project Management Ltd., based in Dublin, to grow crops for ethanol on the now-unused lands around the Chernobyl nuclear plant in Ukraine. Greenfield has already put \$12.6 million into the project, in partnership with the nation of Belarus, and plans to put in another \$120 million this year. The company is building two ethanol refineries in Belarus, with the aim of exporting the biofuels to Europe, so that European nations can meet their EU-imposed quota of having biofuels constitute 10 percent of their fuels by 2020. Now, some European nations import ethanol from Brazil.

"With the right kinds of crops, technology, safety systems and processing, pure fuel ethanol can be safely produced from the nuclear zone," Basil Miller, Greenfield's chief communications officer, told *Ethanol Producer*. The company is promoting its land-grab—the 70,000-square-mile territory involved is larger than the state of Iowa—as a "humanitarian venture." Greenfield says that the ethanol crops will "remediate" the "highly contaminated" land.

Actually, the radioactivity in much of the area is near that of natural radioactivity in average soil—400 kilobecquerels per square mile (1 becquerel = 1 event of radiation emission per second). In some regions of the world, the natural radioactivity in the soil is 10 times higher than this average. (See "The Real Chernobyl Folly" by Zbigniew Jaworowski: www.21stcenturysciencetech.com/2006_articles/spring%202006/Chernobyl_Folly.pdf.)

FORMER GREENPEACE LEADER PATRICK MOORE SAYS, GO NUCLEAR!

Patrick Moore, one of the five co-founders of Greenpeace in 1971, talked with *21st Century's* Gregory Murphy April 28, about environmentalism, nuclear power, and why he left Greenpeace. You can read their conversation on the magazine's website: www.21stcenturysciencetech.com/Articles%202007/Moore_interview.pdf.

THAILAND STUDYING PLAN FOR A CANAL ACROSS THE KRA ISTHMUS

The Thai cabinet on May 20 endorsed a Transport Ministry proposal to conduct a joint feasibility study with Dubai World into the development of a logistics network along the Kra Canal route across the Kra Isthmus in southern Thailand. The Kra Canal to connect the Eastern Gulf of Thailand and the Western Andaman Sea, and more generally Eastern and Western Asia by sea, would cut hundreds of miles off the Strait of Malacca route, and has been a dream for more than a century.

In the early 1980s, *Executive Intelligence Review* and *Fusion* magazine (the predecessor of *21st Century*) co-sponsored two conferences in Bangkok on the Kra Canal, with supporters from all over Asia participating. Beyond the great cost of such a project, many reasons have been put forward to delay or kill it. One of these reasons, has been that the Canal would increase the tension and animosity between the Buddhist North of Thailand and the Muslim South. The utilization of a company from Muslim Dubai should help reduce these political tensions.

The proposed study will investigate the viability of the long-delayed project, including the development of a deep-sea port at Pakbara on the Andaman Sea southwest coast of Thailand (which the Thai government had previously committed to) and an industrial zone along the route. The seaport, with a potential to cater to ships of 70,000 metric tons, would be a gateway to Europe, Southwest Asia, and Africa.

A Transport Ministry source said, "In the event Thailand faces investment constraints, Dubai World is ready to shoulder all of the investment costs, be they for the refinery, an oil depot, a power plant, a port or related businesses."

COLD FUSION (LENR) DEMONSTRATED AT OSAKA UNIVERSITY

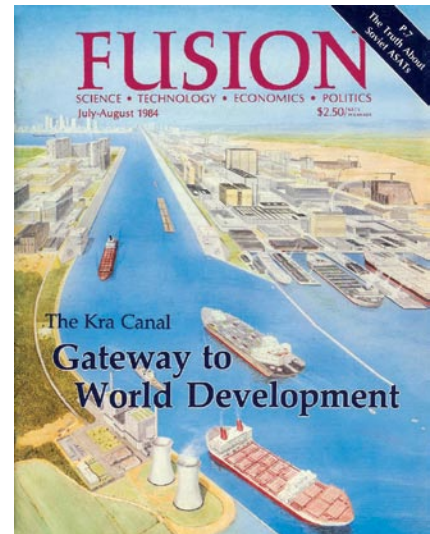
Prof. Emeritus Yoshiaki Arata of Osaka University and his associate, Prof. Yue Chang Zhang of Shanghai Jiotong University, successfully demonstrated the continuous production of excess heat and helium-4, indicators of a nuclear fusion reaction, before an audience of scientists, representatives of technical companies, and journalists, at Osaka University on May 22. The "live data," reported fusion scientist Akito Takahashi, "looked just like data they reported in their published papers" in the *Journal of the High Temperature Society* of Japan in February and March this year. "This demonstration showed that the method is highly reproducible," Takahashi said.

Arata, who is a top senior scientist in Japan, has been working on what are now termed "low-energy nuclear reactions," or LENR, since 1989, when he first learned of the cold fusion experiments of Martin Fleischmann and Stanley Pons. His experiment uses an electrode made from a powder of zirconium oxide and palladium charged with deuterium gas. In this form of cold fusion, two atoms of deuterium gas are caused to fuse into helium, releasing the same energy per reaction as that produced in a hydrogen bomb, under conditions produced in, or near, the negative electrode of an electrolytic cell similar to a battery.

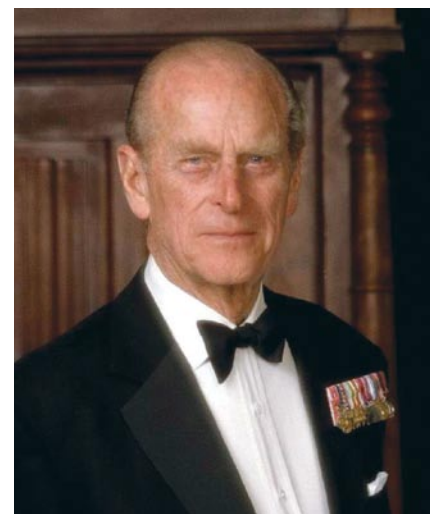
Takahashi's report on the experiment performed in Arata Hall at Osaka University appears in a press release issued by *New Energy Times* (newenergytimes.com/news/2008/NET27.htm), but has had scant mention elsewhere. Arata's research was covered in detail in the Summer 1995 issue of *21st Century*.

DANISH PRESS MOCKS PRINCE PHILIP'S POPULATION POLICY

"Father of Four Attacks Families with Children" is the title of a May 19 news short in the Danish daily *Berlingske Tidende* on May 19. The article begins (in translation), "The Eco-Warrior" has widened his field of activity which is already large, and suggests his own solution to the problem of rising food prices, "The cause is overpopulation." Philip is quoted as saying: "The demand is too great, and there are too many people on the Earth, but no one wants the government to intervene in family life." The short item ends, "Whether the Prince, who had four children with Queen Elizabeth, is considering introducing the Chinese 'only one child per family' policy into England, is still unknown."



The long-delayed Kra Canal "Great Project," part of the Eurasian Land-Bridge plan, would cut hundreds of miles off the shipping route between West and East Asia. Here, the 1984 cover of *Fusion* magazine, with an artist's depiction of the Canal.



The royal "father of four" who wants to be reincarnated as a deadly virus, the better to kill you.



Up for adoption: the vampire bat.

WORLD WILDLIFE FUND (WWF) GOES TO BAT FOR VAMPIRES

Forget the panda; Prince Philip's WWF has found a better symbol: the vampire bat.

What endears the vampire bat to the WWF is its method of feeding: "They have 22 teeth but use only about half of the sharpest ones for feeding. They peel back a small sliver of skin on their featherless or hairless prey and use long tongues to lap up the blood. Grooves in the tongue widen during feeding to allow the flow," says the WWF Gift Center's "Adopt a Vampire Bat" page.

WWF TO MEXICO: LET THEM EAT BUTTERFLIES

For Mexico, the World Wildlife Fund's prescription is a "new water culture" that will "save" the country's water basins and bodies from the "threats" arising from human activity, such as "excessive" irrigation for agriculture, dams, and water management transfers. The WWF plan is a direct attack on lifesaving water projects such as are proposed in the Hydraulic Plan of the North (Plan Hidraulico del Norte or PLHIGON) aqueduct project, which brings otherwise wasted runoff water from the mountains for use as irrigation in dry desert regions.

Rather than support human life with improved agriculture, the WWF argues that the only kind of economic activity that doesn't harm the environment is "eco-tourism"—such as visits to the "Monarch Butterfly Biosphere Reserve," in the state of Michoacan. The WWF organized that state government to prohibit any economic activity in the reserve, other than servicing tourists coming to watch butterflies a couple of months a year. That left 10,000 people who formerly supported themselves by logging, with no recourse but to live off housing subsidies provided by the WWF.

MISSISSIPPI REP. CALLS FOR INCREASING THE NUCLEAR NAVY

Rep. Gene Taylor (D-Miss.) is leading a fight to compel the U.S. Navy to produce more ships that are nuclear powered. This includes future classes of cruisers, destroyers, and large amphibious ships. As of now, only submarines and aircraft carriers are nuclear powered. Taylor told the Capitol Hill newspaper *The Hill* June 14: "Our carriers can go from here to there for 30 years without having to fuel, but the ships that protect the carriers have to refuel every five to six days."

Taylor's proposal faces opposition in the Senate and the Navy, which stems from the collapse of the shipbuilding industrial base. Only two of the six commercial shipyards that build ships for the Navy are nuclear qualified—General Dynamics' Electric Boat in Connecticut and Northrop Grumman's Newport News Shipbuilding and Drydock Co. in Virginia.

In the 1960s and '70s, the Navy had at least a dozen nuclear-powered cruisers and could deploy entire task forces of nuclear-powered ships. But those cruisers were retired and scrapped in the early 1990s, and replaced by gas-turbine-powered Arleigh Burke-class destroyers, which have a range of only about 4,000 miles before refueling.

RUGGED LAPTOP SUMMITS MOUNT EVEREST; JUST RIGHT FOR MARS

The MR-1, a tiny ultra-mobile laptop designed to fit into a military field uniform pocket, recently accompanied the Altitude Junkies climbing team on their Spring 2008 ascent of Mount Everest, providing potentially life-saving real-time weather data for the ascent. Mount Everest is the highest point on Earth, at 29,029 feet. Altitude Junkies team member Phil Crampton, who carried the laptop to the top on May 21, said "The GoBook is more rugged than other small laptops, waterproof and even operated after being froze into 3 inches of ice. We abused the hell out of it and it kept working."

The MR-1 comes with a hard drive heater, but can also be purchased with a solid state (no moving parts) hard drive—essential in the frigid Martian environment.



The General Dynamics Itronix GoBook MR-1 Ultra Mobile mini-laptop, which sells for \$4,400. This tiny computer has GPS and numerous communications platforms built in.

America tried biofuel before. It didn't work, and so, the consequences of this folly are fully understood.

In 1976, we became hostage to an Oil Embargo that caused a national program of conservation and a cry for energy independence. Ethanol was subsidized and corn was diverted into fuel. The price of corn went up along with everything else, including productive land and agriculture inputs. In response to the public outcry, policy shifted, and subsidies for ethanol and oil shale development, etc, were dropped. Ethanol manufacturers went broke; land prices dropped; commodity prices went down below the cost of production; and, family farmers, small businessmen, and small towns went broke—en masse. I know because I was a victim. My family and I survived; but, my good friend died of a heart attack while losing the family farm to foreclosure.

Again, we are starting to see the policy shift as masses of people are starving and rioting. Despots now have another ghastly tool for ethnic cleansing: starvation. My own Senator, Maria Cantwell (D-Wash.), recently qualified her love of renewable biofuel with the "non-food source" moniker. This is a side-stepping trap.

Corn-based ethanol has plenty of critics. But cellulosic-based ethanol has far fewer. Such fuel sources, comprised of wood chips and switchgrass, are abundant and could supply billions of gallons of ethanol. But the conversion process is expensive and undeveloped. To move it along, the U.S. Department of Energy is investing about \$385 million in six projects over the next four years. When fully operational, the "bio-refineries" are expected to produce more than 130 million gallons of cellulosic ethanol per year.

Cellulosic-based ethanol produced in "bio-refineries" doesn't pass the snicker test. There is the conversion expense; it is undeveloped; it exists only because of its government subsidy of \$385 million over four years. But most

VIEWPOINT Biofuels Are Folly— Go Nuclear!



by Carl Holder

important, wood chips and other forms of cellulose are not dense energy. Crop husbandry with harvest, transportation (haul x 2), and weather-protected stor-

age are all energy-intensive and expensive. At best, waste streams are smelly and huge water consumers; and at worst, expensive catalysts require hazardous waste disposal.

Result: The low energy value of cellulose will likely never fit into large-scale, capital-intensive industrial applications for ethanol biofuel.

In the Northwest, free-wood, the refuse from paper/lumber mills, fruit production, and municipal waste is already being used as fuel in industrial boilers. It is free because it is a by-product of a valuable first use. This is called hog fuel. Importantly, where entrepreneurs have found value, cellulose is already being used as fuel, without subsidy.

Biofuels have a responsible place. Small, on-farm systems are used efficiently to convert a percentage of an oil-seed crop to reduce on-farm energy needs. Small-scale wood gasifiers can efficiently produce a gas stream to generate rural electricity. Houses will always be heated with firewood. But industrial-scale bio-refineries will never work.

Nuclear = Real Energy Independence

The main point:

There is something incredibly simple about the concept of "energy density." Buffalo chip → hard wood → corn → coal → oil/gas → nuclear hearth → electric furnace. Gas torch → plasma arc.

Ethanol or biofuel from any food or cellulose source cannot compete with mined/pumped hydrocarbons, but abundant nuclear power can.

Energy independence cannot come from grain or grass. However with abundant nuclear power, railroads can run on electricity; the grid can handle plug-in hybrids; hydrogen fuel can be generated; and food and hydrocarbons can be conserved for highest and best use. Abundant, sustainable nuclear power requires recycling of spent nuclear fuel and advanced fast reactors.

Carl Holder is an engineer in the Tri-Cities, Washington, area and a leader in the fight to reopen the Fast Flux Test Reactor to produce medical isotopes.

Ethanol Production → Starvation

*If the United States alone converted its ethanol grain back to food, it would provide food for 130 million persons! If the nations here (marked *) converted their ethanol grain output back to food, this would feed another 33 million people.*

Country	Millions of Gallons of Ethanol
USA	6,498.6
Brazil	5,019.2
European Union*	570.3
China*	486.0
Canada*	211.3
Thailand	79.2
Colombia	74.9
India	52.8
Central America	39.6
Australia	26.4
Turkey*	15.8
Pakistan	9.2
Peru	7.9
Argentina*	5.2
Paraguay*	4.7
Total	13,101.7

Source: 2007 statistics, Renewable Fuels Association (www.ethanolrfa.org/industry/statistics/)

WHAT, EXACTLY, IS A HUMAN BEING?

Analog, Digital, and Transcendental

by Sky Shields

An actual review of the development of the human species—in particular, the radical steps forward taken during the period of Franklin Roosevelt’s recovery—provides us with a unique angle from which to approach the disease represented by the modern “post-human” hoaxes being pushed today. Rather than twirl ‘round and ‘round, attempting to parry every sophistry in the arguments underlying the cybernetics fraud, we ought to ask ourselves the obvious question: What, exactly, is a human being?

The reductionist’s argument on this point hangs on a single sophistry, which is the same sophistry he wields when asked the question, “What is life?” He proceeds to examine

The reason your laptop doesn’t have any brains.

everything about the human being which is *not* characteristically human, and then he concludes from that that the human being is, in fact, simply a rather sophisticated animal.

The silly reduction of the uniqueness of the human species to physiological differences, such as cranial capacity, posture, physiology of the throat, or an opposable thumb, is an intentional evasion of the issue. It is no less silly than trying to define life from the standpoint of organic chemistry or molecular biology: The reductionist reduces the living organism to its non-living parts, before asking what makes it alive. This is akin to attempting to understand the idea underlying a great poem by analyzing the letters used and how they interact with one another. At this point in the dissection, the idea under consideration ceases to exist.

As we will see below, there *is* an infinitesimal—a unit build-



Brian McAndrews

Visitors at the Franklin Institute in Philadelphia observe a 19th Century orrery, a three-dimensional mechanical model of the Solar System showing the planets as they revolve around the Sun against the background of fixed stars.

ing block—in language, but these are not the letters, any more than the fundamental elements of a living process are its atoms, at least not atoms as they are currently understood. Similarly, once you reduce the analysis of human activity to its animal functions, it is no longer possible to discuss what a human being actually *is* at all.

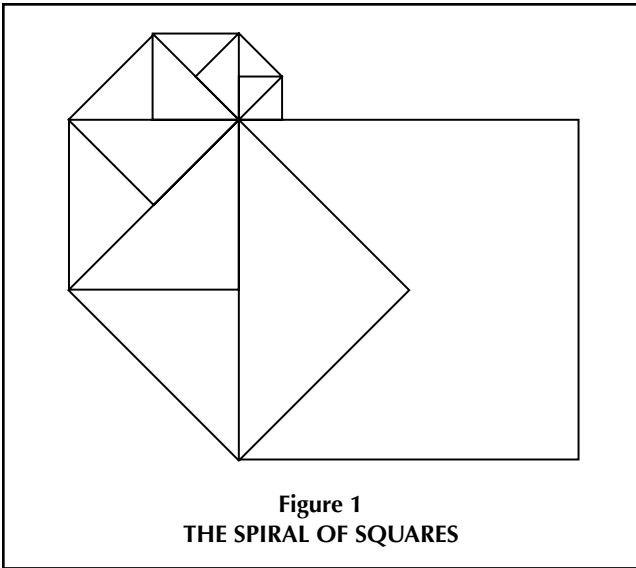


Figure 1
THE SPIRAL OF SQUARES

With that in mind, we will take the opposite approach, and view the human being as any great composition ought properly to be considered: as a coherent whole. Taking our cue from Plato in his *Republic*, we will examine the human individual as *one which takes part in the organization of human economy*.

Human economy, the progress of the development of the human species on the planet, is characterized by rapid and sudden upshifts in the rate of growth of the human population. These sudden upshifts correspond to periods of social reorganization, premised upon scientific and technological progress, such as the 15th Century Italian Renaissance, for example. If the periods between these singular moments are recognized as “units” of human development, it can be seen that this type of constant, anti-entropic development of the human species depends entirely on the discovery and social implementation of new scientific and cultural ideas. That is, this type of characteristic growth, not seen in other species outside of objective changes in their environment, or physiological evolution, depends entirely on the creative powers of the human individual, expressed in the areas of both physical science and classical artistic culture.

Exemplary of this characteristic of the human mind, is its ability to discover, and wield, new transcendental conceptions; conceptions which are defined solely by the fact that they transcend entirely—infinately—the logical systems which preceded them. The model for this transcendental

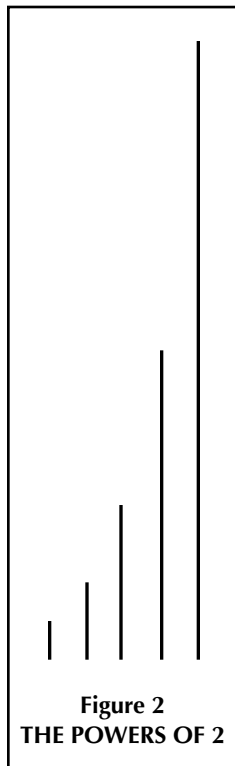


Figure 2
THE POWERS OF 2

relationship is found in Nicholas of Cusa’s quadrature of the circle.

A later transcendental relationship, discovered by Gottfried Leibniz, provides us with a unique window into the methods used during Franklin Roosevelt’s return to the principles of the American revolution, and an insight into the methods by which such transcendental notions are incorporated into the development of human economy—in particular the work of American scientist Vannevar Bush—in extending the cognitive capabilities of mankind as a whole. The exponential curve, or its inverse, the logarithmic curve, is the curve constructed on the basis of constant, continuous, self-similar growth. Its familiar expression is found in the form of Leibniz collaborator Johann Bernoulli’s *Spiral Mirabilis*, or logarithmic spiral. In the logarithmic spiral, equal, arithmetic angular divisions thus correspond to radial lengths increasing in geometric progression (Figure 1). The same thing can be expressed along a horizontal line, by simply producing a series of lines in geometric progression, spaced at equal intervals. In this case, the progression is $1:2 :: 2:4 :: 4:8 :: 8:16 \dots$ (Figure 2).

Obviously, in neither of these cases is the progression actually a continuous curve. The question becomes: What continuous curve has this property of self-similar growth over every interval, and not merely at discrete steps? Let’s begin by looking at any line connecting two discrete points on the curve, such as the ones we have just drawn (Figure 3):

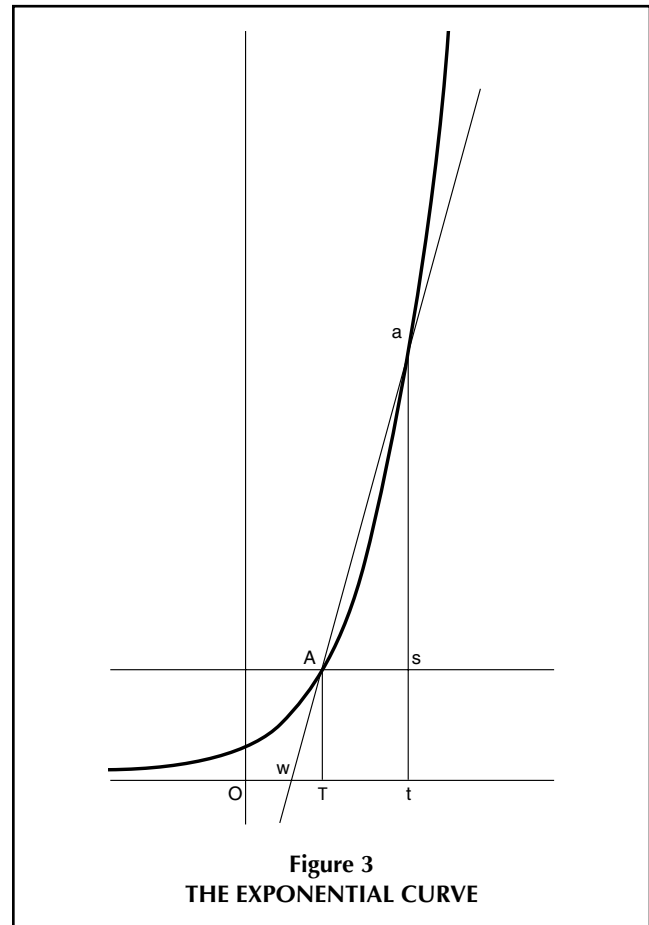
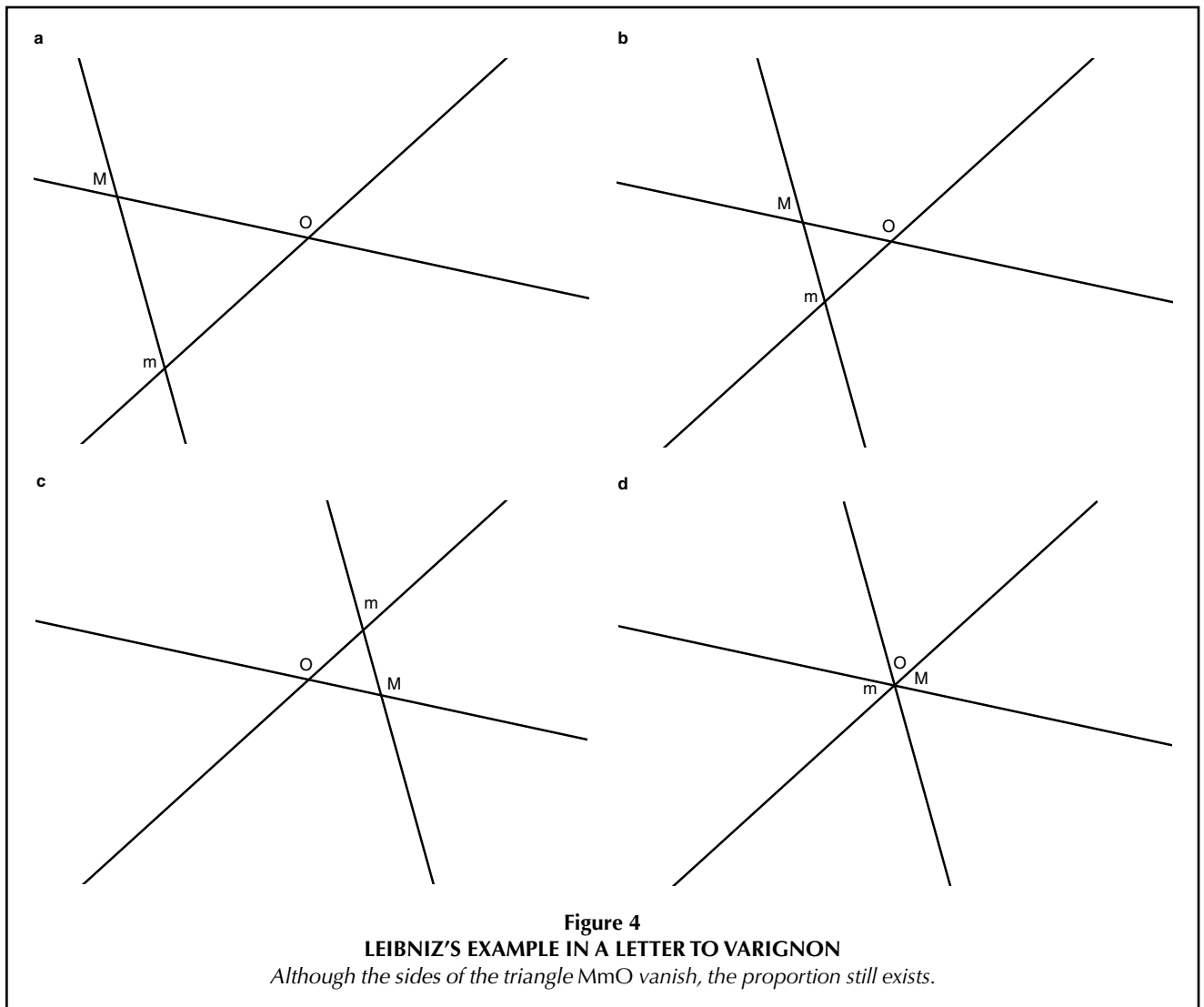


Figure 3
THE EXPONENTIAL CURVE



Here, the triangle aAs is similar to the triangle AWT , having the same angles. That is, we have the proportion:

$$as : As :: AT : WT$$

Or, letting $WT = k$, $OT = x$, $AT = y$, $As = Tt = dx$, and $as = dy$:

$$dy : dx :: y : k$$

If the points A and a on the curve are adjacent, that is, if there is no distance between them, the line AW will be the tangent to the exponential curve at the point A . Also, since this curve was constructed using powers of 2, if $OT = x$, $AT = y$ will be $= 2^{x+dx}$. Also, if $Tt = dx$, at will be $= 2^{x+dx}$. Therefore, our ratio becomes

$$(2^{x+dx} - 2^x) : dx :: 2^x : k$$

or, which is the same

$$2^x(2^{dx} - 1) : dx :: 2^x : k$$

or

$$y(2^{dx} - 1) : dx :: y : k$$

or

$$(2^{dx} - 1) : dx :: 1 : k$$

That is, if dx is taken as constant everywhere on the curve, the distance k will be a constant.¹

"But," you might object, "if the points are adjacent, both the ratios $\frac{dy}{dx}$ and $\frac{dx}{2^{dx}-1}$ are equal to $\frac{0}{0}$." But remember! This

is simply an empiricist's object fixation. For the empiricist, as soon as all of the objects disappear, what is left must be equal to 0. But for the human being, who "is not of the flesh, but rather of the spirit," and for whom objects are simply the shadows of principle, it is only after all of the objects disappear that we can see what that truth actually was which lay behind them all the

1. This constant will be

$$k = \frac{dx}{2^{dx} - 1}$$

while. The example Leibniz used in a letter to his friend Pierre Varignon, in defense of this idea, was to imagine the triangle MmO , in the image in Figure 4.

There is a constant proportion between the sides of the triangle, even as it becomes smaller and smaller, and regardless of which side of the fixed point O the triangle is located on. But what happens at the moment the triangle is passing from one side to the other? At that moment the sides become smaller than anything imaginable, but nothing has changed about the angles to destroy the proportion. Therefore, the sides have vanished, but the *proportion* still exists!

Put in somewhat simpler terms: If you have a sleeping dog, and the dog vanishes, you will no longer have a sleeping dog. If you have a running dog, and the dog vanishes, you no longer have a running dog. In neither case will you be left with “a running” or “a sleeping” for a pet. This does not mean, however, that there is no difference between a sleeping dog, a running dog, and a dog. But where, then, is the difference located? What do a running dog, a running gazelle, and a running emu have in common? If the noun vanishes, where is the verb? With respect to the noun, the verb is $= 0$. However, no sane person would argue that verbs do not exist.

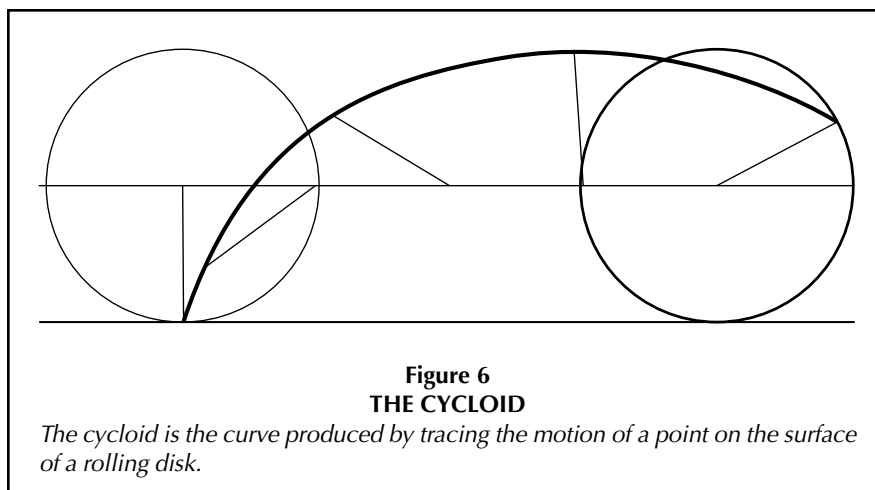
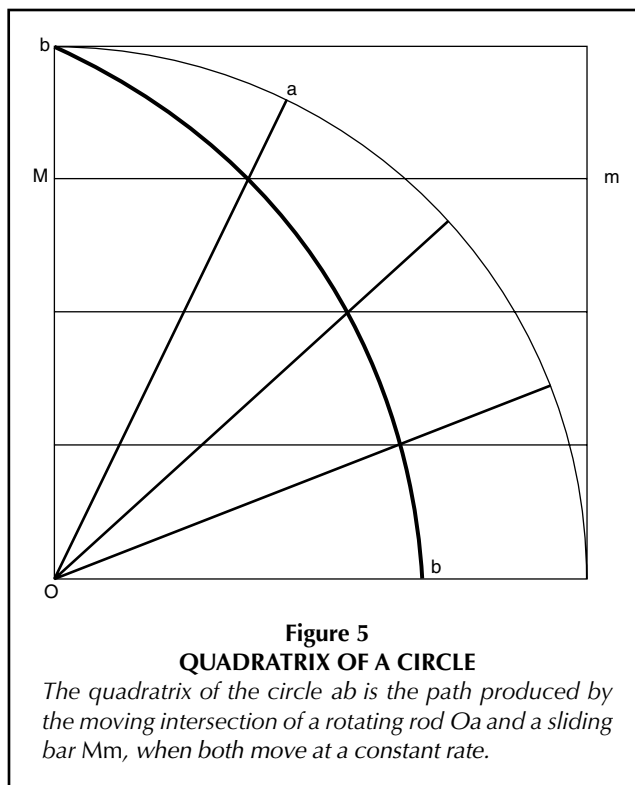
If you keep this in mind, you’ll easily find that the ratio given for k is exactly equal to the ratio of the height and base of the triangle where x is equal to zero.

Speaking of Verbs

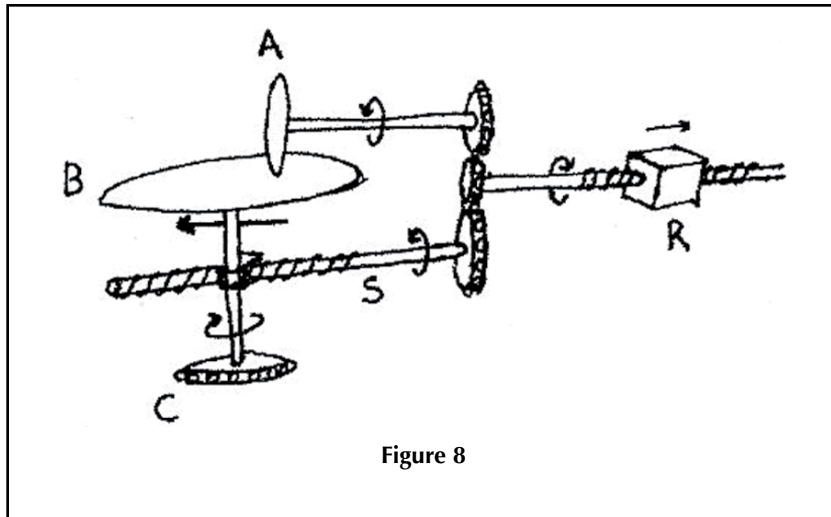
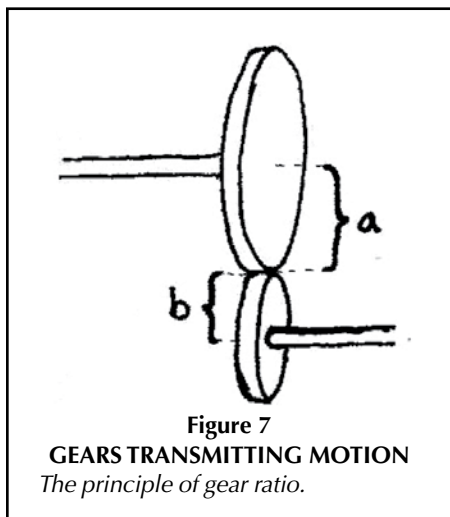
When Descartes banned transcendental geometric relationships from his mathematics, as something it could not comprehend, what he actually said was that “mechanical” curves would not be included. By “mechanical,” he meant the various types of transcendental relationships investigated by the Greeks, which were embodied in physical, mechanical constructions, and which transcended the simple algebraic expression to which he, like a digital computer, was limited. These included the quadratrices of the various conic sections, the cycloid, and the catenary.

Calling these transcendental curves mechanical makes a significant point, whose significance was lost on Descartes himself; the construction of these curves constituted the first occurrence of what later came to be referred to as an “analog computer,” a reflection of one of the fundamental principles of human economic progress.

The principle involved here is one referred to often by economist Lyndon LaRouche as the “machine tool” principle. That is, we have taken an essential, experimentally determined property of this type of constant, self-similar, geometric growth, and embodied it (incorporated it) whole, in a man-made, physical process.



The principle already existed, in principle, as part of the shape of physical space-time. It is necessary, however, to reorganize the shape of Man’s interface with that physical space-time—the physical economy—to reflect that discovered form. The point of intersection of these two physical geometries—that of physical space-time, and that of the physical economy—is the machine tool sector, where the possibility of implementation of a given discovered, physical principle, in a whole array of technology is realized. Because the method of generating this type of implementation is by creating “analogous” processes in the physical economy, such that they reflect the underlying, invisible structure of physical space-time, such a method is called “analog.”



This method is the characteristic form of human creative activity, and the basis for all human economic progress.

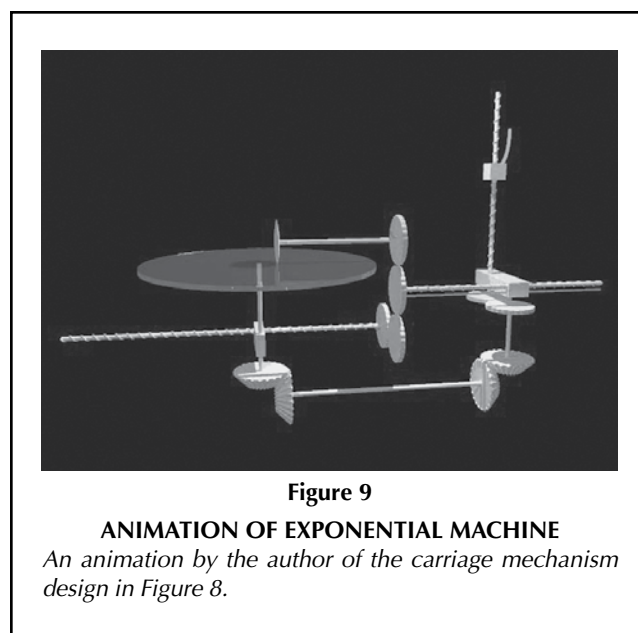
As chairman of the President's National Defense Research Committee, and later director of the Office of Scientific Research and Development during the economic explosion generated by President Franklin Delano Roosevelt's reforms, Dr. Vannevar Bush gained firsthand experience with this principle. His role in the 1930s fight against fascism—and its subsequent subversion by the twin revival of the menace of the Austro-Hungarian Empire, Norbert Wiener, and John von Neumann—has been documented elsewhere.² Here, we will apply his method to a consideration of the exponential curve.

Picture two gears, transmitting motion from one to the other. If the ratio of the two radii is a to b , then b rotations of gear A will correspond to a rotations of gear B . This means also that a tiny rotational change in gear A —call it dA —will have the same ratio to tiny change, dB , in B , which will be the same as a to b . This ratio of rates of change $\frac{b}{a}$, is called the "gear ratio" of the two gears.

Therefore if, as in the device pictured, the two gears A and B can move relative to each other, their gear ratio is variable. If we let gear $A = y$, and gear $B = x$, that variable gear ratio will be equal to the ratio dy/dx . If that variable gear ratio is governed by the motion of the gear y , transferred by means of a screw threading, S , our variable gear ratio becomes equal to the horizontal displacement of that screw threading, which will be equal to the rotation y . If the rotation at C of x is maintained constant, we will have the relationship $\frac{dy}{dx} = y$, expressed by our exponential curve above.³

2. See the accompanying articles by Creighton Cody Jones, "How Wiener Attempted to Kill Science: Only Diseased Minds Believe in Entropy," and Peter Martinson, "Where Your Computers Really Came From."

3. The reader will recognize that this will actually give us a special case of the exponential curve where the constant, k , is equal to 1. That is, instead of 2^x , we will have a curve e^x , where e will be a special number to be discussed later (see Appendix).

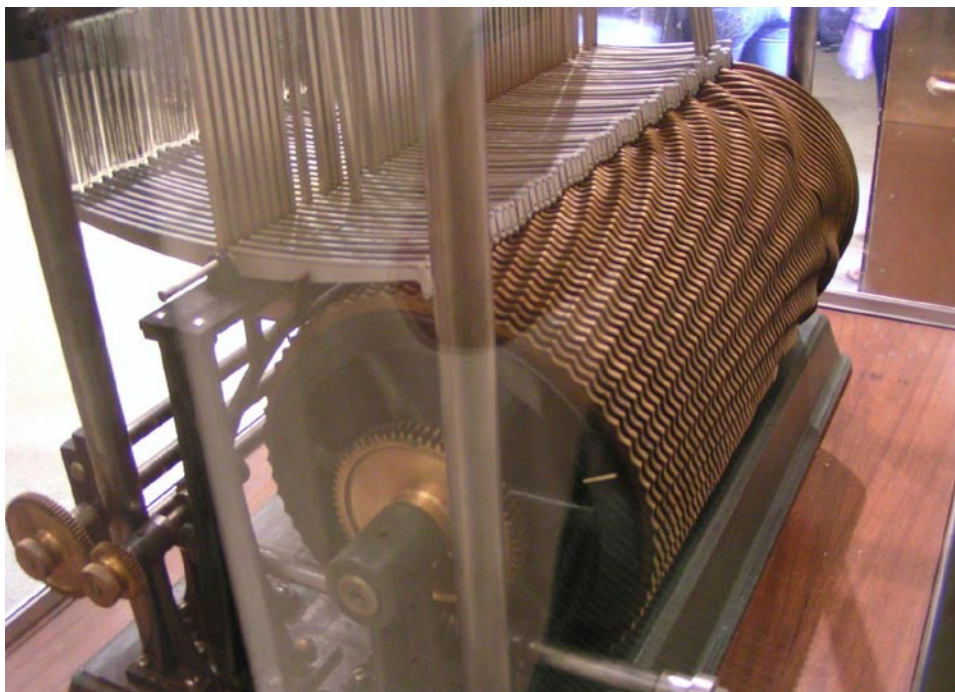


If now that same motion y is transmitted to a carriage, R , by means of another screw threading, and the same constant motion, x , which drives the gear B at C is attached to another carriage, riding on the carriage R , but moving vertically, we will obtain the curve produced by the horizontal motion y , and vertical motion x , such that $\frac{dy}{dx} = y$. That is to say, we will

have our desired exponential curve, for the case where the distance k is equal to 1. The reader is left to devise means to determine the remaining cases.

Squaring the Circle, Again (And Again and Again and Again . . .)

So now, what relationship, if any, does a digital computer have to that process? To begin with, we'll have to figure out how to communicate that type of transcendental relationship to a



Brian McAndrews

This Harmonic Integrator, on display at the Franklin Institute in Philadelphia, was built around 1900 to show how waves interact. It is a single purpose analog computer. Its brass disks have waves cut in them ranging from 64 peaks and valleys to just one peak and one valley. These disks can be connected to the pen in the front, to move it up and down. Rods and pulleys at the top allow the operator to choose which disks are connected to the pen. Then the operator turns a crank to rotate the disks to move the pen, while simultaneously shifting the paper from left to right. This produces a wave pattern on the paper.

digital computer, in terms of the basic logical operations of addition and subtraction which it is capable of understanding. If it is desired to draw the curve itself, we must figure out how to translate the process given above into the types of algebraic relationships our poor digital computer can comprehend.

Since it is not possible to discuss any actually continuous process with our computer, we will have to talk to it in terms of points. We know that our curve $y = e^x$ is equal to 1 at the point where $x = 0$.⁴ The simplest algebraic equation with this property is

$$y = 1$$

but, since we also know that

$$\frac{dy}{dx} = y$$

and thus dy/dx is *also* equal to 1 at the point $x = 0$, we have to pick a more complicated algebraic equation

$$y = 1 + x$$

which is still equal to 1 where $x = 0$, but for which dy/dx is *also* always equal to 1. *However*, since, again, $dy/dx = y$, we have to find a curve for which

$$\frac{dy}{dx} = 1 + x, \text{ or}$$

$$y = 1 + x + \frac{x^2}{2}$$

Hopefully, you can already see that the process of trying to fit this round peg into a square whole will continue forever, giving us

$$y = 1 + x + \frac{x^2}{2} + \frac{x^3}{2 \cdot 3} + \frac{x^4}{2 \cdot 3 \cdot 4} + \frac{x^5}{\dots} + \dots$$

2·3·4·5

which will never become equal to e^x , although, if you have something dumb enough but fast enough—like a digital computer—it will eventually produce something that bears the same relationship to our curve as the multisided polygon bears to the circle.⁵

So then, is it possible that the type of transcendental activity expressed by the human mind—and which drives the anti-entropic growth of a human economy—could ever be replicated by a digital process? After all, it could be argued that a many-sided polygon really *does* make a passably good circle, doesn't it?

The sophistry here, is that without having a circle to begin with, there would be nothing for the many-sided polygon to imitate in the first place! The circle is an elementary unit—a monad in the sense of Leibniz. It is generated as a *single idea*, by a single simple process of circular action. In that sense it, like the human personality, has no parts. It is a one—a whole.

Therefore, from the standpoint of the polygon, the circle is *actually* infinitely far away. This type of transcendental relationship is the same as that which holds between human activity, and that lower behavior of the animals. It is also the same sort of infinite gap which lies between the living and the non-living. The human individual must be regarded as a single, living, cognitive whole, and not merely as the "sum of his parts" because, in reality, he has none.

Sky Shields is a leader of the LaRouche Youth Movement in Los Angeles

4. See Appendix.

5. This process is often inappropriately called the Taylor expansion, though it was earlier discovered by both Gottfried Leibniz and Johann Bernoulli.

Appendix: The Properties of Curve e^x

More can be said about the properties of our curve e^x . As was said before, the value of our number e is given by

$$\frac{dx}{e^{dx}-1} = 1 \text{ or } e = (dx + 1)^{\frac{1}{dx}}$$

which contains an apparent absurdity; which is that, as dx becomes smaller and smaller, $1/dx$ becomes larger and larger. At the point that the distance dx becomes = 0, we obtain

$$e = (0 + 1)^\infty.$$

which again makes no sense, because then we would have the curve $y = 1^x$, which isn't a curve at all, but rather is simply equal to the number 1. But, this can't be the actual value for e because, as we saw above, it is possible to draw a curve e^x with the property $y = \frac{dy}{dx}$, which means a number e must exist having the

property
$$e = (dx + 1)^{\frac{1}{dx}}$$

So, let us call the infinitely large quantity $1/dx$ simply m , giving us

$$e = \left(1 + \frac{1}{m}\right)^m$$

Now, from Pascal's triangle (*much* more can, and will be said elsewhere on this and the Pythagoreans, and so on), we know that the rows

1		$(x+y)^0$
1 1		$(x+y)^1$
1 2 1		$(x+y)^2$
1 3 3 1		$(x+y)^3$
1 4 6 4 1	give us the coefficients for	$(x+y)^4$
1 5 10 10 5 1		$(x+y)^5$
1 6 15 20 15 6 1		$(x+y)^6$

and in general, the coefficients for any $(x + y)^n$ are

$$1, n, \frac{n(n-1)}{1 \cdot 2}, \frac{n(n-1)(n-2)}{1 \cdot 2 \cdot 3}, \frac{n(n-1)(n-2)(n-3)}{1 \cdot 2 \cdot 3 \cdot 4}, \dots$$

That is, $(x + y)^n =$

$$1 \cdot x^n + n \cdot x^{n-1} \cdot y + \frac{n(n-1)}{1 \cdot 2} \cdot x^{n-2} \cdot y^2 + \frac{n(n-1)(n-2)}{1 \cdot 2 \cdot 3} \cdot x^{n-3} \cdot y^3 + \frac{n(n-1)(n-2)(n-3)}{1 \cdot 2 \cdot 3 \cdot 4} \cdot x^{n-4} \cdot y^4 + \dots$$

So, instead of $\left(1 + \frac{1}{m}\right)^m$, we can write

$$1 \cdot 1^m + m \cdot 1^{m-1} \cdot \frac{1}{m} + \frac{m(m-1)}{1 \cdot 2} \cdot 1^{m-2} \cdot \left(\frac{1}{m}\right)^2 + \frac{m(m-1)(m-2)}{1 \cdot 2 \cdot 3} \cdot 1^{m-3} \cdot \left(\frac{1}{m}\right)^3 + \frac{m(m-1)(m-2)(m-3)}{1 \cdot 2 \cdot 3 \cdot 4} \cdot 1^{m-4} \cdot \left(\frac{1}{m}\right)^4 + \dots$$

or

$$1 + m \cdot \frac{1}{m} + \frac{m^2-m}{1 \cdot 2} \cdot \frac{1}{m^2} + \frac{m^3-3m^2+2m}{1 \cdot 2 \cdot 3} \cdot \frac{1}{m^3} + \frac{m^4-6m^3+11m^2-6m}{1 \cdot 2 \cdot 3 \cdot 4} \cdot \frac{1}{m^4} + \dots$$

which is equal to

$$1 + 1 + \frac{1}{1 \cdot 2} - \frac{1}{2m} + \frac{1}{1 \cdot 2 \cdot 3} - \frac{1}{2m} + \frac{1}{m^2} + \frac{1}{1 \cdot 2 \cdot 3 \cdot 4} - \frac{1}{4m} + \frac{11}{24m^2} - \frac{1}{m^3} + \dots$$

where the terms $\frac{1}{2m}, -\frac{1}{2m}, \frac{1}{m^2}, \frac{1}{4m}, \frac{11}{24m^2}, -\frac{1}{m^3}$, etc.,

containing m in the denominator, become = 0 when m becomes infinitely large. Therefore we have

$$1 + 1 + \frac{1}{1 \cdot 2} - \frac{1}{1 \cdot 2 \cdot 3} + \frac{1}{1 \cdot 2 \cdot 3 \cdot 4} + \dots$$

which gives us an approximation which allows us to come as close to our number e as we like, without ever actually reaching it. Such an approximation has many useful applications, one of which being that, while the series above is *not* the actual number e , we have generated an approximation which only involves the operations of addition, subtraction, multiplication, and division of which our digital computer is capable.



© Lucas Deming/Brooks Institute of Photography, 2006

The author addressing an "Atoms for Peace" seminar conducted by the LYM in South Pasadena, California.

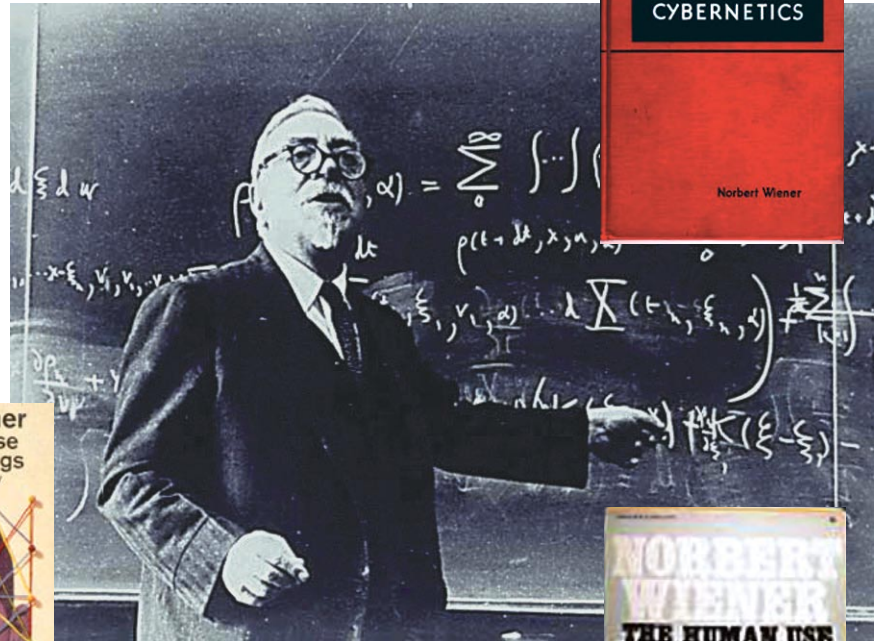
Only Diseased Minds Believe in Entropy

by Creighton Cody Jones

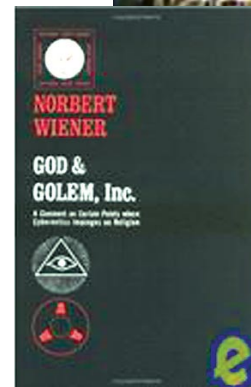
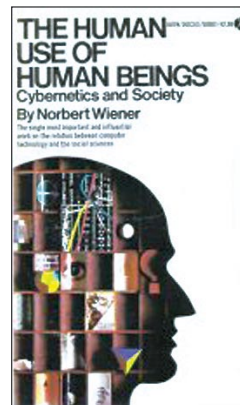
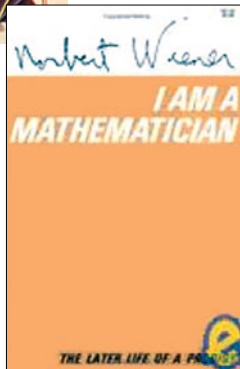
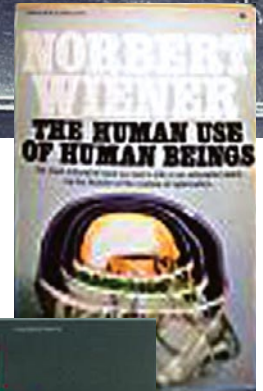
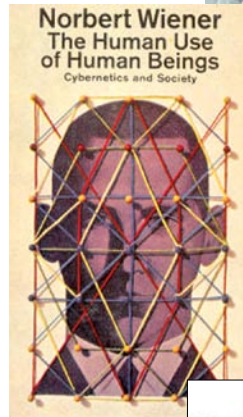
To cure the patient, we must first diagnose society. Thus, we start by examining one of its chief contagions, Norbert Wiener (1894-1964), "pioneer" of information theory and coiner of the term *cybernetics*; a creature whose vision for the cyberfuture is not much different from that of the evil H.G. Wells, one of "One World Government."¹ Wiener writes,

Very many of the factors which previously precluded a *World State* have been abrogated. It is even possible to maintain that modern communication, which forces us to adjudicate the international claims of different broadcasting systems and different airplane nets, has made the *World State* inevitable.

It is precisely this fantasy of a "world state" that Wiener's work took strides to produce. He was joined in this endeavor by many of the leading social engineers of the counterculture movement, including the famed sex-crazed anthropologist Margaret Mead, and the Grateful Dead creator, psychiatrist Gregory Bateson, both of whom were among the many "social scientists" who participated in the Cybernetics Conferences of



Cybernetics cult leader Norbert Wiener imposed his entropic view of the universe on mankind by building it into his artificial "information society." His book covers depict the ugly story.



the 1940s, hosted by the Josiah Macy, Jr. Foundation.²

Wiener's notion, that the computer was a perfect mimic of the human brain, is what these social engineers found particularly useful, and they thought that computers could play a similar role

1. See Matthew Ogden, "The Noösphere vs. the Blogosphere," *Is the Devil in Your Laptop?*, LaRouche PAC pamphlet, November 2007, available at www.larouchepac.com.

2. See David Christie, "INSNA: 'Handmaidens of British Colonialism,'" *Is the Devil in Your Laptop?*, LaRouche PAC pamphlet, November 2007.



Library of Congress

Cybernetics cultists Margaret Mead and her husband Gregory Bateson, shown here in 1938 in Tambunam, New Guinea, where they were researching the native population.

as LSD for use in mind control—to create “concentration camps without tears.” But perhaps the most sinister of those who clustered with the likes of Wiener was John von Neumann, whose “Theory of Games” became the economic-social construct that cybernetics plugged into, and is the theoretical basis for much of the fascist, economic mass-murder policies of globalization today.

The Devil Flies the Union Jack

But first, to understand Norbert, you must come to know his own personal Dr. Faust, the man Lyndon LaRouche has dubbed “the most evil man of the 20th Century,” Bertrand Russell.³ Here we speak of a man, who under the abusive hand of his grandfather, one-time British Prime Minister Lord John Russell, was bred to be an embittered defender of oligarchic racialism, whose only love became the hatred of mankind, and its principal defender, the United States.⁴

Russell’s devilish pessimism oozes out of his book *The Impact of Science on Society* (1953), where he wrote, “Life is a brief, small and transitory phenomenon in an obscure corner . . . not at all the sort of thing one would make a fuss about if one were not personally concerned.” And later, in discussing the threat to the aristocratic way of life posed by human progress and population growth, Russell wrote:

3. Lyndon H. LaRouche, Jr., “How Bertrand Russell Became an Evil Man,” *Fidelio*, Fall 1994. Available at www.schillerinstitute.org.

4. Lord John Russell’s role as an anti-American shows roots in his role as foreign secretary, at one time serving under Lord Palmerston. He met with Confederate Commissioner James Murray Mason, and organized across Europe for support of the Confederacy. See A.R. Tyrner-Tymauer, *Lincoln and the Emperors* (New York: Harcourt, Brace & World, 1962).

The danger of a world shortage of food may be averted for a time by improvements in the techniques of agriculture. But, if population continues to increase at the present rate, such improvements can not long suffice. There will then be two groups, one poor with an increasing population, the other rich with stationary population. Such a situation can hardly fail to lead to war. . . . War may become so destructive that, at any rate for a time, there is no danger of overpopulation, or the scientific nations may be defeated and anarchy may destroy scientific technique. . . .

Thus, Russell took it as a personal mission to complete the job begun by Venice’s Paolo Sarpi (1552-1623): to destroy scientific progress and its generator, creative thinking. Sarpi must be recognized as the man who, in the 16th-17th Century,

faced with the annihilation of the Venetian oligarchy by the hand of scientific progress that had emerged out of the Renaissance, developed the virus of empiricism, spread by his lackey Galileo, as a means of embracing science with one hand, and stabbing it in the back with the other.

So Russell began early in his academic life, by sophisticatedly attacking two of the primary contributors to modern science: Gottfried Leibniz, the founder of the calculus, whose concept of the immortality of the soul Russell took particular issue with; and Bernhard Riemann, discoverer of the principle of higher-order, transcendental, upward development in mathematical physics, and whom Einstein acknowledged, along with Johannes Kepler, as the bookends to the creation of modern physics.

It was in Riemann’s *Hypotheses That Lie at the Foundations of Geometry*, that he broke the silence on the suppressive role that Euclid, an Aristotelian deployment against the work of Plato and the Pythagoreans, had played in the history of science. Riemann attacked the notion of approaching the investigation of reality with an *a priori* set of axioms, from which our interpretation of events was to be logically derived. Riemann proved, rather, that the universe was one characterized by progressive change, from lower, to higher order states of existence. Yet, despite these discoveries grounded in experimental truth, Russell insisted, as in his *Principia Mathematica*, on an *anti-creative* description of a closed Euclidian universe, one of fixed logical consistency. One, of course, devoid of human progress and beauty.

...It Will Be a Cold Life in Hell

It is from the teat of this swine, that Wiener suckled, and, therefore, contracted the Sarpi virus, with the corresponding evil world view of pessimism. To this effect Wiener writes in *The*

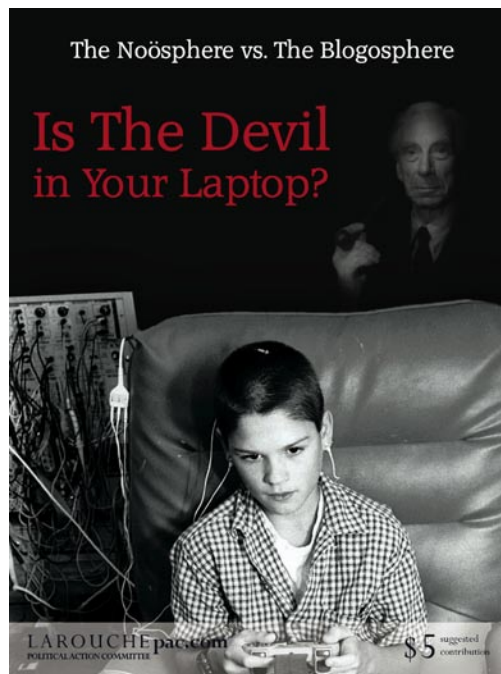
Human Use of Human Beings:

Sooner or later we shall die, and it is highly probable that the whole universe around us will die the heat-death, in which the world will be reduced to one vast temperature equilibrium in which nothing really new ever happens. There will be nothing left but a drab uniformity out of which we can expect only minor and insignificant local fluctuations.

It is this Gnostic belief in an entropic universe, with its subsuming purposeless, and bestial view of man, that Wiener sets to impose on society, through building it into the fabric of his artificial society of information. Here we see, in the form of that axiom of *entropy*, built into the system as truth by Wiener, what Lyndon LaRouche dubbed “The Force of Tragedy”⁵—a belief acting as a kind of “invisible fence” of the mind, herding those who, in this case, would hook the fate of their nation to that belief in the truthful representation of reality by “information systems,” to their own inevitable heat-death.

Governed by this belief himself, Wiener began the preface to the second edition of his principal work, *Cybernetics*, where his wicked ancestors had left off: with a sinister attack on the epistemology responsible for mankind’s development and survival. In trying to convey the state of affairs of science at his time, he indicates what side of the battle he’s on, by maliciously disregarding scientific revolutionary Johannes Kepler and focussing rather on those whom Kepler himself had refuted. Wiener wrote that:

the result was that the study of non-linear electrical engineering was getting into a state comparable with that of the late stages of the Ptolemaic system of astronomy, in which epicycle was piled on epicycle, correction upon correction, until a vast patchwork structure ultimately broke under its own weight. Just as the Copernican system arose out of the wreck of the over-strained Ptolemaic system, with a simple and natural heliocentric description of the motions of the heavenly bodies instead of the . . . complicated Ptolemaic geocentric system, so the study of non-linear structures and systems, whether electrical or mechanical, natural or artificial, has needed a fresh and independent point of commencement.



The LYM-authored pamphlet “*Is the Devil in Your Laptop?*” was published in November 2007 with the intention of saving the United States from its own self-destruction. The introduction notes that “although the contents of this pamphlet will be immediately painful to the minds of those readers, who might be intricately involved in “all the rave” about MySpace, Facebook, and computer games, the joy of being freed from mental slavery, thus engaging in solving our present world’s dangerous problems, will, in the longer term, greatly outweigh the short-term pain, of tearing yourself from a beloved, but deadly, folly.”

Thus we see, consistent with his state of mind throughout the book, and his life’s work, Wiener, in classic sophist style, chooses to misdirect the audience to the formal, mechanistic distinction between Ptolemy and Copernicus, as opposed to the principled, physical contribution of Kepler. That Wiener would conveniently do so, should come as no surprise to anyone familiar with Kepler’s *The New Astronomy* and *Harmony of the World*, where Kepler proves the anti-entropic nature of the universe, contrary to Wiener’s politically imposed assertion of a world headed for heat-death (entropy).

Information Theory Is Not Cognitive Power

Wiener then truly betrays his motives, and spells out the doom of those who buy into his *Cybernetics* crap shoot. He says, “It turns out that the overwhelming importance of a trigonometric analysis in the treatment of linear phenomena does not persist when we come to consider non-linear phenomena,” and then, “What it amounts to in practice is that the appropriate test input for the study of non-linear systems is rather of the character of the Brownian Motion than a set of trigonometric functions.”

To understand the deeper epistemological, and consequently existential implications of what might otherwise appear to be a matter of formality, one need reflect upon the true arc of development of modern science, with its ancient roots in the Egyptian and Greek investigation of ante-Euclidian spherical geometry. For, to know the history of science is to know the history of civilization, and to “own” a proof as to how man has survived, and must continue to do so.

It is with this understanding that Lyndon LaRouche constituted the LaRouche Youth Movement (LYM) “basement teams,” in an effort to breathe life back into the great ideas on which man’s survival has been contingent, and, to give a glimmer of hope to

5. Lyndon H. LaRouche, Jr., “[The Force of Tragedy](#),” *Executive Intelligence Review*, Nov. 9, 2007.

our posterity. These are teams of young adults, tasked with rigorously working to rediscover the great paradigm-changing discoveries of the past, so as to lawfully communicate how to provoke such discoveries of principle in the minds of peers and future generations.

To that end, the LYM begins in the penumbra of Pythagoras and Plato, with the revolutionary discovery of the founder of modern science, Nicolas of Cusa: that the circle has a “transcendental” relationship to the polygon, and that quadrature of the circle is an ontological absurdity. In other words, the circle is of a higher species, and has its generative origin in a domain above and beyond “knowability” from the domain of the Euclidian “straight.”

From here the journey continues, on its way to the enigmatic C.F. Gauss and his superior student Bernhard Riemann, through a student of Cusa, the discoverer of universal gravitation, Johannes Kepler, whose challenge to future mathematicians, to discover the appropriate mathematical language for properly investigating the characteristic change of that elliptical geometry corresponding to his discovery (what would become known as the calculus), brings us to our next scientist, Gottfried Leibniz, and the point of current emphasis.

As a colleague, and current member of the LYM “basement team,” pointed out, Johann Bernoulli, friend and collaborator of Leibniz, the discoverer of the calculus, hypothesized that since he and Leibniz had solved the problem of finding the functions that express the characteristic change of circular and hyperbolic transcendental action, all one need do to solve the integral of any curve, is to find the right combination of circles and hyperbolas that construct the curve, and apply the rules already worked out. Again, Leibniz deemed these integrals “transcendental.”

This work gave way to the discoveries of Gauss (the complex domain) and Riemann, who discovered the principle of “higher-transcendentals,” beyond even the simple circular transcendental of Cusa and Leibniz, what might be call hyper-spherical geometries.

The point to be gleaned from this brief sketch of the curve of development of real science, is that a certain “trigonometric” (sine, cosine, etc.), or better, circular/spherical invariant, persists at every step along the way. It is precisely this history, the history of the increasing power of mankind, and corresponding method, not simply the formality of choosing one mathematics over another, which Wiener is attacking when he says that “trigonometric analysis” loses its importance with his new science of “communication.”

Thus, similar to the Southern slaveowner, Norbert Wiener would put to death those who would free slaves’ minds by teaching them how to read.

To this point, of the primacy of circular and higher transcendental functions, inspired by the art of *Sphaerics*, Lyndon LaRouche writes:



Bertrand Russell followed in the footsteps of Venetian operative Paolo Sarpi, in his mission to destroy scientific progress, and its generator, human creativity. It was from Russell that Wiener contracted the Sarpi “virus.”

At first impression, the starry universe appears to be spherical. Why is that so? Does that appearance not imply that a quality of “sphericalness” bounds the universe? If so, does something else, of a still higher authority, bound that apparently spherical quality of boundedness? These are not merely coincidental questions; these questions imply a different question of deadly seriousness: How was this stubbornly persistent appearance of spherical boundedness generated for the mind of man?

Two great questions are implied in that set of questions. The first of these questions, is expressed in the form of the elementary notion of an anti-Euclidean geometry of the type underlying the physical science of the Pythagoreans and the related circles of Socrates and Plato. The second, deeper question, which is also implied in certain features of their work, as also the famous argument of Heraclitus, is, to what degree is the way in which we acquire reliable scientific knowledge, itself a reflection of the “architecture” of what appear to be the specifically biological conditions under which all valid human knowledge of the universe is organized?⁶

To go further as to the true existential question being posed in exposing the fraud, and evil intent of Wiener and the “true believers” of cybernetics and digital information theory, we must look at the essence of what Wiener says is the “appropriate” mathematics to be used. In stating that we will construct a sys-

6. Lyndon H. LaRouche, Jr., “On Vernadsky’s Space: More on the Calculus,” *Executive Intelligence Review*, Oct. 5, 2007, p. 34.

tem that uses functions derived from investigations of Brownian Motion, he is saying that our world will be one that is fundamentally random, therefore ontologically unknowable, and only capable of being analyzed by infinite approximations, and statistical analysis. This means that the transcendental will be eliminated, and replaced with an approximation. That is, we will construct a system that maintains total mathematical consistency, to the effect that the sort of paradox that arose in attempting to “square the circle,” which thus gave rise to Cusa’s discovery of the transcendental, and the subsequent unleashing of humanist science, is eliminated.

Consider further the idea of compound circular action as a projection of compound least-action processes, where we understand least action, as a universal characteristic, of each and all of an array of universal physical principles, which themselves reflect a bounding universal intention of upwardly developing change (i.e., anti-entropy). In mathematical physics, each higher-order discovery of principle will be of a “transcendental form,” recognized only as a paradox from the viewpoint of the lower state of understanding, yet knowable as a new principle by the mind that discovers it. The integrating of that newly discovered principle into our cognitive map of the universe has the dynamic effect of transforming all the internal relations of thought, such as to account for the newly discovered, everywhere-acting (universal) principle, to the effect that what was “true” becomes an infinitely distant parody of our now more appropriate understanding of the “real” universe.

This is characteristic of the calculus, where at various inflection points in the history of that branch of science’s development, integrals were found as expressions of newly investigated physical curves or actions, such as Leibniz’s investigation of the catenary curve, or Gauss’s work on the lemniscate curve, whose solutions did not correspond to the mathematical rules developed up to that point. These new unsolvable curves became known as higher-transcendental, as, for example, the elliptical integral.

I Find No Reason in Your Logic

Against what has just been said, read from chapter five of *Cybernetics*, “Computing Machines and the Nervous System,” where Wiener equates the human brain to a logical binary system. He writes:

A proof represents a logical process which has come to a definitive conclusion in a finite number of stages. However, a logical machine following definite rules need never come to a conclusion. It may go on grinding through different stages without ever coming to a stop, either by describing a pattern of activity of continually increasing complexity, or by going into a repetitive process like the end of a chess game in which there is a continuing cycle of perpetual check. This occurs in the case of some paradoxes of Cantor and Russell. Let us con-

sider the class of all classes which are not members of themselves. Is this class a member of itself? If it is, it is certainly not a member of itself; and if it is not, it is equally certainly a member of itself. A machine to answer this question would give the successive temporary answers: “yes,” “no,” “yes,” “no,” and so on, and would never come to equilibrium.

Bertrand Russell’s solution of his own paradoxes was to affix to every statement a quantity, the so-called type, which serves to distinguish between what seems to be formally the same statement, according to the character of the objects with which it concerns itself—whether these are “things,” in the simplest sense, classes of “things,” classes of classes of “things,” etc. The method by which we resolve the paradoxes is also to attach a parameter to each statement, this parameter being the time at which it is asserted. In both cases, we introduce what we may call a parameter of uniformization, to resolve an ambiguity which is simply due to its neglect.

In Wiener’s flat world of information, paradox is reduced to a simple formality, to be resolved as such. For example, Wiener demonstrates this ontologically flawed “squaring of the circle” approach to the “transcendental” elliptical function, writing, “When it comes to equations of the elliptical type, where the natural data are boundary values rather than initial values, the natural methods of solution involve an iterative process of successive approximation.”

Thus, the very element of paradox and irony which has been the historic key to provoking the creative mind, to discover the previously unknown principles of reality, has been eliminated. Hence, progress has been eliminated; it is an “end of history” paradigm. Here lies the true threat to mankind’s continued existence: Entropy has been built into the system as a controlling factor, guiding it to an inevitable “Doom.” Therefore, to the extent that current society and economy have attached themselves to cybernetics and information theory, civilization is fated to the tragic heat-death Wiener sadistically lusts for.

Let’s go just one more, crucial step further, in understanding the existential nature of the problem.

Cyborg Existentialist and the Economics of Doom

The fantasized pinnacle of Wiener’s world provides us with the clearest view of its deadly ends, when seen through the eye of physical economy. In the concluding chapters of *Cybernetics*, Wiener states the possibility of a future with learning-capable, self-reproducing machines, much like that depicted by George Shultz’s cyborg wind-up governor, Arnold Schwarzenegger, in the apocalyptic movie *Terminator*. But, like all computers or logical systems, all the decisions and policy of those machines will be nothing more than a logical deduction—however clever and complicated it may be—from a set of rules and axioms of its initial programmer. There is no possibility for discovery of a new univer-

sal principle of science, with its manifest array of new higher-power (that is, transcendental) technologies.

Therefore, if, for example, the programmer of the system had never programmed into the computer the newly discovered principles associated with the organization of the sub-atomic nucleus, then, even given an infinite amount of time, the computer would never itself generate that principle and its implications for itself. For each new discovery, relative to its predecessors, is of a higher-transcendental quality (precisely that quality that has been eliminated by Wiener), and not susceptible to discovery through either logical deduction or induction, but only through the uniquely human act of fundamental discovery. It has been precisely this process of discovery and integration of new universal principles, that has enabled mankind to continue to grow in population and increase its living standards, through the creation of new,



Arnold Schwarzenegger's portrayal of a cyborg in the movie Terminator typifies Wiener's notion of a learning-capable, self-reproducing machine (an ontological absurdity).

more efficient and power-intense technologies, such as nuclear power, with the corresponding increase in production potential, utilizing newly defined resource-bases, such as uranium to supersede coal or oil.

So it will be, that that futuristic world of "flabiators," who lack the power to discover new universal principles, and will be forced to "reproduce" in an entropic world of fixed and diminishing resources, eventually cannibalizing each other for spare parts. So would be the dismal future of us humans, were we to continue to deny that in ourselves which truly makes us uniquely human, and tie our future to that tragic belief in the flat, logical world of "information theory."

Creighton Cody Jones is a LaRouche Youth Movement leader in Los Angeles. This article is part of the pamphlet "Is the Devil in Your Laptop?" and an earlier version also appeared in Executive Intelligence Review, Jan. 4, 2008.

ΔΥΝΑΜΙΣ

THE JOURNAL OF THE LAROCHE-RIEMANN METHOD OF PHYSICAL ECONOMICS

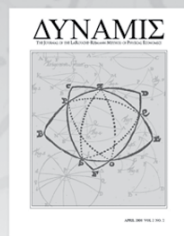
On the Noetic Principle:
VERNADSKY & DIRICHLET'S PRINCIPLE
by Lyndon H. LaRouche, Jr.

THE MAGNIFICENCE BEHIND THE SPHERE
An Initial Treatment of the Pentagramma Mirificum
by Ben Deniston

SPHAERICS vs. "THE BUBBLE"
by Meghan Rouillard

SPHERICAL TRIGONOMETRY
A selection from the Anfangsgründe
by Abraham Gotthelf Kästner

Contributions to
THE THEORY OF ALGEBRAIC EQUATIONS
by Carl Friedrich Gauss



THE LAROCHE
YOUTH MOVEMENT:
REBUILDING SCIENCE,
WITHOUT THE HIGH PRIESTS.

APRIL 2008 ISSUE

DOWNLOAD IN
PDF FORMAT at WWW.WLYM.COM

Where Your Computers Really Came From

by Peter Martinson

Prelude: LaRouche's Machine Tool Principle

Lyndon LaRouche is the leading economic forecaster in the world. He is aided, of course, in this distinction by the world's other economists, who help him by being so incompetent. The truth, though, is that LaRouche is a typical American scientist:

The increase of populations (for example, the potential relative population-density) of human societies, presents us with a phenomenon which is not met within the animal kingdom. Man is not an animal; the distinction of human ecology from all animal ecology, is comparable to the distinction between the chemistries of non-living versus both the living processes and the by-products specific to living processes.

These distinguishing biochemical changes in the ecology of the human species, have been the special province of Russia's V.I. Vernadsky and his associates. The concept of the Noö-sphere is a result.

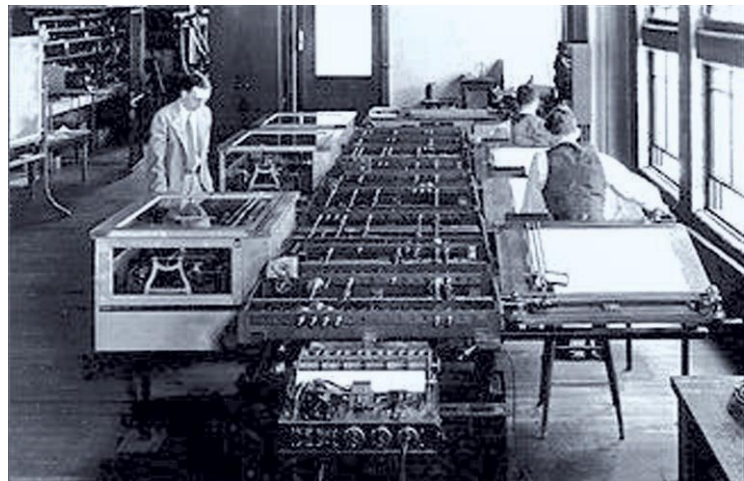
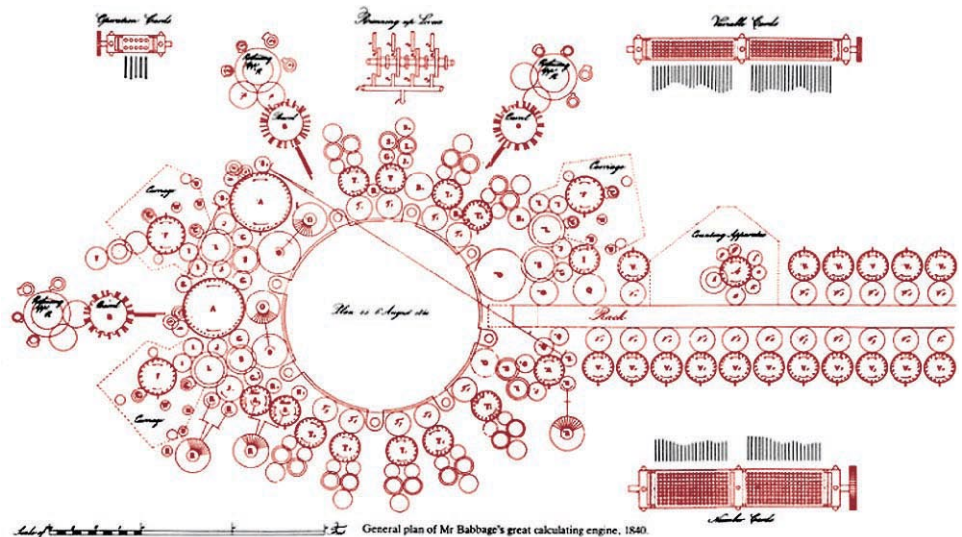
As far as I know to date, the effective treatment of this distinction of human potential relative population-densities from animal varieties, has been among my unique contributions to the science of physical economy and of successful long-range economic forecasting generally.¹

LaRouche has not only identified the present period, as being in a condition of final breakdown of the world's economic system, but has also proposed the

1. Lyndon H. LaRouche, Jr., "Nobel Economics Prize: The Price Is Usually Wrong!," *Executive Intelligence Review*, Oct. 26, 2007.

Any operation that can be performed by a machine, cannot be attributed to a human trait.

Babbage's 1840 schematic for his Analytical Engine. There have been no advances in the principles involved in digital computing since Babbage.



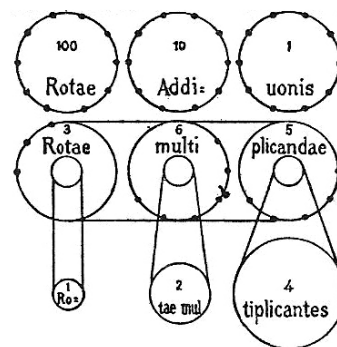
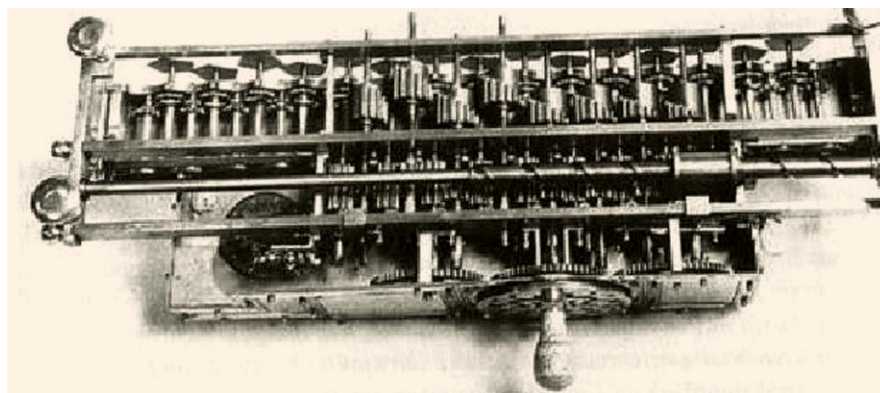
Vannevar Bush's Differential Analyzer, an analog computer which he designed in the 1930s, performed calculations by physically acting out the principles involved.

solution to the problem. Instead of trying to save the system, and thereby collapsing society into a horrible dark age that would literally be marked by roving bands of starving, video-shooter-game trained, adult child cannibals, LaRouche proposes to *scrap the system*, and is now demanding the passage of the Homeowner and Bank Protection Act of 2007 by the U.S. Congress, as an initial firewall to protect the people and banking institutions from the crash.

Immediately after that protective firewall is erected, the United States must enter into cooperation with Russia, China, and India, to replace the current sick monetary system with a New Bretton Woods fixed-exchange rate credit system. This new, stable system of national currency generation, organized through

new national banks run by the governments, will be used to finance mega-projects, such as the Eurasian Land-Bridge and its associated crucial link, the Bering Strait Tunnel.

This would mean the mobilization, initially, of the destroyed manufacturing capability of Europe and, especially, the United States. The associated, *most crucially important*, aspect of this, would be the drive for new scientific discoveries and their implementation as new technologies. As LaRouche has described this process in many papers and public speeches, the application of new discoveries of universal physical principle to the production of, especially, basic economic infrastructure, is what increases Man's powers over the universe. The true source of economic growth, is that point of change at which a mind has



Leibniz's computer, which could add, subtract, multiply, and divide. The schematic shows the multiplication example discussed here.

Leibniz's Calculating Machine

Gottfried Leibniz, the man who discovered the Calculus and launched the science of physical economy, designed a device for performing the four basic arithmetic operations, without errors, even with huge numbers. Here is how Leibniz's calculating machine works:

The first row of wheels displays the digits of the resulting product—the ones, the tens, the hundreds, etc.—and each wheel has 10 gear-pins.

The second row is organized like the first, but the wheels have only as many pins as that wheel represents. For example, if this number is 365, then the first wheel has 5 pins, the second has 6 pins, and the third has 3 pins.

These wheels also have a smaller wheel superimposed upon them, for the multiplication.

The third row represents the number being multiplied by the second row, but the wheels are of various sizes, with diameters making a proportion with the smaller wheels of the second row that is equal to the multiplication factor. For example, if we are multiplying 124 by 365, the second row is organized as stated above, but the smaller wheels are connected by either belts or chains to the wheels in the third row.

The wheel representing the 4 is 4 times the diameter of the small circle on the 5-wheel; that of the 2-wheel is twice the diameter of the small circle on the 6-wheel; and the 1-wheel is the same diameter of the small circle on the 3-wheel. All the wheels of the second row are connected, so that they rotate at the same speed together.

Finally, the wheels in the first row are set at right angles to the wheels in the second row, so that the pins catch on each other, like gears.

Multiplication

To perform the multiplication, first rotate the 4-wheel once, which rotates all wheels of 365 four times. This rotation advances the first row to represent 365 times 4, or 1,460. Now, the first row is slid to the right, so that the 5 in the second row is above the 10s digit in the first row. Now, the 2-wheel is rotated, rotating the 365 wheels twice, which rotate the first set of wheels (not including the 1's wheel), effectively adding 7,300 to 1,460; the first row then displays 8,760.

Lastly, the two rows are slid over again, and the 1-wheel is rotated. This adds 36,500 to 8,760, resulting in 45,260. All of the motions, after the initial set up, can then be automated by a simple hand crank, or a steam-powered engine.

generated a crucial insight into a principle of the universe, and has then tested that insight against a crucial experiment.

The human mind is emphatically not a digital system. A digital system performs long chains of logical operations on integers. The real universe, on the other hand, violates simple logical systems, and always presents us with these violations as paradoxes. The human mind is unique in its ability to observe the various sense perceptions, but to see the paradoxes among them. No digital system can approximate this uniquely human sense. Computers were designed by scientists, but a mysticism has been developed around computers by crazy science fiction writers, such as Alan Turing or John von Neumann. In fact, the true history of the development of computers was never intended to design an artificial intelligence machine, but to aid the scientist in using his or her creativity. We present here a short vignette of that history, which is now placed into the proper context.

Kepler and Leibniz: Giving the Astronomer a Hand

It is said, that when Johannes Kepler first saw John Napier's table of logarithms, he wept tears of joy. Kepler spent, literally, years on simple, repetitive calculations, and even hired a young man for the sole purpose of aiding him in calculations. Despite this enormous burden of logistics, Kepler made those crucial breakthroughs upon which all of modern science is based. Those are the discoveries of, first, universal gravitation, and second, the harmonic ordering of universal gravitation throughout the Solar System.

Among his unpublished works, two letters were found between Kepler and Wilhelm Schickard. Schickard was a close friend of Kepler at Tübingen University, and both were students of Michael Maestlin. The letters represent a discussion the two had on the construction of a machine that could perform the four routine operations of arithmetic, even with very large numbers. It used a series of sliding windows, buttons, and geared vertical cylinders. It can be surmised that, given Kepler's very clear insight into the importance of scientific discovery, and the enormous impediment created by long series of routine calculations, he must have been very interested in constructing such a machine. A working version was never located.

Blaise Pascal devised a calculating machine some time later. Pascal's *Pascaline* was built on similar principles to those of Kepler's machine, but was not as advanced, as it was designed only to add and subtract, and could multiply only by means of repeated additions. He built the machine when he was 18, with the immediate intent of aiding his father in financial arithmetic. It apparently cost more effort to construct than the labor-saving involved in its use, but all future calculating machines used its core principles.

Gottfried Leibniz, the man who discovered the calculus and launched the science of physical economy, designed his own calculating device, which incorporated Pascal's addition wheels, but added a crucial third row, in order to perform multiplication and division. In Leibniz's machine, two sets of wheels

performed the additions and multiplications. These wheels were placed at right angles to the set of wheels that displayed the numbers.

In his description of this procedure, Leibniz points out that, by using his machine, scientists will never incur an error in calculation, and huge numbers are just as easy to use as small numbers. As for the uses of this machine, Leibniz says, in conclusion:

[T]he astronomers surely will not have to continue to exercise the patience which is required for computation. It is this that deters them from computing or correcting tables, from the construction of Ephemerides, from working on hypotheses, and from discussions of observations with each other. For it is unworthy of excellent men to lose hours like slaves in the labor of calculation, which could be safely relegated to anyone else if the machine were used.²

Leibniz clearly wanted everybody to know how his machine worked, so that knowledge could be spread as far as possible. He even tried to convince the Russian Czar, Peter the Great, to give one of his calculators to the Emperor of China. Unlike the 16th Century Paolo Sarpi and today's Bill Gates, Leibniz did not want the mechanical calculating machine to be a hidden black box, that kept the knowledge of the operations from the operator. He intended to create a society where everybody was highly educated, and scientific discoveries were the commonly discussed events. This ideal of Leibniz made him hated by the agents of the newly British-bedecked Venetian party seated in London, which deployed the "Wicked Witch of the West" Isaac Newton hoax against the great German scientist.

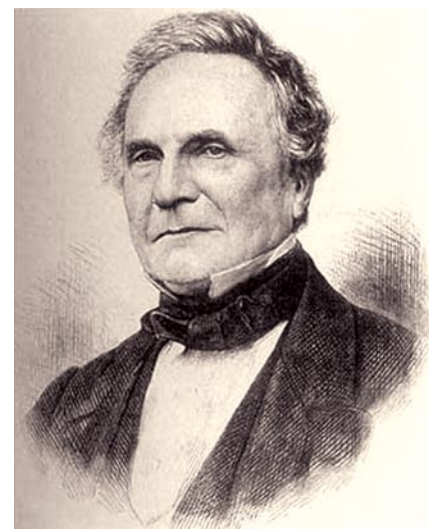
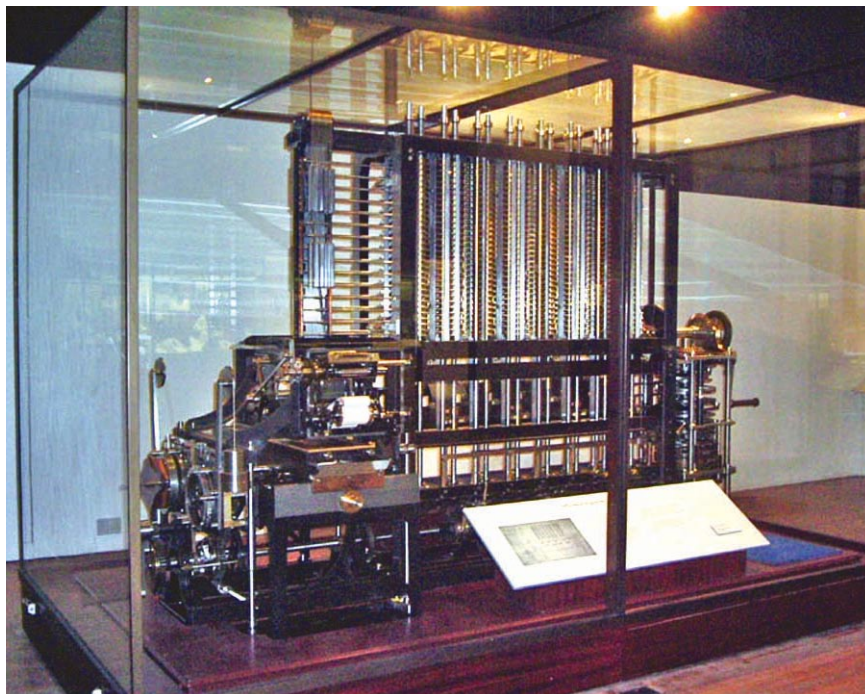
Charles Babbage: Saving English Science from the British

There was virtually no advance in mechanical computing technology between the death of Leibniz in 1716, and the work of Charles Babbage (1791-1871) in the early 19th Century. Babbage, and with his collaborator, England's leading astronomer John Herschel, working at Cambridge, realized that their country had become the stagnant intellectual backwater of Europe, and was lagging disastrously behind the growing economic and industrial power of the new U.S.A. In 1812 they attacked this problem, by adopting Gottfried Leibniz as their champion, and they published an attack called *The Principles of Pure Deism in Opposition to the Dotage of the University*, referring to the political decision of the Royal Society to push Newton's not-Calculus over Leibniz's Calculus. This attack prompted the creation of the Cambridge Analytical Society.³

In the aftermath of Gauss's discovery of the orbit of Ceres,

2. From Leibniz's 1685 description of his machine, as quoted in David Eugene Smith, *A Sourcebook in Mathematics* (Dover Publications, Inc.: New York, 1959).

3. Lyndon H. LaRouche, Jr., "I Don't Believe in Signs," *Executive Intelligence Review*, July 21, 2006.



Charles Babbage (1791-1871) with a model of his last computer, the Analytical Engine, which was inspired by the use of punch card programming of mechanical looms in France.

Babbage saw the immediate need to rapidly improve the accuracy and error reduction in astronomical observational data, which had become a limiting factor in further breakthroughs. In 1823, he convinced the British government to grant him the money to build a machine capable of improving the astronomical tables used by maritime navigators for determining longitude. His *Difference Engine* was able to take a small number of manually performed calculations, and then mechanically generate a fully completed nautical almanac, all based on the initial principles of Leibniz's original calculating engine. The construction of the machine was slow, and ran into many problems, which Babbage blamed, in part, on the lack of precision in machine-tool design in England.

Before completing his *Difference Engine*, Babbage moved on to his more advanced *Analytical Engine*, which would be able to solve virtually any set of algebraic relationships. He was inspired by the use of punch-card programming of mechanical looms in France, designed by Joseph Marie Jacquard, and he decided to also use punch cards for his engine. He used two sets of cards:

[T]he first to direct the nature of the operations to be performed—these are called operation cards; the other to direct the particular variables on which those cards are required to operate—these latter are called variable cards.

Every set of cards made for any formula will at any future time, recalculate that formula with whatever constants may be required.

Thus the Analytical Engine will possess a library of its own. Every set of cards once made will at any future

time reproduce the calculations for which it was first arranged.⁴

This machine was also never completed. Babbage had designed a yet more efficient machine, for which he believed "... it will take less time to construct it altogether than it would have taken to complete the Analytical Machine from the stage in which I left it."⁵

Lyndon LaRouche has noted that the principles established first by Leibniz, and then furthered by Babbage, are the core of all modern digital computers. The only advances made in this domain were in the types of materials used, and the technology used in manufacturing. The inverse of this is, that no advances in the principles involved in digital computing have been made since Babbage. Faster calculation is not, in itself, a technological advance. Of course, this statement disregards the development of Analog Computers, which are more analogous to the designs of machine tools than are digital systems.

Vannevar Bush: A Typical American Scientist

Vannevar Bush (1890-1974) wrote in 1945:

Two centuries ago Leibnitz [sic] invented a calculating machine which embodied most of the essential features of recent keyboard devices, but it could not then come

4. Charles Babbage, *Passages from the Life of a Philosopher*, cited in Herman A. Goldstine, "A Brief History of the Computer," *Proc. of the Am. Philosophical Society*, Vol. 121, No. 5, October 1977.

5. Lord Moulton, "The Invention of Logarithms, Its Genesis and Growth," *Napier Tercentenary Memorial Volume*, ed. C.G. Knott (London, 1915).

into use. The economics of the situation were against it: the labor involved in constructing it, before the days of mass production, exceeded the labor to be saved by its use, since all it could accomplish could be duplicated by sufficient use of pencil and paper. Moreover, it would have been subject to frequent breakdown, so that it could not have been depended upon; for at that time and long after, complexity and unreliability were synonymous.

Babbage, even with remarkably generous support for his time, could not produce his great arithmetical machine. His idea was sound enough, but construction and maintenance costs were then too heavy. Had a Pharaoh been given detailed and explicit designs of an automobile, and had he understood them completely, it would have taxed the resources of his kingdom to have fashioned the thousands of parts for a single car, and that car would have broken down on the first trip to Giza.

Machines with interchangeable parts can now be constructed with great economy of effort. In spite of much complexity, they perform reliably. Witness the humble typewriter, or the movie camera, or the automobile. Electrical contacts have ceased to stick when thoroughly understood. Note the automatic telephone exchange, which has hundreds of thousands of such contacts, and yet is reliable. A spider web of metal, sealed in a thin glass container, a wire heated to brilliant glow, in short, the thermionic tube of radio sets, is made by the hundred million, tossed about in packages, plugged into sockets—and it works! Its gossamer parts, the precise location and alignment involved in its construction, would have occupied a master craftsman of the guild for months; now it is built for thirty cents. The world has arrived at an age of cheap complex devices of great reliability; and something is bound to come of it.⁶

Franklin Delano Roosevelt understood the necessity of scientific advancement for national security. During World War II, the involvement of science in the war effort was not only required in the development of new, more powerful, and longer-range weaponry, but also in aiming the new ordnance. Accurate trajectory charts for the various ballistic weapons, including underwater weaponry, were in high demand, but they required astronomical amounts of calculation to produce.

Vannevar (pronounced like “achiever”) Bush had already been concerned about producing number crunchers, in the tradition of Leibniz and Babbage. Just before the war broke out, the Army Ordnance Department had commissioned Bush to apply his machine shop at MIT to the calculations of ballistics trajec-



Bush testing out the Profile Tracer, his first machine, built in his engineering doctorate program. It formed the basis for his next invention.

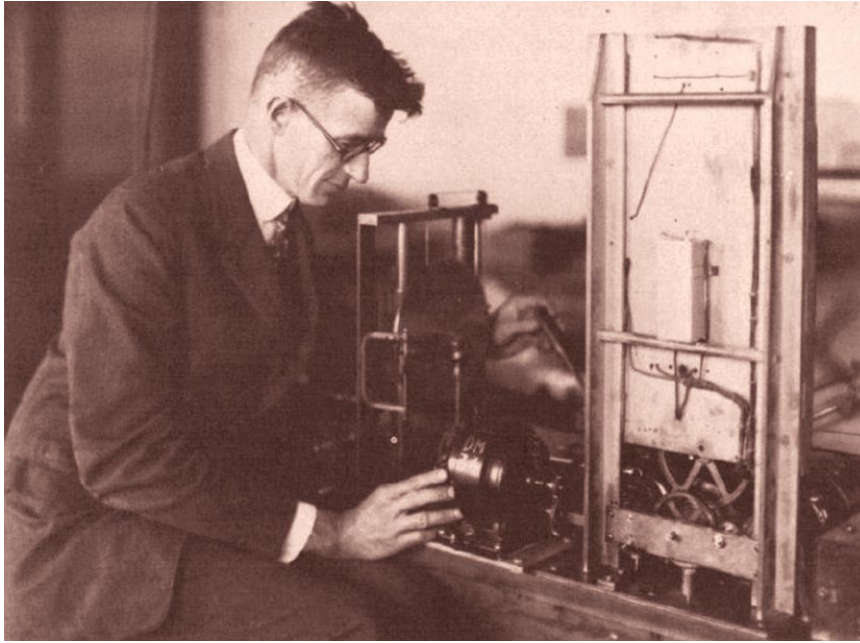
tories. He had been working on improving his *Differential Analyzer* since 1931, and was assembling a new, more powerful version. This machine was an advance on both Leibniz’s and Babbage’s devices, in that, instead of calculating using only discrete steps of integers, it could perform *continuous* calculations. This *analog computer*, which performed calculations by physically *acting out* the principles, opened up the prospect of applying mechanical calculation to problems involving the integral calculus.

The Differential Analyzer used principles similar to Leibniz’s engine, but, instead of displaying a set of digits representing the solution to the problem, it could be set up to draw a smooth curve on a drawing board, and it could even take as input a curve that a person traced on a piece of paper. To accomplish this, Bush replaced the orthogonal gears of Leibniz with smooth disks, one rotating to turn the other. The greatest source of error, initially, was transmitting the small, precise rotations through yards of machinery to the output table.⁷ This technical problem was solved by the machine-tool designers at Baltimore’s Bethlehem Steel, who designed the *torque amplifier*, which amplified the smallest, weakest rotations into powerful cranks.

Bush built his first machine, called the Profile Tracer, to obtain his doctorate degree in engineering. This machine was slung between two bicycle tires and pushed like a lawnmower. As it moved, a pen inside would continuously draw the changing elevation of the land onto a rotating drum of paper, producing a virtual photograph of the cross section of the land traversed. The mechanism inside the Profile Tracer formed the basis for his next machine, made purely for calculation—the Product Integrator. This device, built with his student Herbert Stewart, was the key

6. Vannevar Bush, “As We May Think,” *Atlantic Monthly*, July 1945.

7. For a pedagogical example of this, please see Sky Shields’s construction of the catenary curve in this issue.



Vannevar Bush with his Product Integrator on his Differential Analyzer, 1927. The Integrator performed integral calculus using an array of rotating wheels. The Differential Analyzer used several of these, and was the fastest, most accurate calculating machine during World War II.

to performing integral calculus using an array of rotating wheels.

Stewart's plan had been to observe the output at specific time intervals, but Bush recommended attaching a pen to it, to draw a smooth curve that represented the integral itself. The Differential Analyzer used more than a dozen of these Product Integrators, in a structure half the size of Bush's laboratory. By the end of the war, it was the most important calculating machine in the United States, as it was the fastest and most accurate producer of trajectory tables.

The development of the principles governing the functioning of analog computers lost all funding after the death of Roosevelt. At that point, the new program of Cybernetics, driven by London through Columbia University, had virtually taken over. Norbert Wiener, Bush's former student, had been installed as the head of MIT's Research Laboratory for Electronics,⁸ and all research was now directed towards development of the digital computer. In Wiener's new recommendations for development of the computer, he specified:

That the central adding and multiplying apparatus of the computing machine should be numerical, as in an ordi-

8. Wiener, who got his start when Bush appointed him to head up the anti-aircraft ordinance department, faced the problem of targetting a German Luftwaffe diver bomber, which moved just as fast as the bullets used to shoot it down. He made some unique innovations, including his concept of *feedback loops*, in modelling the targetting of a weapon after the mind's control over the human body. Wiener then went off the deep end, when he started modelling the mind after weaponry control systems.

nary adding machine, rather than on a basis of measurement, as in the Bush differential analyzer.⁹

Today, Bush's Differential Analyzer sits in a museum case in the basement of MIT, while the digital computer, operating with no advance over Babbage's Difference Engine, has become the false symbol of "technological advance." Each somewhat faster component is advertised as a great breakthrough, although the principles remain the same.

To sharpen the point about computing machines, it should be sufficient here to state, once again, the difference between Man on the one side, and both animals and computers on the other. The great hoax, is the promotion of the idea that Man can be studied as either a social animal, or an advanced computer. As any of the scientists just described knew, because human beings are not computers, computers cannot perform science.

Inverting this, any operation that can be performed by a machine, cannot be

attributed to a human trait. Mathematical calculations are purely logical deductive procedures, which humans can, of course, do. But, human scientific discovery is not an epiphenomenon of calculations. For example, Karl Gauss was known for his titanic calculating abilities, yet his work was not an outgrowth of his calculations. He knew that calculations were merely a necessary, albeit *mechanical*, tool for precisely locating those *paradoxes* which lay between measurements taken from various senses.

The human mind was not modelled on the design for the digital computer; therefore the mind cannot be assumed to follow the rules of those machines. But, Lyndon LaRouche has demonstrated that true economic growth must proceed from an increasing density of discoveries, per person. There are principles bounding the creative abilities of the human mind, and they are knowable principles. But, they are not found by looking at how computers or animals work.

So, get your sticky hands off that computer keyboard or joystick, and go use your creativity! For starters, begin with Kepler's discovery of universal gravitation, followed by his discovery of the harmonic ordering of the whole Solar System, at <http://www.wlym.com/~animations>. And get political—it's more fun being creative during a renaissance, than during a dark age.

Peter Martinson is a leader of the LaRouche Youth Movement in Seattle. His article previously appeared in the LYM-authored pamphlet "Is the Devil in Your Laptop?"

9. Norbert Wiener, *Cybernetics* (New York: MIT Press, 1961).

LIFE WITHIN THE NOÖSPHERE



NASA/MSFC

What Is the Human Mind?

by Lyndon H. LaRouche, Jr.

January 1, 2008

A commentary on the accompanying LaRouche Youth Movement articles on analog vs. digital, which takes the argument further to consider how the universe is organized for creative human intervention.

*The LaRouche Youth Movement (LYM) has just recently published a widely circulated defense of human beings, a defense against what can be fairly portrayed as an intended takeover of the Earth by what are, avowedly, virtually de-humanized, digital “pod people” types, such types as may be found in Silicon Valley. That LYM documentation has been provided in both a mass-circulation pamphlet issued in November,¹ and two complementary articles on the same subject-matter, published in the January 4, 2008 edition of the intelligence news weekly **EIR**.²*

1. [Is The Devil in Your Laptop?](#) LaRouche PAC, November 2007.

2. Cody Creighton Jones, “How Wiener Attempted To Kill Science”; Sky Shields, “What, Exactly, Is a Human Being? Analog, Digital, and Transcendental” In **EIR** Vol. 35, No. 1, 2008, Jan. 4, 2008 [and in this issue of *21st Century*].

A typical day in the Noösphere: Astronaut Rex J. Walheim at the International Space Station in April 2002, where he and fellow astronaut Steven L. Smith released the locking bolts on the Mobile Transporter and rewired the Station’s robotic arm

The crucial, underlying feature in those published reports, has been the defense of the role of the analog-like functions of the actually creative human mind, against that virtual alien occupation of our planet which is being attempted by digitally motivated creatures who seek to organize a real-world emulation of the infamous Hollywood role played by Arnold Schwarzenegger as "The Terminator." Sky Shields's defense of humanity against this evil, his piece entitled, "What, Exactly, Is a Human Being?", which was published in the January 4 *EIR*, came directly to the point of this crucial issue of science on which the LYM's published evidence against Silicon Valley robots pivots.

Shields's contribution identified some crucially typical forms of the creative mental processes by means of which we can effectively demonstrate the intrinsic incompetence of the digitalized, "pod-people" mentalities of the same type as Silicon Valley cases. He does this, by demonstrating the ontological actuality of what should be recognized as any true universal physical principle, such as the Leibniz-Bernouilli principle of any competent notion of the mathematical-physical calculus.

What he has accomplished there, has cleared the way for a crucially important, additional step to be taken into still deeper matters, as I specify in this present report. That step now answers two, existential kinds of political questions:

1.) What, speaking with an eye on Genesis 1, is the relevant nature of the developed human individual, as absolutely distinct from the beasts, which this kind of potential power of the human mind expresses;

2.) What, then, is the nature of the organization of our universe, that it accepts the guidance of successfully willful interventions of this type from the human individual mind?

On this account: I, personally, first recognized what human creativity is not, by the time I had left the classroom on the first day of a mid-1930s, secondary-school's introductory class in Euclidean geometry. I knew then, from encounters with construction designs examined during my earlier visits to Boston's Charlestown U.S. Navy Yard, that the only valid geometry is a physically efficient geometry, rather than a merely idealized one, such as that of Euclid.

Therefore, a competent geometry must be a *physical geometry*, which must be defined so, without any Euclidean or other Sophist's *a-prioristic* mumbo-jumbo added. It must be defined, by experimental modes of setting of physical standards of construction and experiment. As part of my own personal revolt against the relevant academic sophistry which I encountered at that time, I filled up several notebooks with excerpts from, and notes on my study of those works of Gottfried Leibniz available to me from both my family household's bookshelves and the Lynn, Massachusetts Public Library, as part of my escape from the Sophistry of Euclid and his like.

Back during the U.S.A.'s 1920s and 1930s, the more customary, pathological definition of "true," was "popular." This did not

require a believer's copying the particular opinion adopted by this or that person, or grouping. In my observations then, and later, it meant, typically, a commitment to premise whatever one chose to believe, using certain current standards for a usually accepted type of explanation for whatever it were that one chose, liberally, to profess to believe, whether in schoolrooms, or otherwise, or, *whether the advocate actually believed his, or her own argument, or not.* In other words, it was an echo of the same *Sophistry* by which the ancient Athens of Pericles had destroyed itself through the Peloponnesian War.

In my experience in this matter, no actual requirement of truthfulness was actually required for such cases, then or in the general practice in our republic today. In place of actual truth, popular convention substituted that slimy word "sincerity," especially when respect for the authority of a usually lying mass-media, or of a high-ranking element of the judiciary might otherwise be in doubt. Even if what were said was an outright lie, "You have to respect the assumption of that man's claim to have spoken with sincerity." It is insisted that if a lie may be caused to appear to be more "plausible" by standards of popular opinion or something like that, we are told that we must show respect for the feelings of the liar, and must thus embrace the lie, and damn the truth.³

Thus, in those past times of my adolescence, and later, still today, the clause, "It is self-evident that . . .," as might have been borrowed from a Sophist such as Euclid, was among the most popular academic and related hallmarks of the typical popular (and populist) sophistries of those times. Unfortunately, prevalent trends in habits of opinion-shaping among most putatively educated people, have tended to become worse since those times about seventy years ago.

I confess, that I never liked Sophists. From the time which I have referenced, above, as the occasion of the classroom encounter with Euclidean geometry, for example, on to the present day, I have never accepted the ontological presumptions of a Euclidean or related sort of *a-priori* geometry, neither a Cartesian analytical geometry, nor a differential calculus premised on those Sophist's axiomatics typified by what was expressed by the circles of a Leonhard Euler or an Augustin Cauchy.

That experience of mine acquired new dimensions, by way of my encounter with an advance review copy of Professor Norbert Wiener's *Cybernetics*, approximately sixty years ago, during the first quarter of 1948. This was my first encounter with what I recognized as the pervasive Sophistry in the work of MIT's Professor Norbert Wiener (a personal disciple of Bertrand Russell): Wiener's posing the preposterous assumptions which he and his devotees have called "information theory." By early 1953, these and related experiences with the views of Bertrand Russell, Norbert Wiener, John von Neumann, and their devotees, had impelled me to become a persuaded and vigilant follower of the

3. When the mightily respected parson died, and his tattered old pulpit Bible was examined, it was noted that many passages in the old man's Bible were marked by a scrawled note: "Text unclear; shout like Hell!"



How do we know man is capable of knowing how the universe is designed? In the 15th Century, Leonardo da Vinci overturned the generally accepted view of linear perspective. Here, his 1473 drawing of the Arno landscape. Leonardo drew up plans for canals to make the river navigable.

mightily refreshing, central conception of Bernhard Riemann's 1854 habilitation dissertation, a commitment which, it may be fairly said, I have retained to the present time.

Hence, to illustrate the nature of the crucial issue underlying the subject of Sky Shields's presentation, I begin this present report of mine, by pointing to the exemplary case of what Albert Einstein affirmed as having been Kepler's uniquely original discovery of a principle of universal gravitation.⁴ I include some repetition of a report which my relevant associates and I have stated, and restated, during a number of scientific meetings and other occasions over the course of the recent three decades; that repetition is still required, as here, today, since the crucial facts of the case are not yet widespread common knowledge, even among those ostensibly trained in physical science.

What Sky accomplished in that *EIR* report, has been to present those immediately most relevant, correct principles of sci-

entific method which prove his Classic case conclusively: the profound incompetence, for all scientific practice, of the practice of substituting linear digital methods for the required analog ones.

That leaves two crucially important, deeper question to be addressed at this juncture: a.) As Leonardo da Vinci overturned the presumed, axiomatic authority of linear perspective, on what basis could we assume that man is capable of actually knowing how the universe is designed, that beyond the scope of a generally accepted description of what most sincere believers do not actually know? b.) How could man prove that we are capable of having practical knowledge, that existing only in domains beyond merely generally accepted opinion, of how the universe actually works.

1. The Birth of Modern Science

Modern science was that born, in fact, during the middle to late Fifteenth Century A.D. It first appeared then, chiefly, as the intersection of the work of the inventor of the modern application of the catenary function to the practice of physical sci-

4. Better known is Einstein's scientific refutation of the methods of Russell et al., during the proceedings of the Solvay conferences: *God does not cast dice in the universe*. Einstein's later emphasis on Kepler's role, is less widely circulated today, but was just as firmly, and also more precisely stated.



Library of Congress

Nicolas of Cusa (1400-1464)



Johannes Kepler (1571-1630)



Gottfried Wilhelm Leibniz (1646-1716)

The founders of modern European science, who built on the the science of the ancient Greeks.

ence, the polymath Filippo Brunelleschi,⁵ and the founding of the general form of modern physical science by Nicholas of Cusa's *De Docta Ignorantia*. There is a precise connection of this pair of discoveries, by Brunelleschi and Cusa, to the evidence which Sky Shields provides in the pages of the January 4, 2008 *EIR*.

However, in speaking of the founding of modern European science, it would be systemically misleading, to say that this was actually the original founding of what should be recognized as European science for today. The known foundations of competent forms of today's specifically *modern* European science, had been first established as European science, essentially, during Europe's Fifteenth Century; but, this occurred as a revival of what had been already the most essential principles of the ancient European science whose origins are to be traced from ancient Greeks. A European science whose ancient origins are to be traced, specifically, from Thales, and from the practice of the principles of *Sphaerics* among such followers of Thales as the Pythagoreans and Heracleitus, and, also, from Plato and his personal followers of the Academy, through, and slightly beyond the work of Eratosthenes.⁶

The common feature shared by the ancient European science of the Pythagoreans and Plato, with the modern science

of Cusa, Kepler, Fermat, Leibniz, and Riemann, et al., is the same "analog principle" of physical geometry now known as the ontologically *infinitesimal*, best known today as what Shields, among other members of the LYM scientific teams, has pointed out as the catenary-related *analog* principle of the Leibniz-Bernouilli calculus (*universal physical least action*).

The root of Shields's referenced argument is located, for its broader implications, within the historical context of that Classical set of scientific references.

That notion of the *physical infinitesimal*, itself, as it had been presented in modern physical science by Kepler's successive, uniquely original discoveries of the principle of gravitation,⁷ had been already introduced to modern physical science, and to Kepler's knowledge of it, by Nicholas of Cusa's exposure of the systemic error of Archimedes' effort to define the generation of the circle by quadrature.⁸ That is an error which also permeates the utter incompetence of the so-called Newtonian "calculus," an incompetence which continued to be shared, in its most essential features, among the Eighteenth-Century opponents of Leibniz's discovery, such as Le-

5. Brunelleschi's use of the catenary (the "hanging chain" principle) for the construction of the cupola of the famous Santa Maria del Fiore Cathedral of Florence. It is the catenary principle which determines the specific form of the cupola.

6. Although there were some partial revivals of ancient European science at times prior to the Fifteenth-Century Renaissance, from the time following the deaths of Eratosthenes and Archimedes, there was a general moral and scientific decadence in European culture under the rise of the Roman Empire, Byzantium, and the domination of Europe by the medieval tyranny of Venetian usury and its Norman ruffians.

7. The first, was the discovery of the principle of the Earth's orbit, in Kepler's **The New Astronomy**; the second was the measurable principle of gravitation within a harmonically ordered Solar System, in **The Harmony of the Worlds**. The published LYM reports on both of these, are the only known, competently elaborated, current studies of these matters of Kepler's original work. See the LYM site (www.wlym.com) for authentic references.

8. The same knowledge from Cusa is implicitly expressed in some of the work of avowed Cusa follower Leonardo da Vinci; but, avowed Cusa follower Kepler was the first to make this the explicit basis for all competent practice of modern physical science. This discovery by Cusa was turned up, from among Cusa's sermons, through the efforts of the Cusanus Gesellschaft's Fr. Haubst.



Carl Friedrich Gauss (1777-1855)



Bernhard Riemann (1826-1866)

onhard Euler and Joseph Lagrange, as also by such Nineteenth Century hoaxsters as Laplace, Cauchy, and such among those of their followers as the Clausius, Grassmann, Kelvin, et al., who launched the hoax of a so-called "Second Law of Thermodynamics."⁹

Leonhard Euler's Hoax

For example:

Leonhard Euler is the only notable figure among the Eighteenth-Century opponents of the Leibniz calculus who can be suspected of the competence to know with certainty that what he wrote about the calculus was a willful fraud.¹⁰ Those others also to be regarded customarily as the originators of the hoax, such as Abraham de Moivre and D'Alembert, had shown no relevant competencies in the actual scientific issues, whereas the Euler, who had been a student of Jean Bernouilli, knew that what he wrote on that matter in 1761, and later, was a fraudulent representation of the clearly stated intention of both Leibniz and Bernouilli's statements of the principle of physical least action.¹¹

9. These were notably relevant precedents for the more radical frauds spawned by Ernst Mach, Bertrand Russell, and such followers of these as the Twentieth-Century radical empiricists Norbert Wiener and John von Neumann. Cf. Cody Creighton Jones, *op. cit.*

10. See my January 1990 remarks on this subject, as presented, with supplementary documentation in Appendix XI "On Euler's Fallacies," in my **The Science of Christian Economy** (Washington, D.C.: Schiller Institute, 1991), pp. 407-425. The reference there is to letters written by Euler in 1761, and published, in English translation, in a collection by David Brewster (New York: Harper & Bros., 1840).

11. The origin of the issues which became the subject of the 18th-Century debate over the calculus, was the ancient solution for the Delian paradox, the successful construction of a doubling of the cube traced to Plato's friend, the Italian Pythagorean Archytas. Modern, Sixteenth-Century attention to this ancient matter, as by Cardano and his followers, introduced the modern issues of cubic and biquadratic algebraic functions in an attempted algebraic form. However, the Eighteenth-Century defenders of the incompetence of both Descartes and Newton, such as de Moivre, D'Alembert, Euler, and Lagrange, claimed to have proven their case against Leibniz, by simply accepting de Moivre's proposal that they agree to denounce what they termed, fraudulently, as "imaginary" roots of the

The issue of the calculus, as predefined by Cusa, Kepler, Fermat, and by Leibniz himself, is that a universal physical principle not only bounds the observed events of the universe, but that this occurs in a fashion which *implicitly* defines the thus-bounded universe as finite, as Albert Einstein was to emphasize this implication of Riemannian physics. **No part of the action which is effected within the bounds of the subject of that principle, contains, formally, in digital-mathematical terms, the principle which causes it.**

No (digital) formal-mathematical description of the trajectory of a principled form of action, such as gravitation, contains the principle itself within it. It is only the replication of the experience of the

relevant crucial experiment itself, which proves the validity of a claim for a universal physical principle.¹² Hence the requirement for "analog methods."

Therefore, whereas, the effect of the principle's action is clearly manifest empirically, the principle itself (e.g., gravitation) is a not confined by the subordinated domain (the orbital pathway) upon which it acts. Therefore, as Sky Shields presents the case, the apparently ontological connection of the principle to the subsumed action, can only be estimated as a point of contact which is ontologically (not spatially) infinitesimal at each and all point-intervals which might be adopted. Ontologically, the principle controls the action, but the action does not control, and does not contain the principle at that, or any other point: hence, gravitation as such is expressed as an absolutely (e.g., inherently) infinitesimal mode of action.

That is the underlying principle of the work of such followers of Cusa and Kepler, as Leibniz and Riemann (for example). It is also, methodologically, the key to the genius of Academician V. I. Vernadsky and Albert Einstein.

Hence, on the basis of such evidence, as Shields illustrates this point, we must go a step further, to say, that no derivatives of digital methods could ever encompass the action which corresponds to a true universal physical principle.

That is the one and only actual meaning of the use of the term *infinitesimal* by Leibniz. Euler knew this fact from

relevant cubic and biquadratic functions.

In his doctoral dissertation on the subject of what he later named the Fundamental Theorem of Algebra, Carl F. Gauss actually exposed the swindle by Euler, Lagrange, et al. Despite that, the fraud by Leibniz's adversaries persists as standard mouthings by the empiricists and positivists, down through Cauchy, Clausius, Grassmann, Kelvin, and by the devotees of Bertrand Russell, Norbert Wiener, John von Neumann, to the present day. The substitution of digital, for analog functions, has been a willfully malicious echo of the fraud of de Moivre et al. The vicious attacks on Kurt Gödel at Princeton, attacks which were motivated as defenses of Gödel's 1931 proof of the hoax of Bertrand Russell's **Principia Mathematica**, are highly relevant on this account.

12. This is known to the LYM teams as the "Basement" method.

Jean Bernouilli's published, well-documented representations of the work of himself and Leibniz. Furthermore, the notion of least-action itself, as proposed by Leibniz, reflected, as by Leibniz's explicit emphasis, the notion of least action introduced by Fermat, as that fact was also well known to Euler. Furthermore, the notion of both the calculus itself, and of the challenge of physical-elliptical functions, had been proposed to future mathematicians by Kepler; there was never any margin of opportunity for a competent scientist of the Seventeenth or Eighteenth centuries, taking these matters of background into account, to make an "honest" mistake in respect to the ontological content of the subjects to which such terms had referred.

How & Why Cauchy Faked the Calculus

In the method common to the work of the leading Pythagoreans, Plato, Cusa, Leonardo da Vinci, Kepler, Leibniz, and Riemann, the integrable infinitesimal represents the existence of a higher principle of action, as in the case of Kepler's uniquely original discoveries in the matter of gravitation, and Leibniz's defining of the calculus.

The effect of the reductionist's method of cutting away what Leibniz defines as the infinitesimal, transforms the conception of physical space-time to the effect of implying a universe characterized by asymptotic universal entropy. (Like the man who removes his genitals as a way of denying the existence of future generations, and thus employs the ruined organs as tools for other forms of entertainments.)

If one accepts the argument, respecting the calculus and modern algebra generally, which is common to de Moivre, D'Alembert, Euler, Lagrange, Laplace, and Cauchy, the outcome must be exactly what we encounter in the dogma of Clausius, Grassmann, Kelvin, Helmholtz, and the curiously disgusting aspects of Maxwell, Ernst Mach, Bertrand Russell, and their devotees. The so-called "Second Law of Thermodynamics," when presented as a universal law, was always a hoax of a literally Napoleonic enormity, which was a spectacular model to be promoted by a man of his size.

The time came when the Emperor Napoleon Bonaparte, the former protégé of the Robespierre brothers, and a Martinist freemason whose personality had been re-designed for him personally by Savoyard Count Joseph de Maistre, had been shrunk to a chuckle in the throat of the British Foreign Of-



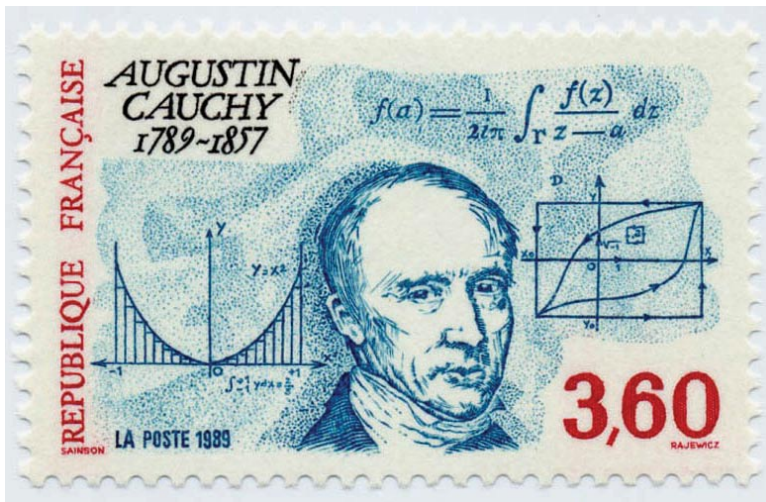
A Swiss banknote commemorates the swindler Leonhard Euler as Switzerland's finest mathematician, while plagiarist Augustin Cauchy is commemorated on a French stamp (at right). Both opposed Leibniz's discovery of the calculus.

office's Jeremy Bentham.¹³ The Duke of Wellington was now the occupying power of France. In this setting, a wretched piece of British property, the Bourbon pretender, was installed as the puppet-king of France, and the followers of Euler's protégé Lagrange, Laplace and Augustin Cauchy, were entrusted by Wellington et al. with ruining, as much as possible, what had been the world's leading center of scientific genius, Gaspard Monge's, Lazare Carnot's, and Alexander von Humboldt's Ecole Polytechnique.

A great scientific genius, Carl F. Gauss, took the precaution of hiding some crucial features of his method of producing some of his most precious innovations in physical science, as if from behind a protective mask.¹⁴ There came a brief period in the 1850s, when the genius of such European allies of Gauss as Wilhelm Weber, Alexander von Humboldt's protégé Lejeune Dirichlet, and Bernhard Riemann, with their American friends of the Franklin tradition, carried a revolution in fundamental scientific progress. Then, in the wake of the plagiarist Cauchy, and of Clausius, Grassmann, et al., European and trans-Atlantic science was under increasing attack by what were actually anti-scientific forms of destructive forces, especially in the aftermath of the closely interrelated cases of the ouster of Bismarck, the assassination of France's President Sadi Carnot, and the assassination of U.S.

13. As I have emphasized in exposing the roots of the model of U.S. Vice-President Dick Cheney, the models which the Martinist master-mason de Maistre promoted as the role of "The Executioner" for the Jacobin Terror and for the design of Bonaparte's change in personality as Emperor, were derived from the satanic image of Spain's Tomás de Torquemada, as the latter would be later presented with notable accuracy by Fyodor Dostoevsky.

14. When I outlined the crucial parameters of what would be the basement team's Gauss project, I emphasized that Gauss had rarely presented the actual methods by which he had arrived at certain among his most important discoveries. I emphasized Gauss's correspondence with Farkas Bolyai on the subject of Gauss's own discovery of an anti-Euclidean geometry (actually anticipating Riemann's 1854 habilitation dissertation) as an illustration, but also pointed out exactly this kind of challenge in Gauss's discovery, that a series of asteroid orbits had Keplerian orbits of a type foreseen by Kepler himself. They had now virtually completed that specific feature of the assignment.



teenth-Century attacks on the work of Leibniz, and the same kind of evil represented by the Malthusian wrecking-effort and its present echo as the scientifically and morally fraudulent campaign conducted by the oligarchical accomplices of the corrupt former U.S. Vice-President Al Gore now.

The object continues to be, to condition society to be dumbed down in ways which blind human beings to that which distinguishes people from beasts: access to usable knowledge of the physical principles which reign in the universe. From Aeschylus' **Prometheus** to the present, the motive behind the attack on the modern science of Cusa, Kepler, Fermat, Leibniz, et al., has been the oligarchical principle, of inducing our fellow human beings to degrade themselves into the bestiality characteristic of the oligarchical traditions of the

Roman, Byzantine, medieval Venetian-Norman, and contemporary Anglo-Dutch Liberal form of neo-Venetian forms of financier-oligarchical traditions.

President William McKinley. This accounts for much of the evidence, that, today, there is a line of intellectual degeneracy in the practice of science and technology, leading from the followers of Ernst Mach and Bertrand Russell into the warrens of Silicon Valley.¹⁵

This pattern, so illustrated with a few relevant highlights, is to be traced, and that systemically, throughout European civilization, since the conflict between, on the one side, the Sparta of the law and tradition of Lycurgus, and, in the opposing camp, the contrary legacy of the Athens of Solon. The crucial, central cultural issue of the entire sweep of the history of European civilization since about 700 B.C. has been a result of the influence of the virtually pro-Satanic Delphi Apollo cult in the promotion of Sophistry and other measures, like those of former U.S. Vice-President Al Gore now, intended to destroy the specifically Promethean outlook of the greatest periods of European culture since ancient Classical Greece.

The motive behind that tragedy is that which Aeschylus presents to the audience of **Prometheus Bound**. In that case what I have identified, immediately above, as the physical infinitesimal which is expressed as a principle of physical science, is illustrated as the issue of man's knowledge of the mastery of the use of "fire." What Aeschylus presents to the audience by this device, is the oligarchical systems' keeping the majority of society's members as virtual human cattle: they are forbidden access to knowledge of the use of fire. In modern times, that same oligarchical form of intention, was the issue posed by those modern Anglo-Dutch Liberal forces behind the fraudulent Eigh-

2. Biosphere & Noösphere

For the purposes of the announced objectives of this report, the best examples to be used in presenting universal gravitation as a boundary condition of the kind described above, are the cases of the Twentieth-Century definitions of *Biosphere* and *Noösphere* by Russia's Academician V.I. Vernadsky.

As far as knowledge of this matter has been presented to me thus far, Vernadsky, circa 1935-1936, found himself in the position of authority from which he, in his official capacity, distinguished the composition of the chemical processes of the Mendeleev domain of chemistry as divisible into two types, between living and non-living types of products, with emphasis on the evidence that the composition of higher regions of the planet Earth must be divided between compounds which occur only in, or as products of living process, and those which occur as products of non-living matter.¹⁶ Today, this distinction applies not merely to relations among the elements of the original Mendeleev Periodic Table, but as a distinction among the isotopes of the elements, with increasing attention to the therapeutic or specifically biological significance of newly produced modern types of isotopes which are by-products of nuclear-fission or related actions.

Taking this distinction between the abiotic processes and the Biosphere into account, the composition of the upper regions of our planet's surface, has been shifting to the effect of increasing the ration of the total mass of living processes and their specific products, relative to products of non-living processes.

However, when the relative mass of the total product specific to the Biosphere is itself divided between products, and by-

15. Thus, from Japan's 1894/1895-1945 warfare which was launched against China, the British Empire has spent most of the interval 1894-2008 to date, in promoting warfare as a dominant feature of life on this planet as a whole. This is an echo of the social, economic, and warfare practices which medieval Venice orchestrated through its control over the Norman chivalry, as through the Crusades conducted from the Norman genocide against the Cathars and the crusade commonly referred to as the Norman Conquest. The British Empire of today is an empire of Anglo-Dutch Liberalism, an empire of those Venetian practices set into motion by Paolo Sarpi and his followers, which took over England during the developments from the accession of James I, but emerged as an imperial force under the British East India Company with 1763 Peace of Paris.

16. Cf. Lyndon H. LaRouche, Jr., "Vernadsky & Dirichlet's Principle," **EIR**, June 3, 2005.



For the crime of giving man fire (technology), Prometheus is condemned by the Olympian Zeus to be bound to a rock, where a vulture perpetually eats away at his liver. This depiction of Prometheus' plight is from an ancient vase painting.

products, specific to human origins (the Noösphere) as distinct from non-human, we are confronted with the fact that the ratio of specifically human, to other by-products of living processes, is increasing in a way comparable to the growth of the Biosphere relative to the inorganic mass of our planet.

However, it is also the case, that the increase of the product associated with human activity, relative to the remainder of the Biosphere, does not necessarily tend to decrease the potential for the further absolute increase of human habitation, but, rather, also increases it as a relative gain of the ratios of the mass and intensity of activity of the Noösphere over the Biosphere.

Contrary to superstitious and reckless opinion today, to the extent that the net physical productivity of mankind increases sufficiently, the increase of population, is not a "threat" to the environment. However, whereas, an implicitly "neo-colonialist" shift of production from more developed sectors of "production," to less developed regions of "cheaper production," and less development of basic economic infrastructure, this combination produces a collapse of the planet's conditions of existence as a whole, as we are experiencing this effect under the foolishly imposed conditions of global collapse of the world economy, as by the so-called "environmentalists" and other members of the physical-work-hating ranks of our typical, anti-industry, anti-farmer science-illiterates of the "white-collar Baby Boomer" class of today.

This threefold division of the relevant total mass of our planet

(the abiotic, the Biosphere, and the Noösphere), confronts science with a challenge comparable to the relationship of the principle of universal gravitation to the orbital pathway of the planet. Life changes the universe, upward, and the human noëtic activity increases the potential growth and qualitative development of the Biosphere beyond the means of the Biosphere itself.

These considerations are an essential feature of any competent practice of economics today.

Life As a Physical Principle

The work of Vernadsky and its outcome have defined the principle of life in manner which is comparable to the distinction between the gravitational determination of a planetary orbit and the orbital pathway in the large. Life is not a product of "inorganic chemistry;" rather, organic chemistry, were to be strictly, broadly defined, as chiefly a product of

the principle of life, that in the same sense that the principle of gravitation is a universal physical principle.

Thus, in that way, life is a universal physical principle, as is gravitation as defined by the work of Kepler. Similarly, the principle of cognition, by which discoveries of universal physical principles are made only by human beings, is, like gravitation and life, also a universal physical principle, which changes the subsumed characteristics of the physical universe within which it operates.

I refer emphatically to a change in the composition of the chemistry of our planet which was induced by the action of the principle of life. The same kind of paradoxical challenge is presented as the change effected within the domain of living processes, which we observe as the growth of the Noösphere. Thus, gravitation, living processes, and cognitive processes, typify, in common, the fact of the relationship of superior external boundaries, *boundaries which are expressed experimentally in the ontological form of physically, rather than spatially infinitesimals*. It is upon those premises that the contained domain is thus defined.

A universe so composed of three or more such universal principles, can be only described as Riemannian. No geometry based upon *a-priori* assumptions of definitions, axioms, and postulates, or the like, is to be tolerated. Thus, as Riemann's 1854 habilitation dissertation variously states and implies, no universal principle can be defined either deductively, or inductively.

It is simply demonstrated, as Sky Shields has demonstrated in

his **EIR** contribution, that only processes of the mental quality of an analog function, not a digital one, can represent the relevant model of relationship pertaining to true universal principles as such. Contrary to the intentional fraud by Euler, the existence of the Leibniz infinitesimal, is not that of a small magnitude within the domain of the planet's orbit; it is a principle of change, operating from outside the motion of the planetary body as such, which is acting with "infinite density" on that trajectory, and is, therefore, ontologically, not metrically, infinitesimal in that sense.

Digital computer technology has uses, but not for defining the principles under whose law the universe operates. No mathematical procedure used to calculate a digital form of arithmetic procedure, or used similarly for any other mathematical function, has any subsuming relevance for a competent science respecting matters of physical principle. *As Sky Shields implied this with sufficient effectiveness, any civilization which operates under the guidance of a digitalized mentality, is, therefore, strategically inferior, in principle, to a competitor whose approach is coherent with analog functions.*

3. Genesis!

The subject of the relative quantity of the Noösphere has two principal aspects. In the large, we have the increasing ration of those components of the Biosphere which are specific to the Noösphere as such, with the resulting increase, a.) of the ratio of these components of the Noösphere to the Biosphere which includes them (quantitatively); b.) of the accumulation of generation of new qualities (e.g., "species") of elements of the Noösphere (qualitatively).

That duly noted, our attention must now focus on the quality of the mode through which those increments are generated. We proceed as follows.

The process needed to replicate Academician V.I. Vernadsky's discovery of the physical existence of the universal phase-space called the Noösphere, might be begun with a few, deceptively simple steps. First, in the approach outlined here, the student must enjoy the experience of discovering that there exists a problem which requires, what is for that student, a new way of thinking about the difference between beasts (such as, for example, either marsupials or mammals) and the human species.

The terrain which this chapter is now beginning to explore on this account, shows us that human creativity, while expressed for our knowledge through "mechanisms" of our biological existence, is not located within that physiology so defined. Rather, to provide a relevant pedagogical image of our subject at this point, the physical-biological apparatus of the individual mind is fairly described as "tuned into" an agency, the domain of human individual creativity, which is not entirely mortal in the sense that the living human body is. The individualization of that reciprocal interaction between the immortal, higher powers of the universe and ourselves, defines the experience which mankind may recognize as the individual human "soul," that creative aspect of the human mind which partakes of actual participation in the divine. This principle is



V.I. Vernadsky discovered the physical existence of the universal phase space called the Noösphere, LaRouche writes. And human creativity increases its potential.

physically efficient, as the application of fundamental scientific discoveries demonstrates; but, its power does not lie confined within our biological apparatus as such, but is a higher power tapped into by means of the specific appropriateness of the development of the human mind of an individual member of our species.

Such is man and woman of **Genesis** 1. Such is the immortal participation of the human individual soul, so defined, in the mission of the existence and work of humanity. So, humanity may be transformed for the better, and the universe itself improved, through the missions for good in which mankind participates.

The improvements in the powers of the mind of the living person, are dependent on the processes by which the human mind tunes itself to the higher powers of creativity into which it "taps," and through which the sections of populations accepting this pro-



EIRNS

"To master the challenge of the universe, we must accept it as being organized dynamically, as Cusa, Kepler, Leibniz, Riemann, and Vernadsky did, and as Albert Einstein understood to a large degree." Here two of the "basement" team, Peter Martison and Tarrajna Dorsey, working on the Gauss project.

cess, improve their powers in a way comparable in effect to growing into becoming the likeness of a higher form of living species.

These qualities, which distinguish the human potential from that of the apes, are expressed, most typically, in what is truly to be recognized as Classical, as music from J.S. Bach and such of his followers as Mozart, Beethoven, Schubert, and so on, and in the expression of scientific progress, as by ancient Thales, Pythagoreans, Plato, or the followers of Nicholas of Cusa today. It is a quality otherwise expressed in the form of the love for mankind which is echoed by the great principle, the benefit of the others, of the 1648 Peace of Westphalia.

There is, in short, a scheme in the universe considered in its totality, a principle to which the human mind may respond as if resonantly. This lies, not within our animal body, but within that to which the animal body of the human individual, among all living species, is exceptionally resonant, with which the resonant qualities of the human mind react reciprocally. What I just said, thus far, is not a guess, a mere speculation; it is my practical experience of knowledge of the matter.

Thus, when we consider the known experience of mankind's development, we are struck by a sense of awesome implications of what is written in **Genesis** 1. The steps by which we are able

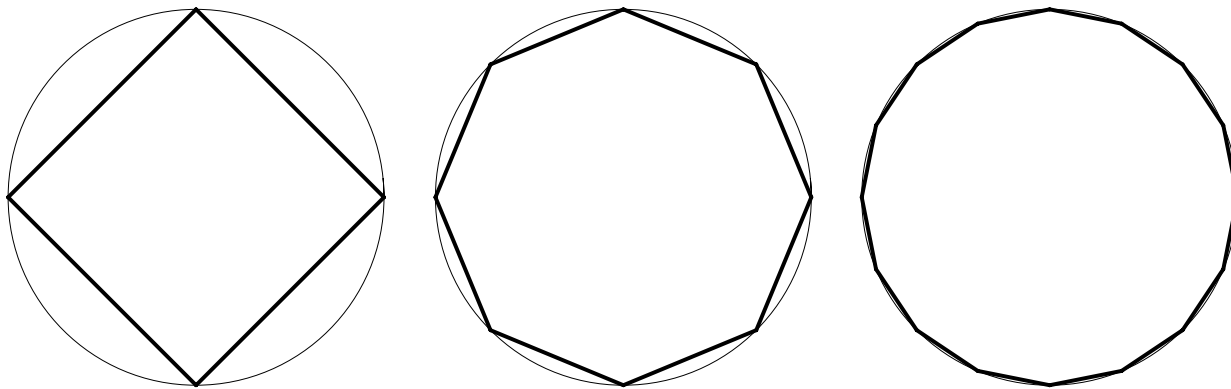
to express that qualitative distinction of the human individual from the beasts, thus become, for those among us who are writing, the well-springs of our passion for mankind and for what we are able to discover as truth.¹⁷

We who are witting, therefore have a very low opinion of opinions which are not truthful conceptions. We despise Sophistry and the reign of mere "popular opinion," on that account.

That much said, in preparation, on background, let us now argue that case.

On a first pass, the student should compare the *potential relative population-densities* among animal species. At first, this takes a form which appears to most to be pretty much straightforward for the cases of several chosen animal species in a relevant, typical environment. Try a well-trodden academic classroom and textbook favorite, the subject of the conjectured

17. In what is said here, we presume a qualitative distinction between discovery (as of a physical principle) and animalistic learning. For example, the following. Suppose we decide we can no longer tolerate tigers, elephants, and the like, but, rather "store" genetic material from which we must recreate such a lost species from our zoo. What we would lose would be the learning which the parent animals had formerly transmitted to the young. Some parents and educational systems make the awful mistake of assuming that human culture were merely a copy of transmitted learning among lower forms of life.



QUADRATURE OF THE CIRCLE

Archimedes tried to square the circle to approximate the value of pi, but his method was inherently flawed, as Nicholas of Cusa demonstrated. No matter how many sides an inscribed polygon has, each tiny side remains straight, while the circle remains curved. The circle is a different, higher species than the straight line.

interrelationship between populations of rabbits and foxes, for example. Then, the same study restated as adjusted to study the effect of changes in the environment, such as longer term changes in annual weather patterns, on the fox-rabbit model.

Such examples might be passable approximations, up to a point.

The second pass involves a qualitative leap, from Cartesian, or kindred models, into recognition that the problem is not one which can be properly understood by reliance on the usual statistical models. It is necessary to abandon the idea of what might be termed “conventional” statistical models (which really never work, anyway), and to bring in Riemannian modes in *dynamic* models, instead.¹⁸

At that point, a really serious leap must be brought in. Prepare the way for that leap in the following manner.

What Glaciers Teach Us

Adopt an “environmental model” known from studies of the span of approximately two millions years associated with recent, primary forms of ice-age cycles. Compare the known samples, and increases of potential relative population density shown for sundry branches of humanity over this period, as this is compared with the population-densities among higher apes.

What that approach accomplishes, is to enable us to smooth out relatively shorter-term variations in the comparison of apes to men and women. The choice of about two millions years has the particular merit of taking into account the several major gla-

ciations of that interval. Notably, the last such great glaciation of about two hundred thousand years, had the effect of forcing the development of human cultures associated with the northern hemisphere into the oceans, as migratory maritime cultures with an inherent reliance on astrogation which we find reflected in remnants of calendars which can be approximately dated from long-ranging astronomical models.¹⁹

Contrary to popular myths, the development of what became modern civilization were maritime cultures which moved upstream, up large rivers, to relatively remote inland locations, not according to the popularized myths of the riparian models. Not until the development of the continental railway system of the U.S.A., was the relative strategic hegemony of the maritime cultures effectively challenged by inland-based physical-economic and related development.

The British Empire’s persisting commitment to geopolitical warfare against the challenge of continental economies, has been the characteristic reflection, since 1763, of what had already been the dominant power of maritime cultures during known history since ancient times.

The development of physical science during known times, has always stemmed from the astrophysics associated with maritime navigational characteristics, as the Egyptian origin of the European science of Thales through the Sphaerics of the Pythagoreans and Plato attests.

What is outstanding as ancient knowledge of the crises of civilizations over the lapse of time since emergence from the recent general glaciation, has been the negative role played by oligarchical systems of the type treated by Aeschylus’ **Prometheus**

18. In the use of the term “dynamic,” we must convey the impact of the full development of the historical use of that term, from Thales and the Pythagoreans, including Archytas’ solution for the purely constructive duplication of the cube, through Plato, Leibniz, Riemann, and the application of a Riemannian standpoint by Vernadsky and Einstein. At no point are the methods of quadrature, such as those of Galileo, Descartes, Newton, Lagrange, Laplace, Cauchy, et al., permitted; rather, we regard them as, ontologically, systemically fraudulent when superimposed on subject-matters of physical science.

19. E.g., Bal Gangadhar Tilak, **The Orion: Antiquity of the Vedas and Arctic Home in the Vedas: Being Also a New Key to the Interpretation of Many Vedic Texts and Legends**. Tilak made use of chiefly Nineteenth-Century, largely German scientific resources for modern scientific treatment of ancient Asian sources.

Bound. The tragedy of Pericles' Athens is an example of the way in which the influence of the oligarchical trait of Sophistry led to the self-destruction of Greece's civilization in the Peloponnesian War and related developments, as in the fall of the Babylonian and the Achaemenid empires, and also the bow-tenure systems of lower Mesopotamia, earlier.

The subject of Aeschylus' **Prometheus** trilogy is of crucial clinical-historical significance on this account.

The issue of that trilogy is, in fact, that the banning of knowledge of the use of "fire," is, like Malthus' swindle and that of former U.S. Vice-President Gore today, an expression of the characteristic feature of the phenomenon of oligarchism whose destructive effects were experienced in the collapse of ancient and medieval empires, and which are the root-cause of the currently threatened general collapse of civilization being experienced as the onrushing disintegration of the presently hegemonic Anglo-Dutch Liberal financier system.

The suppression of knowledge of that form of the discovery and application of scientific progress in the practice of physical economy, progress through fundamental scientific and related progress toward increasingly power-intensive-driven capital-intensity, is the principal form of expression of evil which has been the leading cause of all great catastrophes of civilizations and cultures through the known past existence of mankind.

At the same time that we point out this fact, we must emphasize that cultural progress of the forms and types cohering with fundamental scientific progress and with Classical artistic progress of comparable qualities, is the only means by which the human population can avoid new dark ages of parts, or even all of mankind. Thus, oligarchism, and cultural expressions such as the existentialism of the doctrine published as **The Authoritarian Personality**, or the moral degenerates' scheme known as the Congress for Cultural Freedom, have been typical of the leading factors of pro-oligarchical cultural warfare which have caused the degeneration of contemporary civilization since the death of President Franklin Roosevelt.

Specifically, in the history of modern civilization, it has been chiefly the rise of what became the Anglo-Dutch Liberalism engendered by Paolo Sarpi and his followers which has been the leading edge of the imperialist factor of oligarchism in modern European history thus far. We have not yet quite degraded the general populations of Europe and North America into the status of serfs or slaves, but we are presently well along the way in that direction.

Thus, the time has come again to us today, that either we restore the kind of commitment to scientific and technological progress we of the U.S.A. and Europe once associated with the impetus of President Franklin Roosevelt's leadership, or civilization as a whole is already doomed to a prolonged new, world-wide dark age, during which the level of the human population might probably decline, rapidly, from about six and a half billions souls now, to significantly less than a billion, world-wide, in the course of two or so generations immediately ahead.

In effect, digital designs for computer killer games, and the general decadence of the shift into so-called "post-industrial," "globalized" society, have been markers of the process of programmed cultural decadence which has brought today's global society to the already visibly crumbling brink of global chaos. So, looking on the one side, at the emergence of mankind during some part of the recent two millions years of ice-age cycles, at a point that a new ice-age is now on the way some time ahead, and also taking into account the known cultural disasters which mankind has, largely, imposed upon itself since about 700 B.C., we must recognize that a policy of dedication to the progress of the Noösphere is the only means by which an immediate new general disaster of mankind could be averted now.

Riemann, Again

Within the context of the birth of a modern European civilization to which Cardinal Nicholas of Cusa contributed an essential part, the summation of scientific and related progress is provided by the work of Bernhard Riemann, as typified by the work of Russia's V.I. Vernadsky, and what I have indicated as the relevant comments on the matter of scientific principle by Albert Einstein. The point has been reached to summarize the case for, first, the nature of the power of the human mind to generate discoveries of universal physical principle which increase the power of mankind in the universe absolutely, and, second, the universe's susceptibility to be moved in that way.

Let us refer to that quality of mind required as the type of "the universal genius," such as Plato, Cusa, Kepler, Fermat, Leibniz, J.S. Bach, Ludwig Beethoven, and Bernhard Riemann. The universal mind seems as if to stand outside the known universe, but within the larger, real one. He, or she creates the idea of action by means of which a new state of active being may be introduced to the previously known universe. By such means, as nuclear and thermonuclear scientific practice have shown, mankind is enabled to produce states of being in the universe which had not been known to exist earlier. Through these actions, man's power within the universe is increased. It is a universe in which the fundamental law is a law of universal anti-entropy.

Despite all things tending to the contrary effect, the recent century's developments in physical science as such have demonstrated this to be true.

To accomplish such missions, the individual actor must rise above petty notions of "self-interest." To master the challenge of the universe we must accept it as being organized *dynamically*, as Cusa, Kepler, Leibniz, Riemann, and Vernadsky did, and as Albert Einstein understood to a large degree. What the known such minds of history have done in that respect, demonstrates what the nature of man actually is, and, more important, what it can, and must become.

Lyndon H. LaRouche, Jr., an economist and statesman, is a member of the scientific advisory board of 21st Century Science & Technology.

THE HISTORICAL DATA THE IPCC IGNORED

180 Years of Atmospheric CO₂ Measurement By Chemical Methods

by Ernst-Georg Beck

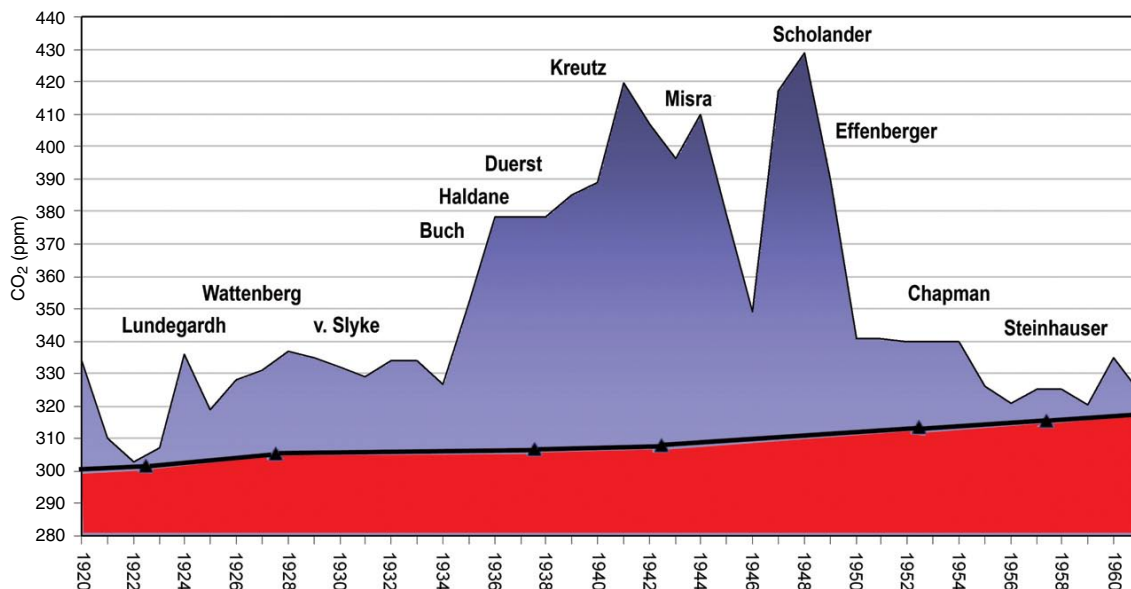
The view of the Intergovernmental Panel on Climate Change (IPCC)—a United Nations body that is responsible for advising governments on climate change—follows closely the views of three influential scientists, Svante Arrhenius, G.S. Callendar, and Charles Keeling, on the importance of CO₂ as the major driver of climate change.

The linchpin in the IPCC argument is the assumption that prior to the industrial revolution, the level of atmospheric CO₂ was

in an equilibrium state of about 280 parts per million (ppm), around which little or no variation occurred. This presumption of constancy and equilibrium is based upon a selective review of the older literature on atmospheric CO₂ content by Callendar, and later Keeling, of the University of California at San Diego, which essentially discounted all data not conforming to their preconceived notions of historical CO₂ levels. (See Figure 1.)

The truth is that between 1800 and 1961, more than 380 tech-

Figure 1
REAL CO₂ MEASUREMENTS VS. GLOBAL WARMERS' FABRICATION
(1920-1961) NORTHERN HEMISPHERE



Actual historical CO₂ measurements (upper line) and the IPCC values concocted from ice cores—a fable designed to convince you that atmospheric CO₂ levels are rising because of industrial activity. The chemical measurements are yearly averages of data from 48 measuring series at different locations (±3% accuracy).

Thousands of direct chemical measurements of CO₂ concentration in the atmosphere since the mid-19th Century show that the current claim of human-induced CO₂ increase is a willful fraud.

Table 1
BIBLIOGRAPHIES AND NUMBER OF DATA-CONTAINING PAPERS THEY CITE

Cited authors and papers with data

Year	Authors	Total	19th Century	20th Century	Notes
1900	Letts and Blake ¹⁴	252	252	-	Only 19th Century
1912	Benedict ¹⁵	137	137	-	Only 19th Century, focus on O ₂ -determination
1940	Callendar ¹⁶	13	7	6	Cited Letts and Blake, Benedict
1951	Effenberger ¹⁷	56	32	24	Cited Duerst ¹ , Misra ¹ and Kreutz ¹
1952	Stepanova ¹⁸	229	130	99	Citation same as Effenberger
1956	Slocum ¹⁹	33	22	11	Cited Duerst and Kreutz
1958	Callendar ²⁰	30	18	12	No citing of Duerst, Kreutz, and Misra
1958	Bray ²¹	49	20	19	Cited most important through the centuries
1986	Fraser ²²	6	6	-	Only 19th Century, same as Callendar
1986	Keeling ²³	18	18	-	Only 19th Century, same as Callendar
2006	Beck [this study]	156	82	74	Only chemical determination until 1961

Note

1. See References

Between 1800 and 1961, there were more than 380 technical papers published on air gas analysis with data on atmospheric CO₂, but these have been rejected by the global warming promoters.

nical papers were published on air gas analysis containing data on atmospheric CO₂ concentrations. Callendar [16, 20, 24], Keeling, and the IPCC did not provide a thorough evaluation of these papers and the standard chemical methods that they employed. Rather, they discredited these techniques and data, rejecting most as faulty or highly inaccurate [20, 22, 23, 25-27]. (See Table 1.)

Although Callendar and Keeling acknowledge the concept of an “unpolluted background level” for CO₂, these authors examined only about 10 percent of the available literature, asserting from that, that only 1 percent of all previous data could be viewed as accurate, specifically that of Münz [28-30], Reiset [31], and Buch [32].

During my own review of the literature, I observed that the evaluation of the work of Reiset and Münz by Callendar and Keeling was erroneous. This spurred me to investigate carefully the criteria used by these and other authors to accept, or to reject, such historical data.

The stated intent of these authors was to identify CO₂ determinations that were made using pure, unpolluted air in order to assess the true background level of CO₂,¹ however, Callendar set out the actual criteria that he used to judge whether older determinations were “allowable” in his 1958 paper [20]. There, Callendar presented only data that fell within 10 percent of a longer yearly average estimate for the region. He rejected all measure-

1. CO₂ measuring stations are distributed across the globe. Most, however, are located in coastal or island areas in order to obtain air without contamination from vegetation, organisms, and industrial activity; that is, to establish the so-called background level of CO₂. In considering such measurements, account should be taken of the established fact that land-derived air flowing seaward loses about 10 ppm of its carbon dioxide to dissolution in the oceans—even more in colder waters—by Henry's Law.

ments, however accurate, that were “measurements intended for special purposes, such as biological, soil, air, atmospheric pollution.” Callendar also rejected nearly all data before 1870, because of what he erroneously described as “relatively crude instrumentation.” He reported only 12 suitable data sets for the 20th Century as known to him [20], out of 99 made available by Stepanova in 1952 [18].

Keeling, in 1986 [23], commented on the 19th Century CO₂ data:

Our original goal was to find, if possible, a seasonal cycle in the nineteenth century atmospheric CO₂ data in agreement with modern observations by applying the air mass criteria of Callendar [16] to screen out contaminated data. This goal we have demonstrated to be unachievable. We find, after screening out suspicious data on the basis of air mass, that none of the five data sets of Callendar show the seasonal cycle which Callendar found in combination.

And then Keeling concluded:

In conclusion, the measurements of atmospheric carbon dioxide carried out by Reiset (1882) from 1872 to 1880 on the coast of northern France appear to be valid. They indicate a mean annual concentration, with respect to dry air, of 292.4 ±1.2 ppm. Comparisons with other possibly valid contemporary data suggest that these data are not biased by more than 10 ppm. It is thus unlikely that the CO₂ concentration was less than 282

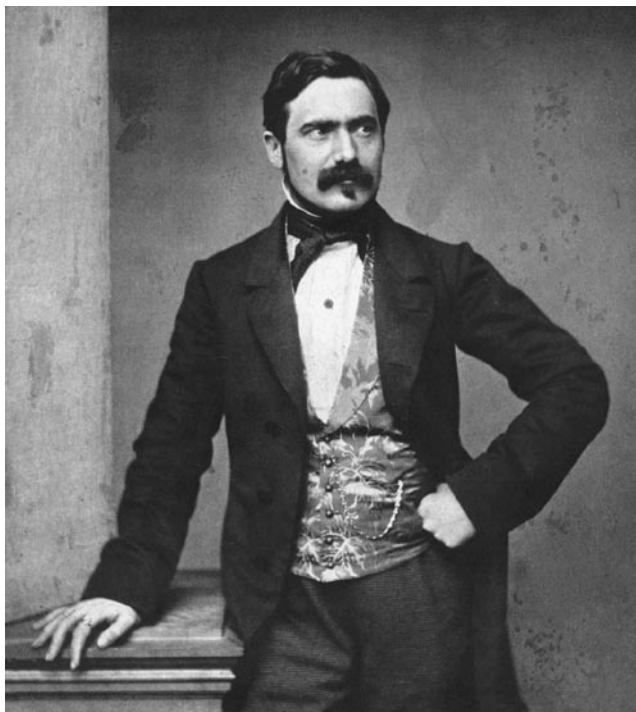
ppm in the late nineteenth century, and was probably close to 292 ppm.

In other words, the historical CO₂ data acceptable to Callendar and Keeling had to be sufficiently low to be consistent with the greenhouse hypothesis that climate change is controlled by rising CO₂ emissions from fossil fuel burning. There was no verification or falsification of results and methods used by many other authors, especially those published in the 20th Century (for example, Lundegardh [35, 36], Duerst [37], Kreutz [38], Misra [39], Scholander [40])—with exception of the 1935 data of Buch [32], lying on the “fuel line” (Callendar 1958 [20]).

According to Callendar, Keeling, and the IPCC, CO₂ variations observable in air were due to diurnal and seasonal cycles (see Figure 2), or to glacial/interglacial fluctuations. Natural concentrations are assumed to have been in equilibrium until mankind disturbed the natural situation. Therefore, any long-term observations that might display decadal to centennial natural variations in atmospheric CO₂ are ruled out *a priori* by Callendar and Keeling.

As I discuss below, these criticisms by Callendar and Keeling, and the selective way in which they discarded historical data, are not justifiable. Their most egregious error was perhaps the dismissal of all data which varied significantly from their presupposed average. That said, it is of course the case that some of the older data must be viewed as less reliable for technical, analytical reasons, as also indicated below.

In 1958, Keeling introduced a new direct technique for the accurate measurement of atmospheric CO₂. He used cryogenic condensation of air samples, followed by non-dispersive infrared (NDIR) spectroscopic analysis against a reference gas, using manometric calibration. Subsequently, this technique was adopted as an analytical standard for CO₂ determination through-



Max Joseph von Pettenkofer (1818-1901), German chemist and medical doctor, was a student of Justus Liebig. Pettenkofer, who devised what became the standard method of measuring CO₂, was also known as a pioneer in epidemiology and public health.

out the world, including by the World Meteorological Organization (WMO) [3-13].

Early Chemical Methods of CO₂ Gas Analysis

I have assembled here a 138-year-long record of atmospheric CO₂ levels, extracted from more than 180 technical papers pub-

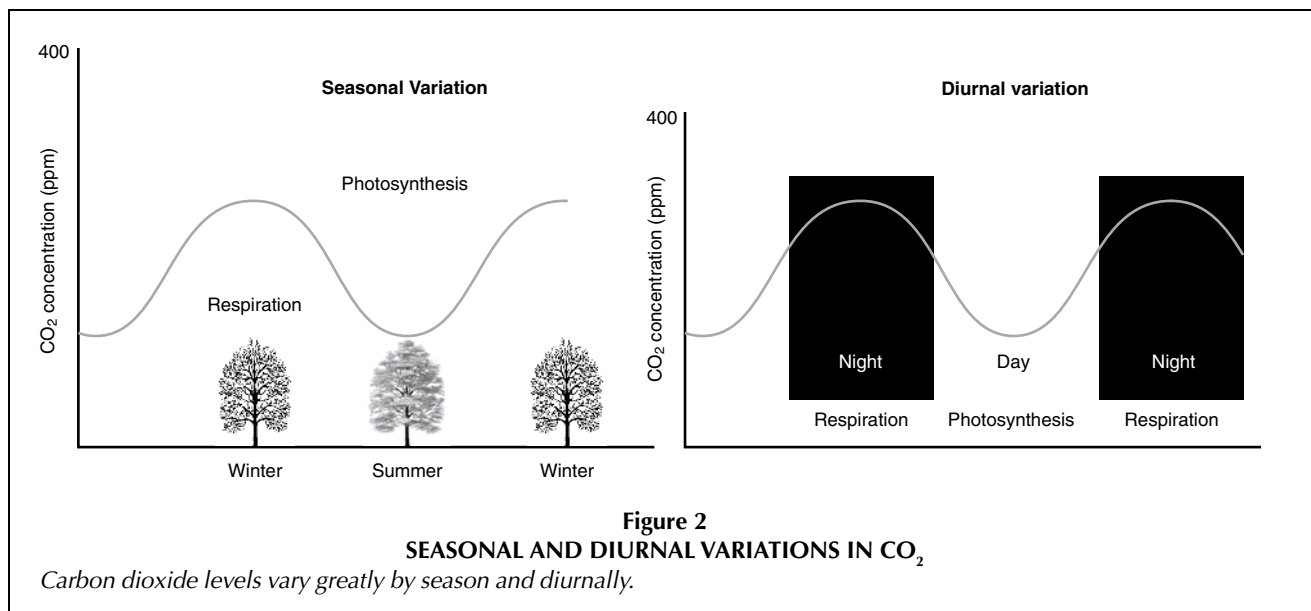


Figure 3
THREE PRINCIPAL
CHEMICAL TECHNIQUES
FOR MEASURING CO₂

- (a) A type of Pettenkofer titrimetric apparatus (1920)
 (b) Petterson/Sonden volumetric apparatus (1912)
 (c) Riedel/Schuftan volumetric apparatus (1933)

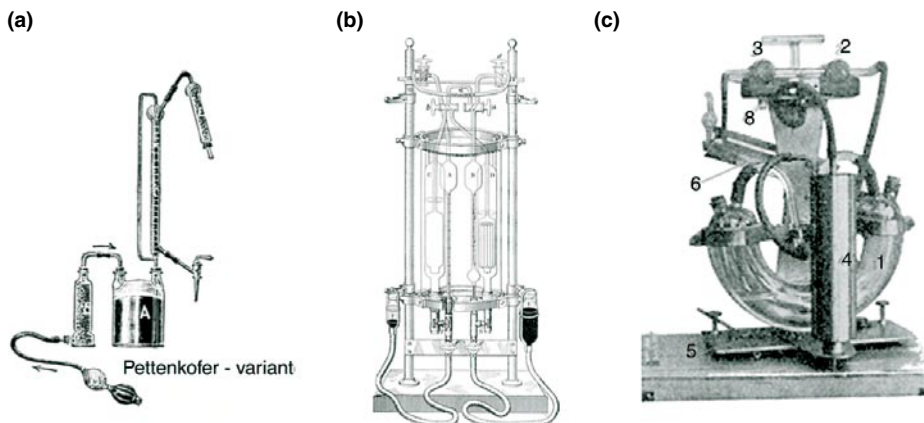


Table 2
SERIES OF CO₂ MEASUREMENTS SINCE 1855 LASTING MORE THAN ONE YEAR
(USING TITRIMETRIC PETTENKOEFER PROCESS)

	Year	Author	Locality	No. of determinations
1.	Since 1855	v. Pettenkofer [46]	Munich	Many
2.	1856 (6 months) ¹	v. Gilm ¹ [50]	Innsbruck ¹	19
3.	1863-1864	Schulze ² [51]	Rostock,	426
4.	1864-1865	Smith [52]	London, Manchester, Scotland	246
5.	1868-1871	Schulze ² [51]	Rostock,	1,600
6.	1872-1873	Reiset [53]	Dieppe, France (Northsea)	92
7.	1873	Truchot [54]	Clermont Ferrand	60
8.	1874-1875	Farsky ² [55]	Tabor, Böhmen, (Czech)	295
9.	1874-1875	Hässelbarth ² [56]	Dahme	347
10.	1879-1880	Reiset [31]	Dieppe	118
11.	1883	Spring ² [57]	Liège	266
12.	1886-1887	Uffelmann [58]	Rostock	420
13.	1889-1891	Petermann [59]	Gembloux	525
14.	1897-1898	Letts and Blake [14]	near Belfast	64
15.	1898-1901	Brown and Escombe [60]	Kew Gardens	92
16.	1917-1918	A. Krogh [61, 62]	Copenhagen	Many
17.	1920-1926	Lundegardh [35]	Southern Sweden, Kattegat	>3,000
18.	1928	Krogh/Rehberg [62]	Copenhagen	Many
19.	1932-1935	Buch [32]	North Atlantic Ocean, Finland	176
20.	1936-1939	Duerst [37]	Bern	>1,000
21.	1941-1943	Misra [39]	Poona, India	>250
22.	1950	Effenberger [17]	Hamburg	>40
23.	1954	Chapman et al. [63]	Ames, Iowa	>100
24.	1957	Steinhauser [64]	Vienna	>500
25.	1955-1960	Fonselius et al.[65], Bischof [66]	Scandinavia	>3,400

Notes

1. v. Gilm: Used similar process as Pettenkofer, first calibrated.
 2. Used identical variant of Pettenkofer process, sampling by tube through opening in window.

Table 3
VOLUMETRIC AND MANOMETRIC MEASUREMENTS

Year	Author	Notes	
1. 1875 (Marx)	Tissandier [67]	Paris, in balloon, volumetric	>10
2. 1880-1912	Müntz & Aubin [28, 29, 30]	Near Paris, Pyrenees, Carribean, etc. (F) volumetric	81+
3. 1910-1912	Benedict [15]	Washington (USA), volumetric	>264
4. 1920-1930	Rheinau [68]	Locations in Germany, Davos, Switzerland (volumetric)	
6. 1912-1936	Haldane [70]	Worldwide, manometric	Many
7. 1939-1941	Kreutz [38]	Germany, (volumetric)	64,000
8. 1946-1970	Scholander [40, 41]	Worldwide, (volumetric)	>1000

lished between 1812 and 1961, the year which marked the end of the era of classical chemical analysis.

The compilation of data was selective. Nearly all of the air sample measurements used were originally obtained from rural areas or the periphery of towns, under comparable conditions—a height of approximately 2 meters above ground, at a site distant from potential industrial or military contamination. Evaluation of the chemical methods used reveals systematically high accuracy, with a maximum 3 percent error, reducing to 1 percent for the 1920-1926 data of Henrik Lundegardh (1888-1969), a pioneer of plant physiology and ecology [34-36].

Three principal chemical techniques have evolved since 1812 for measuring the CO₂ content of air: gravimetric, titrimetric, and volumetric or manometric (Figure 3a-c). The Pettenkofer titrimetric method—being simple, fast, and well-understood—was the optimal standard method for more than 100 years after 1857 [45-48]. (See Table 2.) Various scientists routinely calibrated their methods against each other, and against a standard gas of known CO₂ content.

The Pettenkofer process (Figures 3a, 4) and all its variants involved the absorption of a known volume of air in an alkaline solution (Ba(OH)₂, KOH, NaOH) and subsequent titration of the produced carbonate with an acid (oxalic, sulfuric, hydrochloric). Basic accuracy is ±0.0006 volume percent [34, 45] optimized to ±0.0003 vol percent by Lundegardh [35], who provides measurements comparable to the other techniques (see Table 3).

Measurements made prior to the 1857 introduction of the Pettenkofer method, mostly by renowned French chemists (Boussingault [14], Brunner [14], Regnault [14, 75]), systematically understated the amount of CO₂ in the atmosphere, because of factors that include CO₂ absorption into the lengths of natural latex tubing used for connections, use of sulfuric acid for drying air, and lack of temperature management. There being no calibration against Pettenkofer, or modern volumetric/manometric equipment, I cannot quantify accurately the range of error. Well-known absorption errors are in the order of 30 ppm. Among these authors, only de Saussure, during 1826-1830 [76]

measured a realistic picture of the seasonal CO₂ cycle.

Early volumetric CO₂ measurement techniques also systematically understated CO₂ levels. Those used before Haldane [70] and Benedict/Sonden/Petterson in 1900 [15, 44]—including gas analyzers used by the French researchers Regnault, Müntz, Tissandier, and others—were open systems which lacked efficient control of reaction temperature (see Schuftan [43]), leading to less reliable data. Furthermore, French researchers such as Müntz, Tissandier, and Reiset (Pettenkofer

process) used sulfuric acid for drying air (or releasing CO₂, Müntz [28-30]) before determination of CO₂ content. Because of the absorption of a considerable fraction of CO₂ in the sulfuric acid, their values are too low. The Bunsen absorption coefficient for sulfuric acid (H₂SO₄ at 25°C is 0.96, while for H₂O at 25°C it is only 0.759 [72].

These systematic errors had been known since 1848. Hlasiwetz [73] in 1856, and Spring [57] in 1885, determined these absorption losses of CO₂ in sulfuric acid to be 7-10 percent, or about 20 ppm.

Neither Callendar or Keeling, nor the IPCC mentioned these systematic errors which resulted in overly low CO₂ values. Yet

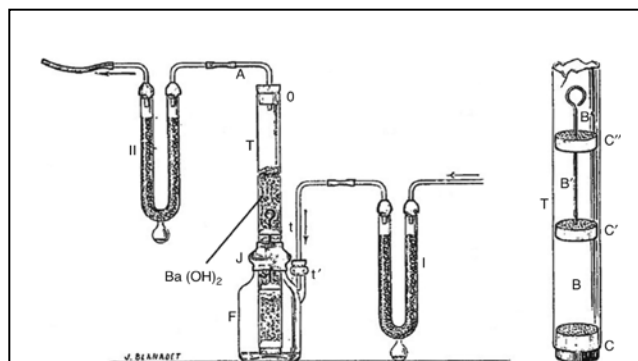


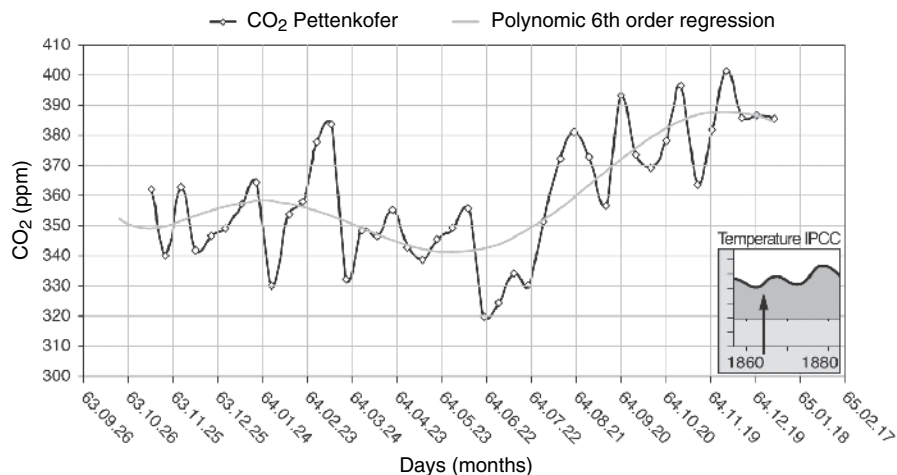
Figure 4
A TYPICAL TITRATION APPARATUS

The Pettenkofer titrimetric process, the standard method for CO₂ measurement since 1857, used the absorption of a known volume of air into an alkaline solution, barium hydroxide, Ba(OH)₂, for example. The carbon dioxide dissolved in the solution reacts with the Ba(OH)₂ to form the insoluble salt BaCO₃. The amount of acid required to neutralize the remaining Ba(OH)₂ vs. the original quantity determined the amount of CO₂ absorbed.

This is part of the equipment used by Reiset at Dieppe in 1872-1880 with sulfuric acid for drying air [31]. Sulfuric acid is in the U-shaped tube at right.

Figure 5
SCHULZE'S MEASUREMENTS
OF MONTHLY AND SEASONAL
CO₂ VARIATION AT ROSTOCK,
GERMANY (1863-1864)

Schulze and other 19th Century studies show CO₂ levels of 350 ppm or higher, when IRC ice core interpretations claim only 290 ppm.



Reiset and Müntz were singled out for special praise by Keeling and the IPCC as the sources of the best available data of that time [22, 23, 25-27, 74].

Even discounting such unsatisfactory data, in every decade since 1857, we can still identify several measurement series that contain hundreds of precise, continuous data (Table 2).

The highest density of data was achieved by Wilhelm Kreutz at the state-of-the-art meteorological station in Giessen, Germany [38], using a closed, volumetric, automatic system designed by Paul Schuftan, the father of modern gas chromatography [43, 78]. Kreutz compiled more than 64,000 single measurements using this equipment in an 18-month period during 1939-1941 (see below).

The longest single time series was carried out at the Montsouris laboratory in Paris, and comprised 12,000 measurements over the 30 years from 1876 until 1910 [79].

Historical Resolution of Short-term CO₂ Cycles

I first investigated short-term fluctuations in CO₂ concentration, stimulated by Callendar and Keeling's assertion that the historical data are unreliable because they reflect measurements

made within an unresolved diurnal or seasonal cycle. Certainly, some observations deserve such criticism. But many others do not, as shown below.

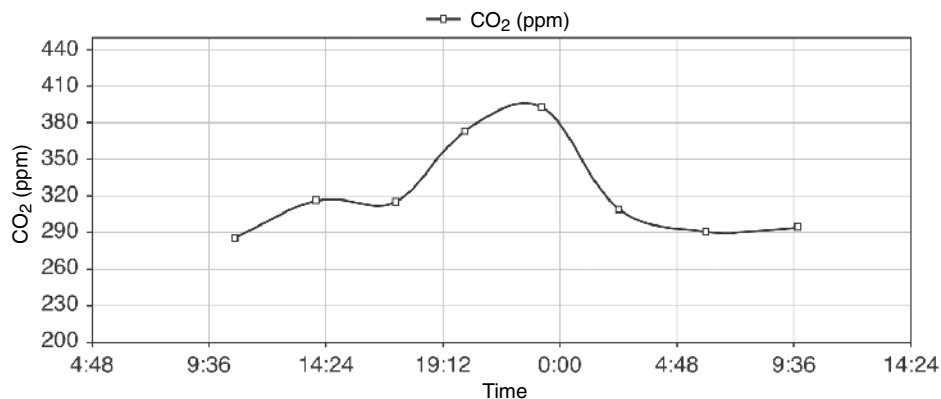
Out of dozens of high quality data sets since 1857 that are available for analysis, I cite three 19th Century studies, in order to show the precision exhibited by historical gas analysis in detecting seasonal and diurnal variation of CO₂ levels. The three studies are by F. Schulze during 1863-1871 [51] at Rostock, Germany; P. Hässelbarth at Dahme, Prussia, in 1876 [56]; and W. Spring in 1883-1884 [57] at Liège, Belgium. (See Figures 5-7.)

The conditions of data acquisition, description of methods, prevailing weather conditions, and information about the precise location can be gathered from the appropriate papers. In general, these three sets of observations share levels of CO₂ as high as 350 ppm or more, at a time when data interpreted from ice cores indicate a level of around 290 ppm.

W. Spring, a chemist at the University of Liège in Belgium, analyzed 266 air samples during 1883-1885, resulting in an average CO₂ concentration of 355 ppm. His data clearly resolve the seasonal CO₂ cycling characteristic of temperate regions.

Figure 6
HÄSSELBARTH'S
MEASUREMENTS OF
DIURNAL CO₂ VARIATION
AT DAHME, PRUSSIA (July
24-25, 1876)

CO₂ was measured with a Pettenkofer apparatus, taking 34 liters of air, every 3 hours, on a 1-meter-high table in a garden, with no wind and no clouds.



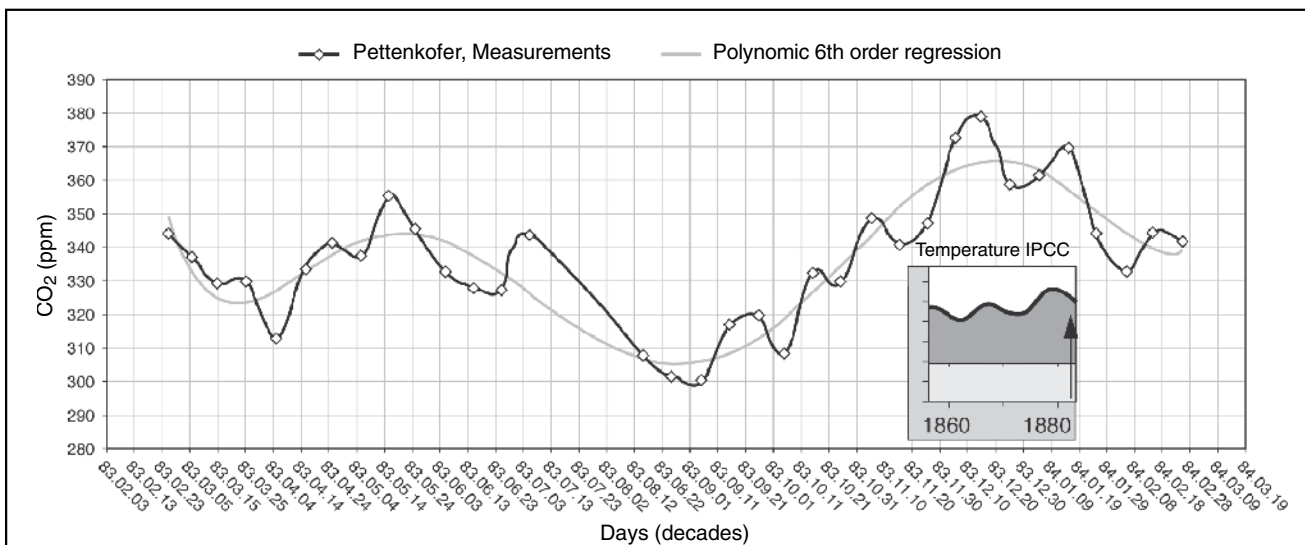


Figure 7

SPRING AND ROLAND'S MEASUREMENTS OF SEASONAL CO₂ VARIATIONS AT LIEGE, BELGIUM (1883-1884)

CO₂ was measured every 10 days with a Pettenkofer apparatus at the height of 5 meters. An average of 266 samples were 335 ppm, with a variation of 70 ppm. The IPCC claims a CO₂ level of around 290 ppm for this same time period.

He carefully tested and calibrated his equipment, quantified local CO₂ sources from soil and industry (see Figure 8), and systematic CO₂ losses by drying air in sulfuric acid. He also discussed the influence of weather and the results of other scientists.

Even after making this adjustment, the Giessen results strongly contradict recent IPCC estimates of carbon dioxide levels during the 1940s. These results of Kreutz were neither cited nor evaluated by Callendar and Keeling. Others who have mentioned Kreutz's work, such as Slocum [19], Effen-

CO₂ Studies at Giessen, 1939-1941

Equipped with the best available hardware at that time [80, 81], W. Kreutz installed four measuring sites for parallel data acquisition between 1939 to 1941, measuring all weather parameters including radiation, temperature, pressure, humidity, wind, and so on. Over an 18-month period, he analyzed more than 64,000 single CO₂ values at a rate of 120 samples per day, using a volumetric gas analyzer designed by Riedel & Co. of Essen, Germany [77]) and Paul Schuftan (Linde & Co), the famous expert in gas analysis, [43, 71, 78]. Kreutz's results [38] delineate well both the seasonal cycle and weather events around the city of Giessen, and confirm strikingly the persistence of CO₂ levels above 400 ppm over most of a period of two years (Figure 9).

The overall average CO₂ level for the 25,000 values plotted from Giessen is 438.5 ppm. This figure needs to be adjusted downwards to take account of anthropogenic sources of CO₂ from the nearby city, an influence that has been estimated as lying between 10 and 70 ppm (average 30 ppm) by different authors [61, 57, 82, 83].

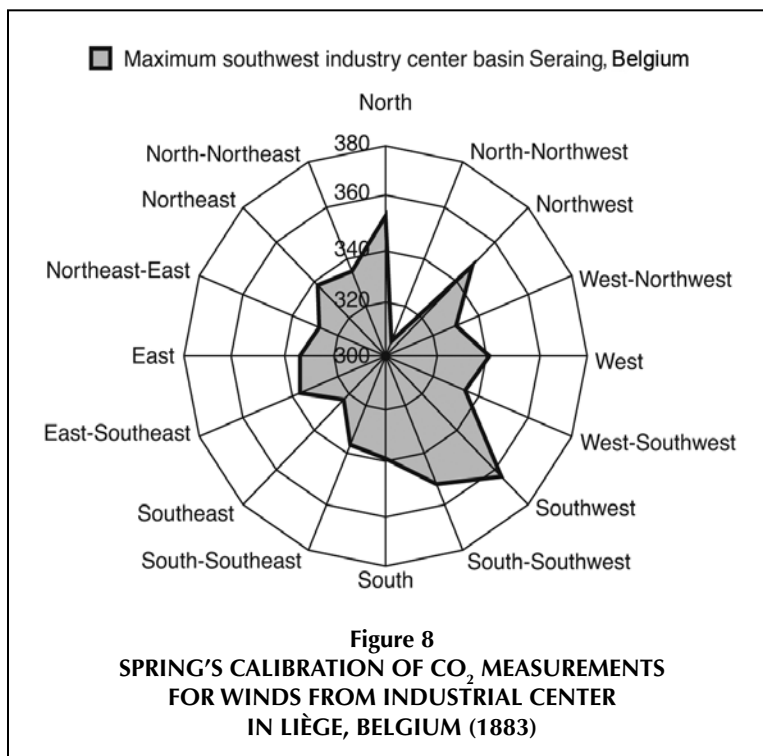


Figure 8
SPRING'S CALIBRATION OF CO₂ MEASUREMENTS FOR WINDS FROM INDUSTRIAL CENTER IN LIÈGE, BELGIUM (1883)

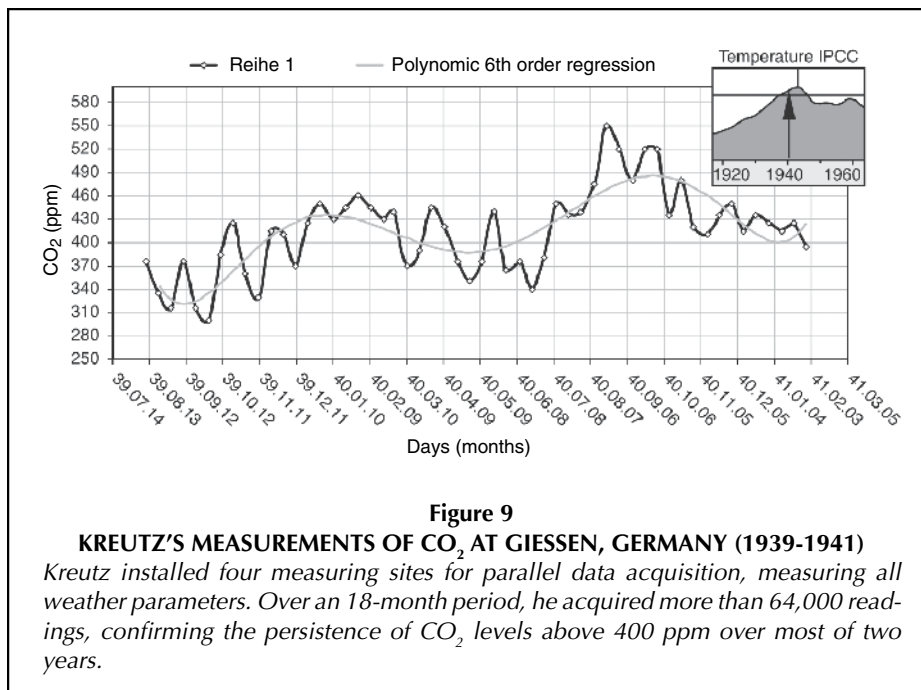


Figure 9
KREUTZ'S MEASUREMENTS OF CO₂ AT GIESSEN, GERMANY (1839-1941)
Kreutz installed four measuring sites for parallel data acquisition, measuring all weather parameters. Over an 18-month period, he acquired more than 64,000 readings, confirming the persistence of CO₂ levels above 400 ppm over most of two years.

ments made on samples collected at a height of approximately 2 meters above ground, from stations located throughout the Northern Hemisphere, from Alaska, through Europe, to Pune, India.

Figure 10 gives an overview of the period 1812-1961 with 11-year smoothing to remove the short-term CO₂ fluctuations.

Figure 11 compares the 11-year-averaged CO₂ curve and the 2001 IPCC annually averaged temperature record between 1860 and 2000. Short-term fluctuations in CO₂ are suppressed by the filtering, but at this broad level there is a close match between the 1942 CO₂ and temperature peaks.

Figure 12 compares the yearly CO₂ averages over the period 1920-1961 to ice core CO₂ records compiled by Neftel et al. [33].

berger [17], and Bray [21], invariably give faulty citation of the details.

The Historical CO₂ Data Compiled

In this section I present the analytical data over a 150-year period for air gas analysis determined by classical chemical techniques, as published in 138 scientific papers. The data presented have been retained unmodified. They mostly comprise measure-

Notice in Figures 11 and 12 that the peak CO₂ concentration in the atmosphere and peak temperature coincide in 1942, an observation which will be given more attention below. The overall validity of the pattern of CO₂ fluctuations over this period is supported by the following considerations:

- Broad geographic coverage, with measuring stations spread throughout middle and northern Europe, the United States, the Atlantic Ocean, Alaska, India, and Antarctica.

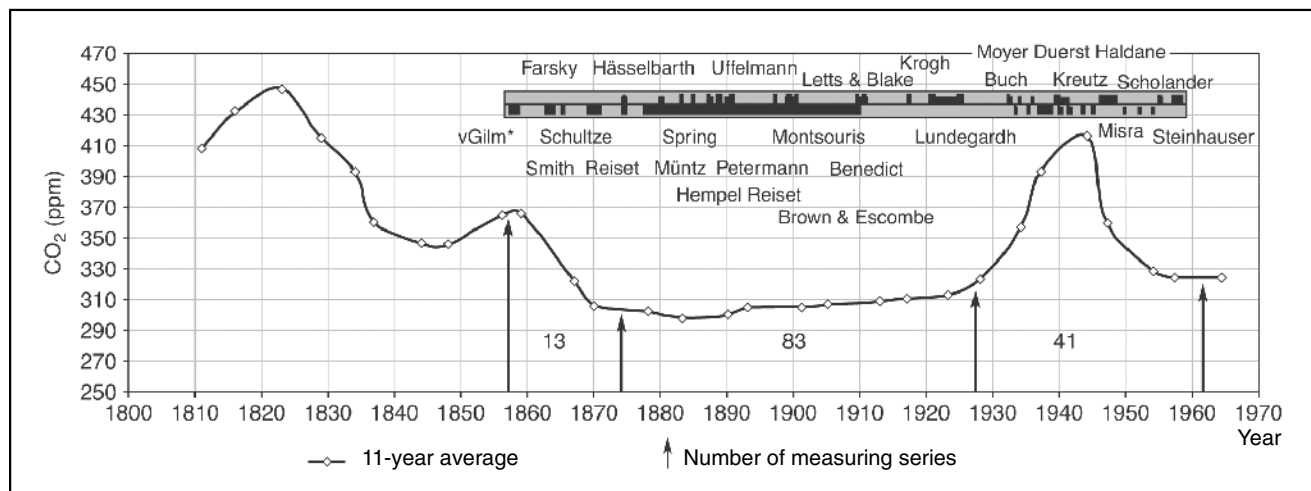


Figure 10
11-YEAR AVERAGED CO₂ MEASUREMENTS IN NORTHERN HEMISPHERE (1812-1961)
For most of the 19th and 20th centuries, atmospheric CO₂ measured above 300 ppm, and sometimes above 400 ppm, despite claims to the contrary by Keeling and the IPCC. This 11-year averaging of data has eliminated short-term daily and seasonal variations. The researchers who compiled the data are noted by name, roughly on a time line; the bar diagram shows the periods of data coverage; and the number of measuring series for each period is given between the arrows.

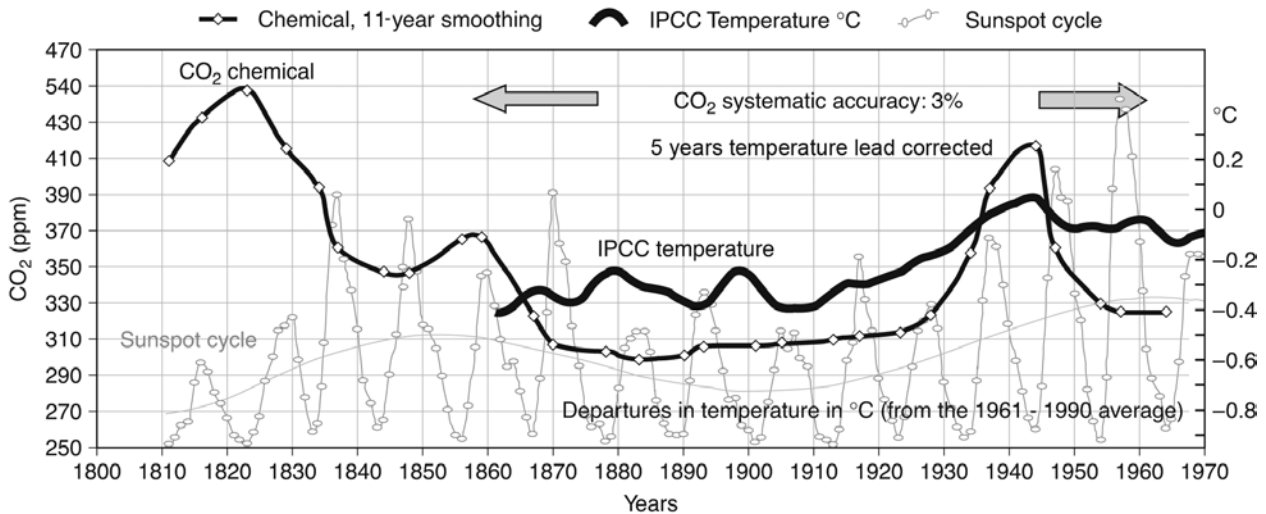


Figure 11
11-YEAR AVERAGED CO₂ CURVE OF ACTUALLY MEASURED CO₂ LEVELS,
COMPARED TO 2001 IPCC TEMPERATURE RECORD (1860-1970)

Note the close match between the 1942 peaks in CO₂ and temperature—a vindication of the accuracy of chemical methods of CO₂ measurement, but not proof of the global warming conjecture. The CO₂ fluctuation peaks about five years after the temperature peaks. For more on this phase lag, see www.biokurs.de/treibhaus/180CO2_supp.htm.

- High data density: The 41 CO₂ series used include about 70,000 discrete measurements, with the highest data density in the peak between 1939 and 1942.

- Comparable CO₂ data were acquired using several different chemical techniques with accuracy of 2-3 percent, as designed by Krogh, Schufftan, van Slyke, Haldane, and Scholander.

- Measurements were made by several highly competent experts in air gas analysis: Buch [32], Haldane [70], Duerst [37], Kreutz [38], Scholander [40], Lockhart [84].

- There were verified suitable locations of the measuring stations: No contamination is known from human or natural sources; for example, conurbation, war, soil degassing, or volcanic emissions.

- World War II cannot be responsible for the high values, because a rise in CO₂ is exhibited from 1925 and culminating in 1942, and the second part of the maximum was recorded at places with no war activity (Alaska, India).

If the same CO₂ data are plotted as a five-year average (Figure 13), then the shorter-term CO₂ fluctuations reassert themselves. This plot shows

that all eight temperature maxima during the 100 years from 1850 to 1950 correspond with CO₂ maxima. Ice core CO₂ data are included for comparison. Note that the ice core re-

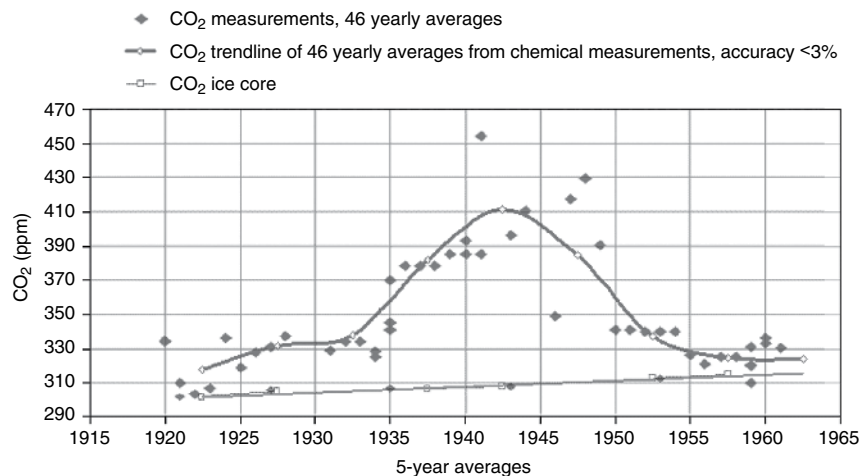
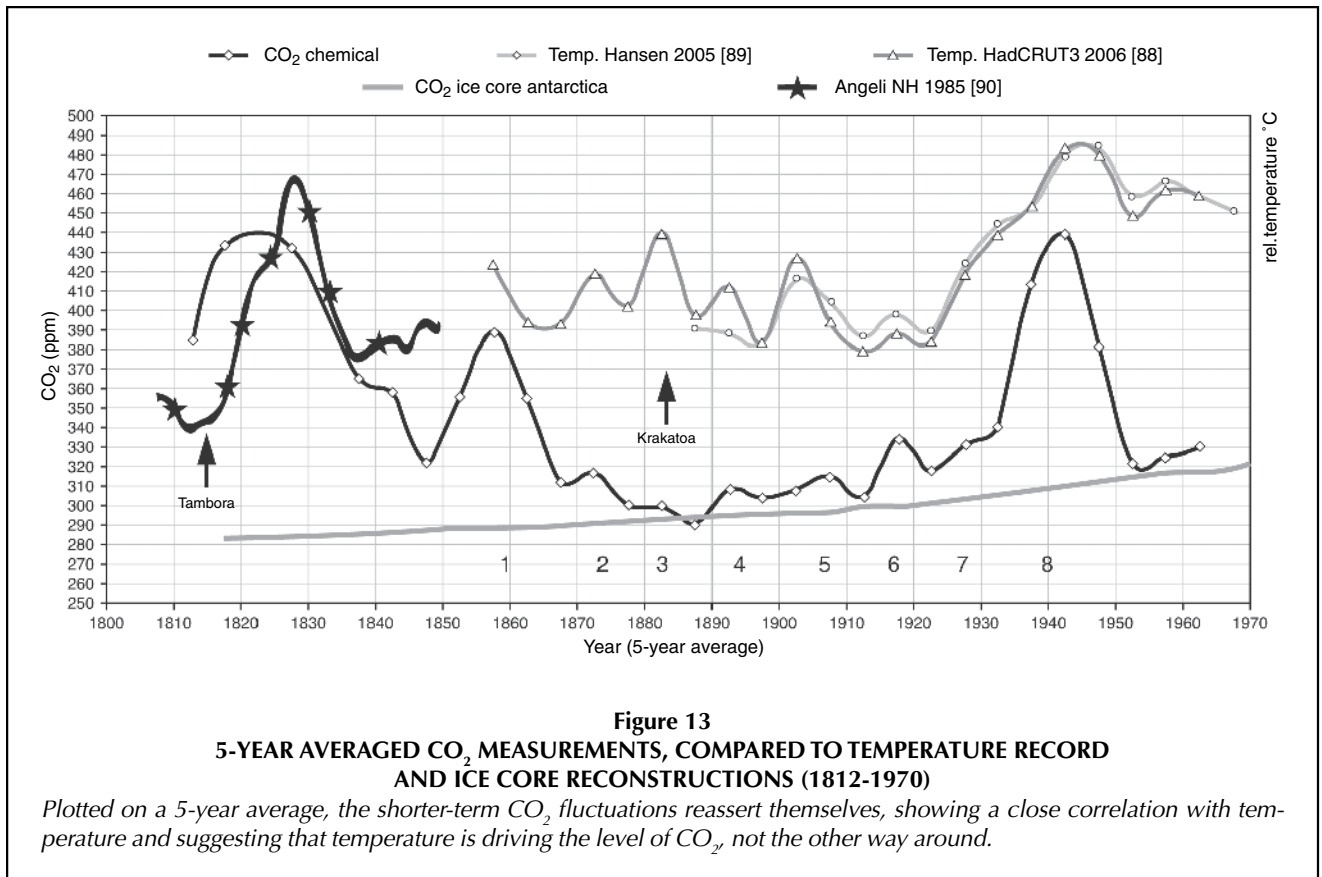


Figure 12
YEARLY CO₂ AVERAGES FROM CHEMICAL MEASUREMENT,
COMPARED TO ICE CORE RECONSTRUCTIONS (1920-1961)

Direct chemical measurement (diamond symbols) showed considerable variation in atmospheric CO₂ content over the period from 1921 to 1961, compared to the almost flat curve (square symbols) produced by methodologically questionable means from gaseous inclusions in ice cores. The top line of direct chemical measurements has a standard error of less than 3 percent.



sults do not contain decadal frequency fluctuations.² The unreliability of ice core reconstructions was indicated by Jaworowski [86].

The close relationship between temperature change and CO₂ level exhibited by these results is consistent with a cause-effect relationship, but does not in itself indicate which of the two parameters is the cause and which the effect. The greenhouse hypothesis of the IPCC argues for CO₂ being the cause (through radiative feedback) of the temperature rise. My results are equally, if not more consistent with the hypothesis that temperature drives the level of CO₂ in the atmospheric system. In support of this latter hypothesis, ice-core data consistently show that over climatic time scales, changes in temperature precede parallel changes in carbon dioxide by several hundred to more than a thousand years [91].

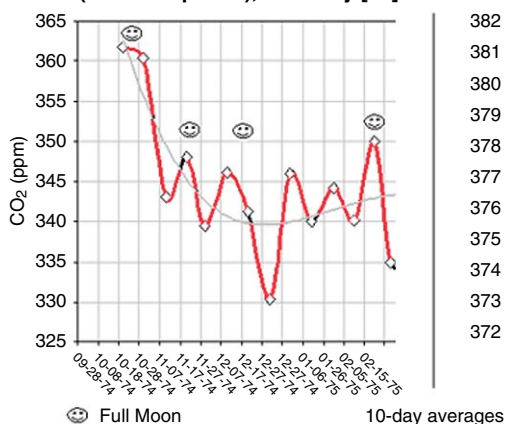
2. Most of the historical chemical measurements were accomplished on samples collected from the boreal regions of the Northern Hemisphere. In these regions the diurnal and seasonal variation in atmospheric CO₂ displays a much higher amplitude than for oceanic areas, where smoothing influences result in a diminution of CO₂ levels by 10 ppm or more. An imbalance of photosynthesis, respiration, and soil respiration in and near to forests may lead to periodic emissions of large quantities of CO₂ [83, 92]. Substantial differences in amplitude of parts of the carbon cycle are well known in the Northern Hemisphere (for example, methane [93]; Luxembourg, [94]). Such effects may explain the various smaller fluctuations in CO₂ content through the historical chemical record, which are not imaged by ice cores or at ocean stations.

Historical Data Must Be Included

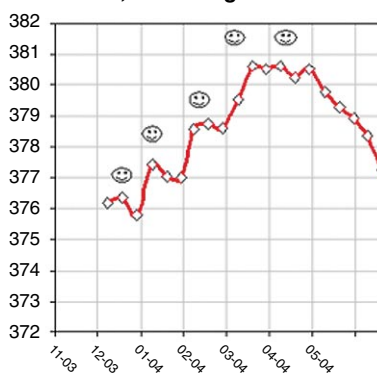
During the late 20th Century, the hypothesis that the ongoing rise of CO₂ concentration in the atmosphere is a result of fossil fuel burning became the dominant paradigm. To establish this paradigm, and increasingly since then, historical measurements indicating fluctuating CO₂ levels between 300 ppm and more than 400 ppm have been ignored. A re-evaluation has been undertaken of the historical literature on atmospheric CO₂ levels since the introduction of reliable chemical-measuring techniques in the early to mid-19th Century. More than 90,000 individual determinations of CO₂ levels are reported between 1812 and 1961. The great majority of these determinations were made by skilled investigators using well-established laboratory analytical techniques. Data from 138 sources and locations have been combined to produce a yearly average atmospheric CO₂ curve for the Northern Hemisphere.

The historical data that I have considered to be reliable can, of course, be challenged on the grounds that they represent local measurements only, and are therefore not representative on a global scale. Strong evidence that this is not the case, and that the composite historical CO₂ curve is globally meaningful, comes from the correspondence between the curve and other global phenomena, including sunspot cycles and Moon phases—the latter presented here for perhaps the first time in the literature (Figure 14)—and the average global temperature.

CO₂ Measurements 1874-1875 at Tabor (Czech Republic), F. Farsky [55]



CO₂ Measurements 2004 at Mauna Loa, C. Keeling



**Figure 14
DATA INDICATING CO₂ PEAKS AT FULL MOON**

Strong evidence that the direct chemical measurements are meaningful comes from the correspondence between the historical curve and other global phenomena, including sunspot cycles, and Moon phases (here noted for the first time).

Furthermore, that the historical data are reliable in themselves is supported by the credible seasonal, monthly, and daily variations that they display, the pattern of which corresponds with modern measurements. It is indeed surprising that the quality and accuracy of these historic CO₂ measurements have escaped the attention of other researchers.

Ernst-Georg Beck, Dipl. Biol., is a Biology and Bio-Technology Professor at the Merian-Schule, in Freiburg, Germany. An earlier version of this paper has appeared in the journal Energy & Environment, (Vol. 18, No. 2, 2007). The author can be reached at egbeck@biokurs.de. His website (http://www.biokurs.de/treibhaus/180CO2_supp.htm) supplies links to the historical data for this article, and includes links to commentaries on his work.

References

1. C.D. Keeling, "The Influence of Mauna Loa Observatory on the Development of Atmospheric CO₂ Research," Scripps Institution of Oceanography, University of California at San Diego, 1978: <http://www.mlo.noaa.gov/>.
2. IPCC Third Assessment Report: *Climate Change 2001: The Scientific Basis*, Eds. J.T. Houghton, Y. Ding, D.J. Griggs, M. Noguer, P.J. van der Linden, and D. Xiaosu (Cambridge, U.K.: Cambridge University Press), p. 944: http://www.grida.no/climate/ipcc_tar/wg1/index.htm.
3. A.G. Dickson, *Reference Materials for Oceanic CO₂ Measurements*, (Scripps Institution of Oceanography University of California, San Diego, La Jolla, Calif., Unesco, 1991).
4. G.C. Bate, A. D'Aoust, and D.T. Canvin, "Calibration of Infra-red CO₂ Gas Analyzers," Department of Biology, Queen's University, Kingston, Ontario, Canada, 1969: www.pubmedcentral.gov/articlerender.fcgi?artid=396226.
5. AEROCARB Research Station Italy, Mt. Cimone, ISAC National Research Council: <http://aerocarb.lisce.iplsi.fr/>.
6. C.L. Zhao, P.P. Tans, and K.W. Thoning, "A High Precision Manometric System for Absolute Calibrations of CO₂ in Dry Air," *Journal of Geophysical Research*, Vol. 102(D 5), p. 5885, 1997.
7. "Scriptum Meereschemische Analytik," WS 2002/2003; Körtzinger, Arne, University of Kiel, Germany.

8. "A High Precision Manometric System for Absolute Calibrations of CO₂ Reference Gases," NOAA/ESRL Global Monitoring Division, Boulder, Colo. <http://www.esrl.noaa.gov/gmd/ccg/refgases/manometer.html>.

9. "Charles David Keeling: Climate Science Pioneer: 1928-2005," Scripps Institution of Oceanography, University of California at San Diego: <http://sio.ucsd.edu/keeling/>.

10. C.D. Keeling, "The Concentration and Isotopic Abundance of Carbon Dioxide in the Atmosphere," *Tellus*, Vol. 12 pp. 200-203, 1960.

11. C.D. Keeling, "The Influence of Mauna Loa Observatory on The Development of Atmospheric CO₂ Research," Scripps Institution of Oceanography, University of California at San Diego, 1978: <http://www.mlo.noaa.gov/>.

12. C.D. Keeling and T.P. Whorf, 2005. "Atmospheric CO₂ records from sites in the SIO air sampling network," *In Trends: A Compendium of Data on Global Change*, Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tenn.: <http://cdiac.ornl.gov/trends/co2/sio-mlo.htm>.

13. "Global Atmosphere Watch Measurements Guide," *World Meteorological Organization Global Atmosphere Watch Nos. 143 (2001) and 148 (2003)*: <http://www.wmo.ch/pages/prog/arep/gaw/documents/gaw143.pdf>, <http://www.wmo.ch/pages/prog/arep/gaw/documents/gaw148.pdf>.

14. E. Letts, R. Blake, "The Carbonic Anhydride of the Atmosphere," *Scientific Proceedings of the Royal Dublin Society*, Vol. 9, 1899-1902.
15. F.G. Benedict, "The Composition of the Atmosphere," *Carnegie Publication*, No. 166, Washington, D.C., 1912.
16. G.P. Callendar, "Variations of the Amount of Carbon Dioxide in Different Air Currents," *Quarterly Journal of the Royal Meteorological Society*, Vol. 66, No. 287, pp. 395-400, Oct. 1940.
17. E. Effenberger, "Messmethoden zur Bestimmung des CO₂-Gehaltes der Atmosphäre und die Bedeutung derartiger Messungen für die Biometeorologie und Meteorologie," *Annalen der Meteorologie, Viertes Jahrgang*, Vol. 10, No. 12, pp. 417-427, 1951.
18. Nina A. Stepanova, "A Selective Annotated Bibliography of Carbon Dioxide in the Atmosphere," *Meteorological Abstracts*, Vol. 3, pp. 137-170, 1952.
19. G. Slocum, "Has the Amount of Carbon Dioxide in the Atmosphere Changed Significantly Since the Beginning of the Twentieth Century," *Monthly Weather Review*, Vol. 83, No. 10, pp. 225-231, 1955.
20. G.P. Callendar, "On the Amount of Carbon Dioxide in the Atmosphere," *Tellus X*, pp. 243-48, 1958.
21. J. Bray, "An Analysis of the Possible Recent Change in Atmospheric Carbon Dioxide Concentration," *Tellus XI*, Vol. 2, p. 220, 1959.
22. Fraser et al., in *The Changing Carbon Cycle*, Springer Verlag (1986), p. 66.
23. C.D. Keeling, "Reassessment of Late 19th-Century Atmospheric Carbon Dioxide Variations," *Tellus*, Vol. 38B, pp. 87-105, 1986.
24. G.P. Callendar, "The Artificial Production of Carbon Dioxide and Its Influence on Climate," *Quarterly J. Royal Meteorological Society*, Vol. 64, pp. 223-40, 1938.
25. T. Wigley, "The Preindustrial Carbon Dioxide Level," *Climate Change*, Vol. 5, pp. 315-320, 1983.
26. "The Pre-1958 Atmospheric Concentration of Carbon Dioxide," EOS Meeting, June 26, 1984, p. 415.
27. WPC-53, WMO: "Report of the Meeting in the CO₂-Concentrations from Preindustrial Times," I.G.Y, 1983.
28. A. Müntz and E. Aubin, "Recherches sur les Proportions d'acide carbonique contenues dans l'air," *Ann. Chim. Phys., Serie 5*, Vol. 26, p. 222, 1882.
29. A. Müntz and E. Aubin, "Recherches sur les Proportions d'acide carbonique contenues dans l'air," *Ann. Chim. Phys., Serie 5*, Vol. 26, p. 222, 1882.
30. A. Müntz and E. Aubin, "L'acide carbonique de l'air," *La Nature (Paris)*, Vol. 2, p. 385, 1882: <http://cnum.cnam.fr/CGI/page.cgi?4KY28.18/399/>.
31. J. Reiset, "Recherches sur la proportion de l'acide carbonique dans l'air," *Annales de Chimie*, No. 5, Vol. 26, p. 144, 1882.
32. E. Buch, "Der Kohlensäuregehalt der Luft als Indikator der Meteorologisch-

- en Luftqualität," *Geophysica*, Vol. 3, pp. 63-79, 1948.
33. A. Neftel et al. "Ice Core Sample Measurements Give Atmospheric CO₂ Content During the Past 40,000 Yr.," *Nature* Vol. 295, pp. 220-223, 1982.
 34. H. Lundegardh, "Neue Apparate zur Analyse des Kohlensäuregehalts der Luft," *Biochem. Zeitschr.*, Vol. 131, p. 109, 1922.
 35. H. Lundegardh, *Der Kreislauf der Kohlensäure in der Natur.*, Fischer, Jena (680), 1924).
 36. A. Larkum, "Contributions of Henrik Lundegardh," *Photosynthesis Research*, Vol. 76, pp. 105-110, 2003; Biography of H. Lundegardh: http://www.life.uiuc.edu/govindjee/Part2/09_Larkum.pdf.
 37. U. Duerst, "Neue Forschungen über Verteilung und Analytische Bestimmung der wichtigsten Luftgase als Grundlage für deren hygienische und tierzüchterische Wertung," *Schweizer Archiv für Tierheilkunde*, Vol. 81, No. 7/8, pp. 305-317, Aug. 1939.
 38. W. Kreutz, "Kohlensäure Gehalt der unteren Luftschichten in Abhängigkeit von Witterungsfaktoren," *Angewandte Botanik*, Vol. 2, pp. 89-117, 1941.
 39. R.K. Misra, "Studies on the Carbon Dioxide Factor in the Air and Soil Layers near the Ground," *Indian Journal of Meteorology and Geophysics*, Vol. 1, No. 4, p. 127, 1950
 40. P.F. Scholander, "Analyzer for Accurate Estimation of Respiratory Gases in One-half Cubic Centimeter Samples," *J. Biol. Chem.*, Vol. 167, pp. 235-250, 1947: <http://www.jbc.org/cgi/reprint/167/1/235>.
 41. R. Hock et al., "Composition of the Ground-level Atmosphere at Point Barrow," *Journal of Meteorology*, Vol. 9, p. 441, 1952.
 42. E. Abderhalden, *Handbuch der biochemischen Arbeitmethoden*, (Berlin 1919), p. 480; and F.P. Treadwell, *Kurzes Lehrbuch der analytischen Chemie, II. Band* (Vienna, 1949), p. 511.
 43. P. Schuftan, *Chem. Fabrik*, Vol. 51, p. 513, 1933.
 44. O. Pettersson and K. Sonden, *Skand. Arch. Physiol.*, Vol. 6, p. 16, 1895.
 45. Y. Kauko and V. Mantere, "Eine genaue Methode zur Bestimmung des CO₂-Gehaltes der Luft," *Zeitschrift für anorganische und allgemeine Chemie.*, Vol. 223 No. 1, pp. 33-44, 1935.
 46. M. Pettenkofer, "Über eine Methode die Kohlensäure in der atmosphärischen Luft zu bestimmen," *Chem. Soc. Journ. Transp.*, Vol. 10, p. 292, 1858; and *Journ. Prakt. Chem.*, Vol. 85, p. 165, 1862.
 47. M. Pettenkofer and C. Voit, *Zeitschrift für Biologie*, Vol. 2, p. 459, 1866.
 48. M. Pettenkofer, *Ann. Chem. Pharm.*, Suppl. Bd. 2, I, 1862.
 49. "The respiration apparatus by M. Pettenkofer," Letter exchange by Dr. Eugen Freih. von Gorup-Besanez: <http://gorup.heim.at/Briefe/Pettenkofer.htm>.
 50. H. v. Gilm, "Über die Kohlensäurebestimmung der Luft Sitzungsberichte d. kaiserl. Akademie d. Wissenschaften, Vol. 24, 1857.
 51. F. Schulze, *Landw. Versuchsstationen*, Vol. 9, p. 217, 1867; Vol. 10, p. 515, 1868; Vol. 12, p. 1, 1875; Vol. 14, p. 366, 1871.
 52. S. Smith, "On the Composition of the Atmosphere," *Manchester Lit. Phil. Soc. Proc.*, Vol. 4, p. 30, 1865.
 53. J.A. Reiset, *Compt. Rend.*, T. 88, p. 1007; T. 90, pp. 1144-1457, 1879-1880.
 54. P. Truchot, "Sur la proportion d'acide carbonique existant dans l'air atmosphérique," *Compt. Rend.*, Vol. 77, p. 675, 1873.
 55. F. Farsky, "Bestimmungen der atmosphärischen Kohlensäure in den Jahren 1874-1875 zu Tabor in Böhmen, Wien," *Akad. Sitzungsberichte*, Vol. 74, No. 2, p. 67, 1877.
 56. P. Hässelbarth and J. Fittbogen, "Beobachtungen über lokale Schwankungen im Kohlensäuregehalt der atmosphärischen Luft," *Landw. Jahrbücher*, Vol. 8, p. 669, 1879.
 57. W. Spring and L. Roland, "Untersuchungen über den Kohlensäuregehalt der Luft; Chemisches Centralblatt No. 6, Oct. 2, 1886, 3. Folge 17. *Jahrgang and Mémoires couronnés par l'Académie Royal de Belgique*, Vol. 37, p. 3, 1885.]
 58. J. Uffelmann, "Luftuntersuchungen," *Archiv f. Hygiene*, p. 262, 1888
 59. A. Petermann, "Acide carbonique contenu dans l'air atmosphérique," *Brux. Mem. Cour.*, Vol. 47, No. 2, p. 5, 1892-1893.
 60. H. Brown and F. Escombe, "On the Variation in the Amount of Carbon Dioxide in the Air of Kew during the Years 1898-1901," *Proc. Roy. Soc., B.*, Vol. 76, p. 118, 1905.
 61. A. Krogh, "A Gas Analysis Apparatus Accurate to 0.001 Percent Dainly Designed for Respiratory Exchange Work," *Biochem J.*, Vol. 14, Nos. 3-4, pp. 267-281, July 1920.
 62. A. Krogh and P. Rehberg, "CO₂-Bestimmung in der atmosphärischen Luft durch Mikrotitration," *Biochemische Zeitschrift*, Vol. 205, p. 265, 1929.
 63. H. Chapman et al., "The Carbon Dioxide Content of Field Air," *Plant Physiology*, Vol. 29, p. 500, 1956.
 64. F. Steinhäuser, "Der Kohlendioxidgehalt der Luft in Wien und seine Abhängigkeit von verschiedenen Faktoren," *Berichte des deutschen Wetterdienstes*, Vol. 51, p. 54, 1958.
 65. S. Fonselius, "Microdetermination of CO₂ in the Air, with Current Data for Scandinavia," *Tellus*, Vol. 7, pp. 259-265, 1955.
 66. W. Bischof, "Periodical Variations of the Atmospheric CO₂ Content in Scandinavia," *Tellus*, Vol. 12, pp. 216-226, 1960.
 67. G. Tissandier, "Dosage de l'acide carbonique, de l'air a bord du ballon le Zenith," *Comt. Rend.*, Vol. 80, p. 976, 1875.
 68. E. Rheinau, *Praktische Kohlensäuredüngung in Gärtnerei und Landwirtschaft* (Berlin: Springer Verlag, 1927).
 69. D.D. Van Slyke et al., "Manometric Analysis of Gas Mixtures," I, II, *Biol. Chem.*, Vol. 95, No. 2, pp. 509, 531, 1932: <http://www.jbc.org/cgi/reprint/95/2/531>.
 70. J.P. Haldane, *Methods of Air Analysis*, (London: Charles Griffin and Co., 1912).
 71. P. Schuftan, *Gasanalyse in der Technik* (Leipzig: P. Hirzel Verlag, 1931).
 72. IUPAC NIST Solubility Database: http://srdata.nist.gov/solubility/sol_detail.aspx?sysID=62_79.
 73. W. Hlasiwetz, "Über die Kohlensäurebestimmung der atmosphärischen Luft," *Wien akad. Sitzungsberichte*, Vol. 20, p. 18, 1856.
 74. C.D. Keeling, "Atmospheric Carbon Dioxide in the 19th Century," *Science*, Vol. 202, p. 1109, 1978.
 75. V. Regnault and J. Reiset, *Ann. Chim. (Phys.)*, Vol. 26, No. 3, p. 299, 1849.
 76. T. de Saussure, "Sur la variation de l'acide de carbonique atmosphérique," *Annales de Chimie et Physique*, Vol. 44, p. 5, 1830.
 77. F. Riedel, German Patent No. 605333, Oct. 18, 1934, Gasuntersuchungsapparat.
 78. G. Arnold, V.G. Berezkin, L.S. Etre, "Paul Schuftan and the Early Development of Gas-adsorption Chromatography," *Journal of High Resolution Chromatography*, Vol. 8, No. 10, pp. 651-658, 1985.
 79. G. Stanhill, "The Montsouris Series of Carbon Dioxide Concentration Measurements, 1877-1910," *Climatic Change*, Vol. 4, pp. 221-237, 1982.
 80. W. Kreutz, "Spezialinstrumente und Einrichtungen der agrarmeteorologischen Forschungsstelle," *Biokl. Beibl.* H2, 1939.
 81. A. Vaupel, Coworker of W. Kreutz, Deutscher Wetterdienst, personal notes, 2006.
 82. S. Henninger and W. Kuttler, "Mobile Measurements of Carbon Dioxide within the Urban Canopy Layer of Essen, Germany," *Proc. Fifth Symposium of the Urban Environment*, August 23-26, 2004, Vancouver, Canada, American Meteorological Society, p. J 12.3.
 83. D. Schindler et al., "CO₂ Fluxes of a Scots Pine Forest Growing in the Warm and Dry Southern Upper Rhine Plain, SW Germany", *Eur. J Forest Res*, Vol. 125, pp. 201-212, 2006.
 84. E. Lockhart and A. Court, "Oxygen Deficiency in Antarctic Air," *Monthly Weather Report*, Vol. 70, No. 5, 1942.
 85. M. Rogers et al., "Long-term Variability in the Length of the Solar Cycle," *Penn. State Tech. Reports*, 2005: www.stat.psu.edu/reports/2005/tr0504.pdf.
 86. Z. Jaworowski, "Ancient Atmosphere—Validity of Ice Records," *Environ. Sci. & Pollut. Res.*, Vol. 1, No. 3, pp. 161-171, 1994.
 87. National Geographic Data Center (NGDC) 2006: http://www.ngdc.noaa.gov/stp/SOLAR/ftp_sunspotnumber.html.
 88. Jones et al., Climatic Research Unit 2006: <http://www.cru.uea.ac.uk/cru/data/temperature/>.
 89. J.E. Hansen et al, "NASA GISS Surface Temperature Analysis": <http://cdiac.ornl.gov/trends/temp/hansen/hansen.html>.
 90. J. Angell et al., "Surface Temperature Changes Following the Six Major Volcanic Episodes between 1780 and 1980," *Journal. of Climate and Appl. Meteorology*, Vol. 24, p. 937, 1985.
 91. M. Mudelsee, "The Phase Relations among Atmospheric CO₂ Content, Temperature and Global Ice Volume over the Past 420 ka.," *Quaternary Science Reviews*, Vol. 20, pp. 583-589, 2001.
 92. John Hom et al., "Studies on Carbon Flux and Carbon Dioxide Concentrations in a Forested Region in Suburban Baltimore," 2001, USDA Forest Service, Northeast Research Station, Indiana University, Bloomington, Ind.: http://www.beslter.org/products/posters/johntower_2003.pdf.
 93. NOAA, Global Distribution of Atmospheric Methane: <http://www.cmdl.noaa.gov/ccgg/>.
 94. Meteorological station at Diekirch, Luxembourg: <http://meteo.lcd.lu>
 95. C.D. Keeling, "A Brief History of Atmospheric CO₂ Measurements and Their Impact on Thoughts about Environmental Change," Acceptance Speech as Winner of the Second Blue Planet Prize, 1993: http://www.af-info.or.jp/eng/honor/bppcl_e/e1993keeling.txt.

Malaysia's Agricultural Breakthrough, and Nuclear Desalination, Can Feed the World

by Mohd Peter Davis

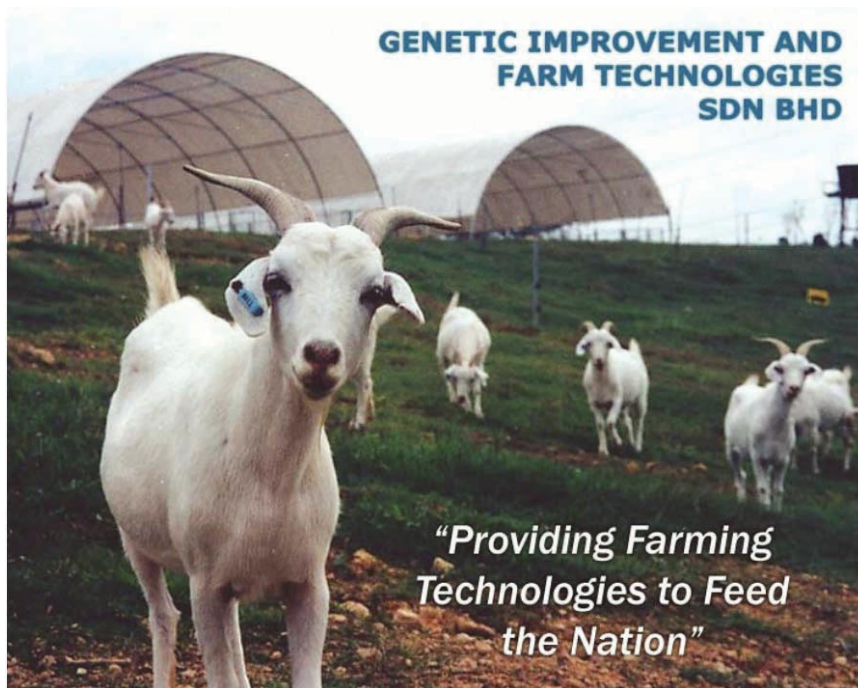
World agriculture was developing rapidly, until the destruction in 1971 of Franklin Roosevelt's Bretton Woods Agreement, which had provided the economic stability for the post-war boom. In the previous 17 years, world milk production had increased by 49 percent, and world meat production by nearly 100 percent. The visionary "Atoms for Peace" program, promising cheap electricity and abundant desalinated water, was inspiring the world with the "green revolution" to end world hunger.

Reflecting this scientific and technological progress, Dr. K.L. Blaxter from the Rowett Research Institute in Aberdeen, Scotland, ended his review of world agriculture on a very optimistic note: "I share the view ... that agriculture and animal production resources of the world are perfectly adequate to cope with foreseeable demands"

What this dedicated scientist did not foresee, was the intention by the British Empire to destroy world agriculture. In 1974, U.S. Secretary of State Henry Kissinger, who later admitted in a public speech at Chatham House in England that he was a longtime British agent of influence, wrote a secret report (National Security Study Memorandum 200) to protect "our resources" in Africa and Third World countries and to use food as a weapon to control population growth.

In NSSM 200, Kissinger envisaged "large-scale famine of a kind not experienced for several decades—a kind the world thought had been permanently banished."

As the now-declassified NSSM 200 makes clear, the food crisis and the food riots now being reported daily in the world media, and the impending mass



Courtesy of Mohd Peter Davis

Fast-growing grass and genetically improved breeds of sheep, cattle, goats, and milk cows combine to provide a way to bring a high-quality diet to the world population. These goats are one of the Malaysian grass farm experimental herds.

starvation in developing countries, have been carefully engineered and have little to do with droughts, climate change, "global warming," or the two-centuries-old lie by Thomas Malthus of "too many people," which is peddled to this day by the green environmental movement.

Lyndon H. LaRouche, Jr., has warned for decades that the willful destruction of agriculture is part of the British Empire's "Great Game," a continuation of both World Wars and the Cold War against Russia, to establish "globalization," which is merely a euphemism for world empire. To break down any resistance to this plan, the British Empire's intention is to return

to the war, famine, and disease of Europe's 14th Century, thereby reducing the world population from 6.5 billion to what it considers a "sustainable" 1 billion, or even less. Essentially, the British Empire's Great Game is a killing game, on a scale never before seen in history.

This insanity and genocide must be stopped. The adoption of LaRouche's call for a New Bretton Woods among the four major powers—America, Russia, China, and India—which other nations can join, will provide the new financial architecture for urgently doubling world agriculture along the lines originally envisaged by the "Atoms for Peace" program.

Malaysia has an important role to play in vastly increasing the quality of grass required to feed the animals that can provide protein for the world population, and in maximizing the conditions of life for those animals, as described below.

Food Security the Nuclear Way

The aim of providing world food security is just as simple and straightforward as the definition put forward by the United Nations Food and Agriculture Organization (FAO) in 1983: "Access for all people at all times to adequate food for a healthy and active life."

Developing the technology to end world poverty and feed the present world population of 6.5 billion can become the noble task which unites the entire world scientific community. If the British Empire and its genocidal intentions are defeated, the world population is likely to grow to a healthy 9 billion by 2050. With agricultural scientists and engineers back on the job, under a New Bretton Woods, the Atoms for Peace program can be enthusiastically revived to achieve world food security in a remarkably short time.

The first task is providing adequate water.

During the colonial period, new lands were opened up in Asia, the Americas, Africa, India, Australia, and New Zealand for world agricultural commodities (cotton, wool, rubber, tea) and food (cereals, rice, lamb, beef, milk). These agricultural industries have relied, not so much on renewable rainfall, but heavily on underground fossil water, left over from previous ice ages. This underground water is now almost depleted. A good example is Australia, essentially a desert continent, which was prevented from going nuclear in the 1960s and is now stranded without the capacity to produce cheap desalinated water to replace its fossil water.

Once a world leading agricultural exporter of wool, meat, and wheat, Australia cannot withstand the natural droughts, and its agriculture is now in a pitiful state. Farmers, whose grandfathers—and their grandfathers before them—had carved out highly productive farms from the inhospitable Australian outback, have lost hope, and many are committing suicide.



Courtesy of Mohd Peter Davis

Entrepreneur N. Yogendran (who is 6-feet tall) standing in 3-foot grass, which took only 38 days to grow on his Malaysian grass farm. Grass cut as this age is perfect for feeding ruminants. The grass can be cut 10 times per year for three years before re-ploughing and re-seeding.

The irony is that Australia, the thirsty continent, is surrounded by oceans of water and is sitting on the world's largest reserves of uranium. With a revival of its "lucky country" post-war optimism, a Nuclear Australia could, within a decade or so, become a gigantic food supplier for the world.

Africa can lead the way! Africa has suffered extreme technological apartheid, but now South Africa has outflanked its former colonial masters with its pioneer design for a Pebble Bed Modular Reactor (PBMR), now under way. The South Africans intend to mass produce this small, inherently safe nuclear reactor, as well as its nuclear fuel, and place the reactors exactly where needed to supply electricity and desalinated water throughout Africa. The PBMR is the hope of Africa and "could transform the famine-ravaged continent into the bread basket of the world," to use the words of LaRouche Youth Movement leader Portia Tarumbwa Strid

("British Destabilization of Zimbabwe," *EIR*, April 11, 2008).

This African scientific optimism is shared in India. During the April 2008 India-African Union Summit, the Director-General of the U.N. Industrial Development Organization, Kandeh Yumkella, said that a solid India-Africa collaboration in agriculture can feed the world, drawing on the huge success in the Indian green revolution of the 1970s and 1980s in grain production. "This is indeed possible," Yumkella said. "India has the capacity and technology, and Africa has the land and labour."

This collaboration would allow Africa to industrialize its agriculture, increase production, and prevent the 50 percent post-harvest losses that are now occurring.

Increasing Animal Production

The human body has a biological daily requirement of 1 gram of protein per kilogram of body weight. (One kilogram equals 2.2 pounds.) A 60-kg person therefore requires 60 grams of protein per day. It is very difficult to supply this amount of protein by eating vegetables and grains. It is best supplied by meat, milk, and eggs, and the transition to this higher quality diet, particularly during the 20th Century, has greatly improved the stature, health, and longevity of populations, at least in more developed countries. However, to achieve this worldwide, means that the population of domestic animals has to be a similar size to the human population.

For example, one sheep will supply the protein requirement for a family of five for only two weeks. A good milking cow will provide 20 liters of milk per day, containing enough protein to feed only three families per day. (One liter is 1.057 quarts.) With the fossil water running out, the supply of grass in traditional and colonial animal-grazing systems is insufficient to support the billions of sheep, goats, cattle, buffalo, and milk cows required to feed the world population. These grass-eating ruminants are increasingly being fed human food, especially wheat and corn.

The non-ruminants, pigs and poultry, and the egg industry also rely predominantly on corn, but this is necessary because there really is no practical alterna-

tive feed for the highly efficient food industries that raise these animals. So our domestic animals are directly competing with human beings for corn and wheat.

Producing ethanol biofuel from corn has further removed up to 20 percent of the corn from American and Western European food supplies. This energetically useless and evil destruction of food must stop immediately.

The world desperately needs a new, large-scale source of grass as animal feed, to replace the wheat and corn inefficiently fed to ruminants. (Animals in barns require 14 kg corn, a human food, to produce 1 kg of beef or lamb.)

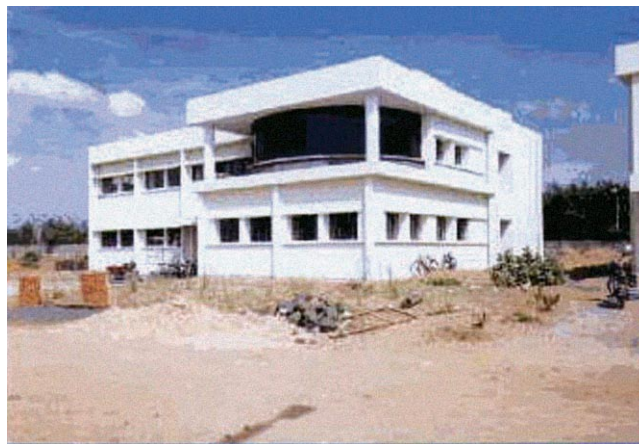
Solution: Malaysian Grass Farms

In the nick of time—and against all the prevailing agricultural practices—a Malaysian livestock entrepreneur, N. Yogendran, has just established a giant farm, which provides at least three times more highly nutritious grass per hectare per year, compared to the best New Zealand pasture land. Prototype grass farms have proved that cut grass fed to sheep, goats, cattle, and milk cows in Malaysian climate-controlled houses dramatically overcomes the barriers to successful animal production in the humid tropics.

Despite determined attempts since British colonial days to establish modern animal production in Malaysia, the rainforest has always won. Land cleared from the rainforest and sown with improved pastures soon becomes overgrown with inedible jungle species. In addition, the parasite disease load on grazing domestic animals is unrelenting and uncontrollable.

Grass farms “leapfrog” over these problems by isolating domestic animals in climate-controlled houses and feeding them with young cut grass. The rainforest climate supports the highest rate of biomass production in the world. The humid equatorial climate can now be harnessed to produce enormous quantities of fresh grass per hectare for feeding animals, 365 days of the year.

Malaysian agriculturalists are just beginning to appreciate the worldwide po-



DAE/Government of India

Desalinated seawater can provide the needed irrigation for agriculture and human consumption. This Nuclear Desalination Demonstration Project at Kalpakkam, India, supplies fresh water for the nuclear power plant and the local population. The modular fourth-generation nuclear reactors, like South Africa's PBMR and General Atomics' GT-MHR are ideally suited for coupling with plants to desalt seawater.

tential of this beautifully simple innovation. There is no reason that grass farms for feeding housed ruminants can not be quickly established throughout the humid tropics. This new animal-production system can also spread to the dry tropics, as nuclear-powered desalinated water becomes available. The only other missing ingredients, plant minerals and nitrogen fertilizers, are easily supplied.

All this is bad news for Al Gore and Prince Philip's environmentalists, who hysterically claim that man-made carbon dioxide and global warming, and the presence of too many people, are destroying the planet. Ironically, the perpetually warm, humid tropical climate, with abundant year-round rainfall, plenty of sunlight, and naturally high concentrations of carbon dioxide from rotting vegetation, provides the perfect conditions for highly productive “sustainable” grass farms, without the use of pesticides, for potentially growing more than enough “organic” domestic animals to feed Southeast Asia.

Science, it seems, has out-greened the greensies!

All Flesh Is Grass

To appreciate the importance of grass farms, it is necessary to give a brief outline of ruminant nutrition. Grass is quite useless for human nutrition, because we cannot break down cellulose into its glucose units. However, young “Spring” pas-

ture grass of selected and improved species is perfect for ruminant animals, which have been domesticated from wild-life species and artificially selected during 10,000 years of agriculture. Grass-eating domestic animals, complementing a much older fish diet, have served as a major source of protein for man.

Sheep, cattle, buffalo, goats, and cows have a special type of stomach, the rumen, which, when full of grass, can account for 20 percent of body weight. In this large organ, young grass (but not so easily old grass) is fermented by quadrillions of anaerobic bacteria of diverse species. The multiplying bacteria double about every 30-60 minutes, break down the cellulose, and live

on some of the energy.

Most of the energy from cellulose, however, is excreted in the form of volatile fatty acids, which are absorbed into the blood stream and serve as the complete energy source for the animal. Protein for the ruminant animal is provided by the bacteria that get squirted into the small intestines for digestion into amino acids (in the same way as humans digest meat with enzymes). So the rumen is not so much a food-digesting organ as a food-producing organ. A cow is a walking fermenter, producing microbial food for itself from grass.

Ruminant animals can survive, but not gain weight on old grass, mature plants, or leaves, which become chemically protected (lignified), and resist microbial digestion. This rapid maturation of a juvenile plant to avoid getting eaten is the secret of how grass, plants, and trees can survive and recolonize barren lands after ice ages. Sheep and cattle on poor pastures can spend up to 18 hours per day searching for the young blades of grass, until rain and Spring temperatures again provide a plentiful supply of young grass.

For most of the year in temperate climates, ruminants are merely surviving, not growing. Yogendran's Malaysian grass farms overcome all the seasonal problems of grass and animals in temperate climates and allow for all-year-round weight gain, reproduction, and milk pro-



Courtesy of Mohd Peter Davis

Workers constructing a climate-controlled barn for cattle on one of N. Yogendran's giant grass farms. The grass grows 3 feet in just 30 days, providing a nutritious diet for the animals.



duction. In the humid tropics, the grass is cut every 30 to 40 days, when it is about 3 feet high and still highly digestible when fed to animals in barns. After this time, the grass becomes less and less digestible.

For the grass farm, particular species of grass are chosen that can be harvested about ten times per year for up to three years. The grass is then ploughed back to rejuvenate the soil. New sprouts of grass emerge in days from the old roots, and are supplemented with seeds to establish a packed carpet of grass. This prevents seeds from the large diversity of jungle plant species from germinating, much like a garden lawn keeps out weeds. With correct management to supply minerals and nitrogen fertilizer, the grass farms can be sustainable without exhausting the soil.

Water is not a limitation in this climate, for it is recycled almost daily in a rainforest by transpiration from trees and other plants, followed by rain, creating vast reserves of underground water. The soil is nearly always moist, and irrigation of grass farms is not usually necessary. To really gear up production of ruminant meat and milk, underutilized agricultural land and old rubber or oil palm plantations can be turned into grass farms, within six months, surrounded by well-separated villages, each for the intensive production of a different species of ruminant in animal housing.

A grass farm is, therefore, a modular animal production unit, which can be rapidly established throughout the humid tropical regions of Southeast Asia, West

Africa, and the Amazon. As the developing world gears up with the small PBMR nuclear reactors that South Africa intends to mass produce, and the thorium reactors that India is now urgently developing, the new animal production system can spread throughout the dry tropics, making use of nuclear-powered desalination.

Climate-Controlled Animal Housing

Under British colonial rule, and up to the present, Malaysian researchers have put great effort into adapting the highly productive temperate breeds of domestic animals to the humid tropics, but these pure breeds do not perform in the harsher climate. Persistent attempts to mass produce cross-bred ruminants, more adapted to the humid tropics, using traditional grazing methods, have proved very disappointing; and Malaysia, with only 26 million people to feed, is only about 25 percent self-sufficient in ruminant meat, and less than 5 percent self-sufficient in milk.

Entrepreneur Yogendran, after 25 years of self-funded experiments, has developed a stunningly simple solution. Instead of continuing the futile attempt to change animal biology, he changes the animals' environment! He air freights the most genetically improved breeds of sheep, cattle, and milk cows from around the world to Malaysia, and immediately trucks them to fully enclosed climate-controlled animal houses, located on his prototype grass farms. The economical, light-weight animal houses are maintained throughout the year at 25 to 29°C—77 to 84°F), ideal for maximum animal production. This perfect indoor climate is achieved not by electricity-guzzling air-conditioning, but by evaporative cooling using strong suction fans. At one end of the building, these fans draw in warm outside air (35°C maximum—95°F—in the humid tropics). The air cools down as it is forced through large pads dripping with water. The high ventilation rate also serves to keep the animal houses

fresh, dry, clean, and odor free at all times, improving the contentment and well-being of the animals.

Suitably vaccinated animals under these fully enclosed hygienic conditions are virtually disease free. The "animal rights" advocates, if they are sincere about animal welfare, should visit these new Malaysian animal houses! Enclosed, climate-controlled "bio-security" animal housing offers a practical way forward for replacing Asian and African backyard farming, where domestic animals and human beings now live side by side in poverty, the humans picking up and efficiently spreading any infectious diseases from the animals.

Mass Producing Intensive Animal Farms

The latest giant grass farm in Malaysia was established in a remarkably short time from old pasture land, which had become overgrown with secondary jungle. The failed animal-grazing project was ploughed in October 2007, and planted with an improved species of grass in November. The first batch of 285 pregnant cows arrived on one cargo plane from Australian high-tech breeding farms in April 2008. They adapted within days to their cool "Hilton Hotel" animal houses, loved the cut grass, and are all set to calve in June, with commercial milk production expected by August 2008.

A New Zealand automatic milking turntable for 50 cows has been built, and new climate houses are under construction for the next batch of cows from Australia. This good business model, from idle land to marketable milk and calves in one year, with a return on investment within 3.5 years, is now attracting large investors. If Malaysia's "plantation companies," no longer owned by the British, decide to mobilize their huge resources, milk and meat production in the humid tropics could move with lightning speed.

Given the political will, there can be no doubt regarding Malaysia's ability in this large-scale agricultural venture. Malaysia has vast colonial experience in rubber plantations which put it on the world map; and since the 1960s, Malaysia has planted 4.3 million hectares of oil palm and become the world's largest producer



Agricultural Research Service, USDA

The best sheep farms in New Zealand can carry up to 25 sheep per hectare throughout the year. One hectare of grass in Malaysia's new grass farms can support 82 sheep throughout the year. More food for more people.

of palm oil. Malaysia has the resources to rapidly mass produce these intensive animal farms throughout its territory, and to assist its neighbors in climatically suitable parts of Indonesia, Thailand, and the Philippines to do the same.

With a crash science program modelled on what America used to do under Roosevelt during World War II, and Kennedy during the Apollo Project, Malaysia can lead the way in providing urgently needed supplies of milk, beef, lamb, and goat meat for Southeast Asia. As nuclear power comes on stream, and desalinated water becomes plentiful, the Malaysian animal production system can spread to other developing countries in the dry tropical regions.

As in the post-war period, agricultural scientists are able to find the solutions to end world hunger. The only obstacle standing in the way is the British Empire, which in its death agony is preparing frantically to kill up to 90 percent of the world's population in World War III and the intended famine and diseases which will follow such a war. This lust for genocide has been stated forthrightly by Prince Philip, president of the World Wildlife

Fund: "In the event that I am reincarnated, I would like to return as a deadly virus, in order to contribute something to solve overpopulation"

The long overdue and final defeat of this totally evil British Empire will recapture the Atoms for Peace program for all humanity. World food security can then be easily achieved, as forecast by the great Russian biogeochemist V.I. Vernadsky, in his speech opening the Radium Institute in Petersburg in 1922: "Soon man will have atomic power at his hands. This is a power source which will give him a possibility to build his life just as he wishes."

Mohd Peter Davis is a biochemist, and visiting scientist at the Institute of Advanced Technology, Universiti Putra Malaysia, near Kuala Lumpur. To read more on the theoretical background for his work, see "Biosphere Technology in the Nuclear Age," 21st Century Science & Technology, Fall-Winter 2006.

He can be reached at mohd_peter@hotmail.com.

Keep Up with 21st CENTURY SCIENCE & TECHNOLOGY

- Back issues highlights are available online

<http://www.21stcenturysciencetech.com>

Back issues are \$5 each (U.S.) or \$8 (foreign)

Order online by credit card
Or send check or money order (U.S. currency only) to

21st Century
P.O. Box 16285, Washington, D.C.
20041

Compiled by Gregory Murphy

The Return of the Ice Melt Hoax

It's back. After last Summer's scare stories of Arctic ice melts greater than ever before (and no follow-up coverage of the great re-freeze), the scare cycle is repeating.

The BBC reported on June 19 that Arctic sea ice is melting faster than it was last year. The website of the National Snow and Ice Data Center (nsidc.org/arcticseaicenews/) is slightly more cautious, reporting that the rate of change in the Arctic sea ice is greater than last year. However, the Center's senior research scientist Mark Serreze told CNN June 27: "We kind of have an informal betting pool going around in our center and that betting pool is 'does the North Pole melt out this summer?' and it may well."

But, if one compares the satellite Arctic sea ice maps for June 19, 2007 and June 19, 2008 (this page), it can be seen that this year's melt is about three weeks behind last year's melt, with the end of the melt season projected to be Labor Day.

Eco-Tourists Trapped By Arctic Ice

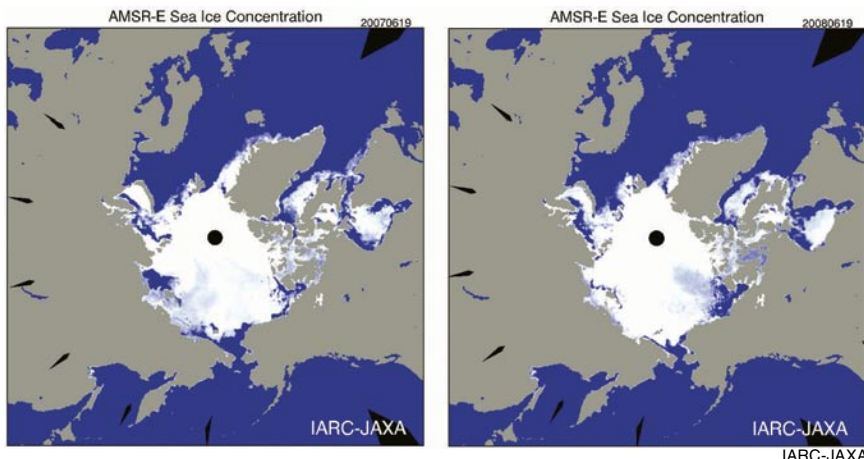
A "See it before it's gone" cruise of the Arctic in an ice-breaker got trapped by ice this Spring.

Quark Expeditions, of Norwalk, Connecticut, operates a tour through the



Courtesy of Anthony Watts and www.climatechange-fraud.com

The Northwest Passage cruise on the ice-breaker Kapitan Khlebnikov, now a luxury eco-tourist vessel, was stuck for a week in the ice that supposedly isn't there anymore.



These satellite images of Arctic ice cover for June 19, 2007 (left) and June 19, 2008 are produced by the Arctic Research Center (IARC) in cooperation with the Japan Aerospace Exploration Agency (JAXA) and the Advanced Earth Science and Technology Organization of Japan (AESTO). The melt was greater in 2007 than it is this year, but the hype has increased nevertheless.

Northwest Passage on the *Kapitan Khlebnikov*, a huge 24,000-horsepower Polar Class icebreaker from the Soviet era, which can carry 108 passengers. The eco-tourists travel in relative luxury, including an indoor pool, sauna, and movie theater in which the passengers can view Al Gore's "An Inconvenient Truth."

As reported in the May 24 *Toronto Globe and Mail*, the *Kapitan Khlebnikov* became trapped in the very same ice that the climate alarmists claim is thin or disappeared because of global warming. The icebreaker remained trapped for seven days, until the tide and winds worked the ship free.

For more details, see http://www.climatechange-fraud.com/component/option,com_maxcomment/task,quote/id,1237/lang,en/Itemid,218/

How Hansen Staged His 1988 Senate Testimony

Former Senator Timothy Wirth (D-Colo.), who was in office from 1987-1983, freely admits that he and global warmer James Hansen staged the introduction of the global warming scare in Senate hearings in 1988 by choosing the hottest day of the year for the hearings and opening all the windows to counter-

act the air conditioning. Wirth, now the director of Ted Turner's UN Foundation, was interviewed by the PBS series "Frontline" for a special that aired in April 2007.

Here are excerpts from the "Frontline," hosted by Deborah Amos, which tell the story:

"TIMOTHY WIRTH (D-CO), 1987-1993: We knew there was this scientist at NASA, you know, who had really identified the human impact before anybody else had done so and was very certain about it. So we called him up and asked him if he would testify.

"DEBORAH AMOS: On Capitol Hill, Sen. Timothy Wirth was one of the few politicians already concerned about global warming, and he was not above using a little stagecraft for Hansen's testimony.

"TIMOTHY WIRTH: We called the Weather Bureau and found out what historically was the hottest day of the summer. Well, it was June 6th or June 9th or whatever it was. So we scheduled the hearing that day, and bingo, it was the hottest day on record in Washington, or close to it.

"DEBORAH AMOS: [on camera] Did you also alter the temperature in the hearing room that day?

"TIMOTHY WIRTH: What we did is

that we went in the night before and opened all the windows, I will admit, right, so that the air conditioning wasn't working inside the room. And so when the—hearing occurred, there was not only bliss, which is television cameras and double figures, but it was really hot.

"[TIMOTHY WIRTH:] Dr. Hansen, if you'd start us off, we'd appreciate it.

"The wonderful Jim Hansen was wiping his brow at the table at the hearing, at the witness table, and giving this remarkable testimony.

"JAMES HANSEN: [June 1988 Senate hearing] Number one, the earth is warmer in 1988 than at any time in the history of instrumental measurements. Number two, the global warming is now large enough that we can ascribe, with a high degree of confidence, a cause-and-effect relationship to the greenhouse effect. . . ."

For the full PBS transcript, see <http://www.pbs.org/wgbh/pages/frontline/hot-politics/etc/script.html>.

Hansen's Genocidal Flim-flam—20 Years Later

James Hansen, NASA's global warming alarmist and science advisor to Al Gore, gave a briefing to the House Select Committee on Energy Independence and Global Warming on June 23, to mark the 20th anniversary of his 1988 Senate Testimony, in which he had proclaimed that man-made global warming was real and a crisis for the planet. That 1988 hearing (see above) was called by then-Senators Al Gore (D-Tenn.) and Timothy Wirth (D-Colo.).

In his anniversary briefing, Hansen stated that man-made global warming is getting worse, and he stressed that time is running out.

Those who look back at his 1988 testimony, can easily check that none of Hansen's dire predictions have materialized. For example, Hansen said in 1988 that CO₂ levels of 350 parts per million would cause temperatures to rise by as much as 11 degrees F. Yet, with the atmospheric CO₂ concentration today at 385 ppm, the best of the global warmers can claim is a 0.6 degrees C (about 1 degree F) rise in temperature over the last hundred years. However, even that claimed increase was largely wiped out by the cooling of the last decade. In truth, the claimed increase



NASA

James Hansen is pushing man-made global warming harder than ever, although none of what he warned about in 1988 has come to pass.

was never real, but a measurement artifact resulting from the fact that the temperature monitoring stations became hotter due to surrounding urbanization.

Hansen told his Capitol Hill audience this year that CO₂ emissions have to be cut back from the present 385 ppm to 350 ppm. To accomplish that, Hansen said, the world has to phase out coal-fired plants and replace them with clean energy. By clean, he means solar and wind, since he, like Al Gore, is opposed to nuclear power.

One British scientific source told *21st Century* that Hansen's proposed CO₂ emissions cut to 350 ppm would kill 3.5 billion people on the planet, because the world would lack the energy to produce heat and food, especially as we enter a period with winters like those in the Little Ice Age.

In addition, Hansen called for oil executives and global warming skeptics to be put on trial for "crimes against humanity" for denying the effects of man-made global warming! Hansen should be careful of such statements, because his policy proposals would constitute a greater crime against humanity than Hitler, Stalin, and Pol-Pot added together.

Army Scientist: Solar Activity, Not Man-made CO₂, Causes Warming

The first-ever U.S. Army conference call on global warming on June 23, featured Dr. Bruce West, chief scientist of the Army Research Office's mathematical and information science directorate, presenting evidence that solar activity is the

cause of any warming in the past 100 years.

West reported that his research has shown that "changes in the Earth's average surface temperature are directly linked to the short-term fluctuations in the Sun's total solar irradiance and the longer-term solar cycles."

"The Sun's turbulent dynamics are linked with the Earth's complex ecosystem. These connections are what is heating up the planet," Dr. West stated.

West noted that when the Intergovernmental Panel on Climate Change (IPCC) looked at solar activity, it had concluded that it was nothing but climate noise and that solar effects on the climate are negligible. His research proved otherwise.

This Army conference call shows that there is a fight in the Pentagon over the global warming fraud. Prior to the June 23 call, the Army War College had released a report, endorsed by 10 top retired generals and admirals, largely supporting the global warming fraud. Entitled "Global Climate Change National Security Implications," the report stated that man-made global warming is going to cause food riots and wars, so it has to be seen as a national security issue.

Icebergs in Gore Movie Made from Styrofoam

The famous shot in Al Gore's propaganda piece "An Inconvenient Truth," which shows pieces of the Antarctic ice shelf falling into the ocean, "is a fake," ABC News reported on April 22.

The visual effects supervisor for the 2004 film "The Day After Tomorrow," Karen Goulekas, says that Gore took the ice shelf shot for his "An Inconvenient truth"



An Inconvenient Truth

Convenient styrofoam?

from that fictional global warming movie. The scene was created on a sound stage using styrofoam ice, and then scanned into a computer.

"Yeah, that's our shot and that's a fully computer-generated shot. There is nothing real in there," Goulekas said.

31,072 Scientists Oppose Al Gore's Global Warming Hoax

Dr. Arthur Robinson, director of the Oregon Institute of Science and Medicine,

held a press conference at the National Press Club May 19, to release the names of the 31,072 scientists who have signed his online petition attacking Gore's global warming swindle.

Robinson told the press, that he and former president of the National Academy of Sciences Frederick Seitz (recently deceased), had started the petition in 1997 as a way to speak out against the political movement that was trying to shut off the use of fossil fuels which provides 85 percent of the world's energy.

Robinson further stated, "... [I]f fossil fuel

energy is restricted or shut off by taxation or by rationing and the developing nations are deprived of advanced technology, hundreds of millions of people in the developing world will die," Robinson said. "It is a human right to have access to advanced forms of energy and advanced technology."

Robinson urged, "I hope the general public will become aware that there is no consensus on global warming, and I hope that scientists who have been reluctant to speak up will now do so, knowing that they aren't alone."

Editorial

Continued from page 5

have to do with feeding people? Everything! It has always been man's pushing forward on the frontiers of knowledge as well as those of geography that has permitted the progress of the entire society. Breaking the knowledge barriers of the present will lead to new solutions for old problems, new technologies to increase food production included.

As a first step, to industrialize the Moon, as spelled out by space visionary Krafft Ehrlicke in the 20th Century,³ will give us plentiful helium-3 as fusion fuel. Farming in space, in controlled environments, will also give us new ways of efficiently grow-

3. Several articles by or about Krafft Ehrlicke are available in *21st Century*. For example, "Krafft Ehrlicke's Extraterrestrial Imperative," by Marsha Freeman, Winter 1994. A special collection of six articles can be purchased at the *21st Century* website store.

ing food on Earth.

Perhaps most important, a society that is focussed on preparing its younger generations to use their brainpower to explore and colonize space, and that captures the imagination of the general population with the idea of moving mankind into space, will have the requisite culture for succeeding not only in feeding the world but also in mobilizing the creativity of every individual to join the process of making progress.

The Urgent Tasks

The urgency of this task was put forward by Schiller Institute founder Helga Zepp-LaRouche in early May, in a call that is posted on the *21st Century* website: "Instead of Wars of Starvation, Let Us Double Food Production," where you are encouraged to read and endorse it (www.21stcenturysciencetech.com/Articles%202007/Double_Food_Production.pdf).

The political measures to get the job done are straightforward: (1) eliminate the use of food crops for biofuels; (2) kill the World Trade Organization and the lethal "free market" methods it is foisting on nations throughout the world; (3) return to the parity system, where farmers are assured of a fair market price at enough profit to encourage them to keep farming; and (4), most important, bury the dying monetary system and institute a New Bretton Woods policy of the sort Lyndon LaRouche is proposing.

Changing current policies so that we can feed the world is a political question. The alternative? Food riots, chaos, more wars, starvation, and depopulation—a new Dark Age.

—Marjorie Mazel Hecht
and Christine Craig

The Great Global Warming Swindle

Everything you've ever been told about Global Warming is probably untrue. This film blows the whistle on the biggest swindle in modern history. We are told that 'Man Made Global Warming' is the biggest ever threat to mankind. There is no room for scientific doubt. Well, watch this film and make up your own mind.

DVD is Now Available

Feature-length documentary plus additional interview material with some of the world's leading climate scientists.

Price: **\$19.99**

TO ORDER: www.wagtv.com



A Fascinating Review of the Emerging Science of LENRs

by George H. Miley

The Science of Low Energy Nuclear Reaction: A Comprehensive Compilation of Evidence and Explanations about Cold Fusion

Edmund Storms

London: World Scientific, 2008

Hardcover, 340 pp., \$85.00 (www.worldscientific.com/physics/6425.html)

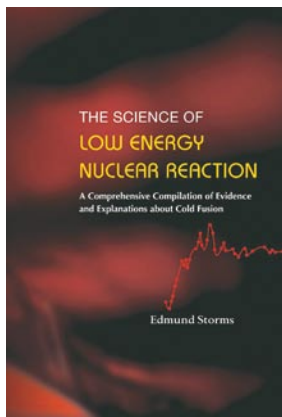
World Scientific's advertisement for this book explains that, "One of the most important discoveries of this century—cold fusion—was summarily rejected by science and the media before sufficient evidence had been accumulated to make a rational judgment possible. Enough evidence is now available to show that this rejection was wrong and that the discovery of a new source of clean energy may help solve some serious problems currently facing mankind. The book catalogues and evaluates this evidence and shows why the initial reaction was driven more by self-interest than fact."

This very astounding summary provides a powerful inducement for anyone with any scientific curiosity to read Dr. Storms's new book.

As this ad and the subtitle of the book make clear, this book is about cold fusion. However, experiments over recent years have shown that nuclear reactions such as transmutations can also occur in loaded solids, so the broader term, "Low Energy Nuclear Reactions" or LENRs, is used in the main title. I too prefer the term LENR, since it best encompasses the field.

I am pleased to serve as a reviewer. I have worked in this field ever since the dramatic press announcement of fusion in a test tube by Pons and Fleischmann almost 20 years ago. Still by reading the book I gained new scientific insight, as well as new views of some of the bizarre behavior of individuals, scientists, journalists, reporters, governmental organizations, and companies that started soon after the 1989 press announcement, and has continued up to today.

Why has this happened? I can only



conclude that when a new discovery with such high stakes comes about, greed and self interests unfortunately take front stage.

An Amazing Range of Data

From the title, I had anticipated that this book was a textbook. However, it is



Courtesy of Edmund Storms

A calorimeter for use in LENR, constructed by Edmund Storms. A DieHard® battery, lower right, that serves as an uninterruptible power supply; a power failure can ruin an experiment.

something quite different. Indeed, it is difficult, if not impossible, to prepare a text for a field which is "still emerging," to the extent that the reader is asked to form an opinion about its validity. Indeed, the book brings out many scientific facts and insights supported by one of the most extensive bibliographies of the field available anywhere (78 pages, roughly one-quarter of the book, covering 1,070 citations).

In the preface, the author sets as his goal to show that agreement exists among many well documented studies, thus convincing the reader of the validity of the field. In the process, the book provides data about an amazingly wide range of experiments that have been performed worldwide. In view of this wealth of information, I enthusiastically recommend this book to workers in the field, and anyone else who has an interest in cold fusion, i.e. LENR—plus those who just have a scientific curiosity.

After a brief historical review, Dr. Storms moves on in Chapter 3 to describe his personal experiences in cold fusion studies, mainly involving tritium production in LENRs at the Los Alamos National Laboratory. He ends that chapter with a description of a wider range of experiments that he has been carrying out in his own well-equipped laboratory in Santa Fe, after his retirement from Los Alamos.

These studies are very interesting and provide important background about the history of the field, as well as insight about how to run experiments, measure reaction products like tritium, prepare electrodes, measure energy flows with calorimetry, and so on. Dr. Storms concludes the discussion by stating that, "Nature has seemed content to give just enough encouragement to keep a person interested without allowing the effect to be understood."

The next chapters deal with: what is known or believed (including myths about cold fusion); and where reactions occur, and what influences their behavior. Those chapters lead into the next, which discuss

possible reaction-initiating conditions, for example, laser simulation, and detection methods.

These chapters are extremely instructive about the LENR phenomenon. Yet, it is made clear that we still do not fully understand this phenomenon.

The Nuclear Reactive Environment

For example, Dr. Storms continually talks about reactions occurring in a Nuclear Reactive Environment (NRE), presumably a localized region or regions created on an electrode surface. While much evidence is presented for the existence of NRE states, there is not a prescription for creating one at will. Nor is it quite clear what the Nuclear Reactive Environment state consists of.

For example, in some cases, impurities plating out on non-reactive platinum electrodes seem to produce such states. However, it is made clear that NRE states are created in a variety of ways that, as of yet, cannot be purposely designed into the experimental procedure in advance. Thus the author lays down a gauntlet for the researcher to define and learn how to cause and control these NREs.

Dr. Storms defends such ambiguities in the field by summarizing: "Rather than going away, as 'pathological' observations are said to do, the evidence is only growing stronger." Gaining an understanding of the Nuclear Reactive Environment in LENRs represents a key next step needed for this emerging field to move ahead.

The next chapter, titled "Explanations, the Hopes and Dreams of Theoreticians," may be one of the more provocative ones, especially for theoreticians in the field. It briefly outlines a number of proposed theories and notes the author's concerns about each. These concerns are then nicely condensed into a section titled "Limitations to Theory." There the author raises four overarching limitations for LENR theories in general, stating that these must be addressed in any "successful" theory.

The initial discussion of individual theories appears, on the surface, to be quite confrontational. While the author's criticisms are clearly developed with much thought, the scientists proposing the theo-



Dan Chicea

High school student Corissa Lee and Prof. John Dash, of Portland State University, with a cold fusion electrolytic experiment that demonstrated excess heat. Dash runs a summer internship program for high school students in cold fusion.

ries did not have an opportunity to respond prior to publication of the book. Indeed, prior attempts to discuss limitations of the various theories in conferences and on websites have generally failed to reach any conclusions. Thus, the discussion may appear to pass judgment prematurely.

Still, the issues raised are good ones and the chapter serves its purpose. As stated by the author, "Hopefully, the summary of observations provided here combined with the Limitations listed ... will help the effort [to develop a fundamental theory]."

Two brief closing chapters provide a "summary" along with comments on "what should happen next." In that respect, it is stated that, "The cold fusion saga has revealed serious flaws in the way science and the media, both popular and scientific, handle new ideas." This book certainly provides ample examples backing up this assertion. But the reader focussed on learning science may become impatient with this discussion of people and events. It does emphasize, however, how science and the personalities involved often become so intimately intertwined that they are almost inseparable.

In closing, Dr. Storms emotionally states: "Surely these [... exhaustion of oil fields and global warming] are sufficient reasons to explore a new source of energy no matter how difficult it is to understand. Future generations will have little sympathy for a society that allowed these condi-

tions to become worse when a better alternative might have been available, but was ignored." The implication, left to the reader to decide, is that the data presented in the book are ample evidence to conclude that cold fusion is a "better alternative."

Breadth and Depth of Coverage

One might ask if this book does a better job of convincing and explaining cold fusion than do the more than half-dozen earlier books, plus the many conference papers in the field.

First, with so many skeptics among the mainstream scientists saying that the field does not even exist, it seems amazing to have so many books in print. Most, though,

are nontechnical, intended to review the history and politics of this turbulent saga. Only recently, two researchers, Dr. T. Mizuno and Dr. H. Kozima published books (Infinite Energy Press, 1998, and Elsevier Scientific, 2006, respectively) that focus on the science over history and politics. Both authors, however, come at the subject with some biases that have grown out of their own research (but still, these books too should be read by anyone serious about the field).

While Dr. Storms devotes a whole chapter to his own research history, he also provides amazing breadth and depth of coverage of the field beyond that. His views are insightful, although at times controversial. He is not afraid to bring in subjects sometimes thought to be taboo (even by cold fusion researchers), such as the role of hydrinos in reactions and biological cold fusion. Some colleagues have even stated that the inclusion of these subjects might drive readers away from the book. To the contrary, I believe this will demonstrate to the reader that Dr. Storms tries to follow his own logic regardless of where it leads.

In conclusion, it seems appropriate to return to the author's stated goal of this book to convince the reader that the data available show that LENR is real. Certainly we cannot ignore the massive number of observations cited. Something must be happening! However, the question of re-

producibility comes back to haunt us, in terms of what is meant by “reproducibility.” Dr. Storms cites many experiments in different labs that report positive results within the various classes of phenomena attributed to LENR—for example, excess heat, tritium, radiation emission, etc. But, the reproductions in different labs use different techniques, and what is observed usually varies over wide ranges. Further, differences are frequently observed from one experiment to another within the same laboratory. Thus, the reader who expects to be shown a single experiment which has been precisely replicated in several laboratories around the world will be disappointed.

It must be recognized that this picture has been improving, however, as experimentalists learn more about what the crucial parameters requiring control are and how to measure them. For example, many early experiments were done in haste without even measuring the loading obtained, so it is not surprising to see variable results without any clues about why this may have happened. Consequently, the question of proving LENR is real remains for one’s interpretation of the vast amount of data (facts) gathered over the past 20 years.

Indeed, this book is the best source to date for providing the facts that must be mulled over by anyone wrestling with this issue. By doing this, it provides a much

needed unifying insight to this struggling, but emerging, field.

George H. Miley is Professor of Nuclear Plasma, and Radiological Engineering and Electrical/Computer Engineering at the University of Illinois, Urbana-Champaign campus. He is recognized internationally for his research on innovating fusion plasma confinement concepts and studies of advanced fusion fuel. Miley is a Fellow of the American Physical Society, the American Nuclear Society, and IEEE, and a founder and former editor of the ANS Fusion Technology Journal and editor of the Journal of Laser and Particle Beams and the Journal of Plasma Physics. He can be reached at g-miley@uiuc.edu.

The Vision, Determination, and Science to Feed the World

by Gregory Murphy

The Man Who Fed the World: Nobel Peace Prize Laureate Norman Borlaug and His Battle to End World Hunger, an Authorized Biography

by Leon Hesser

Dallas: Durban House Publishing, 2006

Hardcover, 297 pp., \$24.95

This biography of Dr. Norman Borlaug by a friend and agricultural colleague captures the high points and the struggles of Borlaug in his leadership of the wheat program that was set up in Mexico in 1944. The book also highlights Borlaug’s efforts to build an international grouping of institutions for research and training of agricultural scientists that would provide the research and manpower needed for what was called the “Green Revolution” in India and Pakistan. In all, it is refreshing in outlook and conveys the excitement and passion of Borlaug to use his science to feed the world.

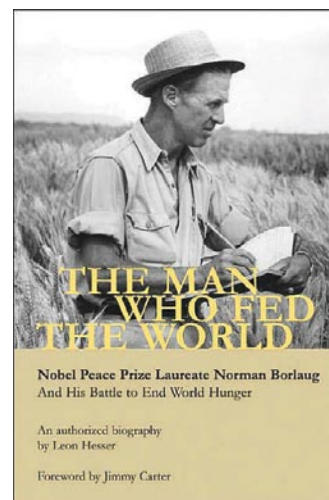
The real story of the book is about how human creativity and scientific progress can solve any problems that arise. The reader will gain a sense of optimism in the face of great challenges, such as fighting world hunger. As the world today is in the greatest financial meltdown in human history and a great crisis in food produc-

tion—caused in part by speculation and the cutting of funds to agricultural research—we need the optimism that Borlaug’s work demonstrates, to give us the hope of finding solutions to our current problems and to the new challenges that we will have to face in the future.

Wheat in Mexico

The wheat program in Mexico was a result of the vision of Henry Wallace, President Franklin Roosevelt’s Vice President. Wallace had the uncanny ability to see beyond the hunger problem in Mexico and envision a future made brighter by focused agricultural research. He envisioned a program that centered on developing technologies for producing more and better food that would guarantee adequate food supplies for all peoples of the world.

With this vision in mind, Wallace approached the Rockefeller Foundation with the idea of setting up a wheat program in Mexico. The Mexican government welcomed the idea, and the Mexican Government-Rockefeller Foundation Cooperative Agricultural Program was then created. This was the first U.S. agricultural assistance program. Mind you that this was being done while the world was at war.



In 1944, Dr. Norman Borlaug, then 30, was recruited to the program by Wallace and Rockefeller Foundation president George Harrar, at the recommendation of the renowned plant biologist E.C. Starkman, who said that Borlaug was the perfect choice to be the program’s plant pathologist because he had shown a keen interest in plant diseases and would not be defeated by difficulties.

He “burns with missionary zeal,” Starkman said.

In the early field trials, Borlaug had the idea of having two planting seasons, one in southern Mexico and another in northern Mexico. When he presented this idea to the Rockefeller Foundation board of directors, there was a lot of resistance to the idea. Even the former head of the wheat program in Mexico said that it would not work—that it had already been considered and rejected because it was deemed that it would fail.

Green Revolution: Changes in Factors of Production in Developing Countries of Asia

	Adoption of Modern varieties		Irrigation million ha	Fertilizer Nutrient Use million t	Tractors millions	Cereal Production million t
	Wheat M ha / % area	Rice M ha / % area				
1965	0 / 0%	0 / 0%	94	5	0.3	368
1970	14 / 20%	15 / 20%	106	10	0.5	463
1980	39 / 49%	55 / 43%	129	29	2.0	618
1990	60 / 70%	85 / 65%	158	54	3.4	858
2000	70 / 84%	100 / 74%	175	70	4.8	962
2005	72 / 87%	102 / 76%	178	77	6.4	1,017

Source: FAOSTAT, March 2006 and author's estimated on modern variety adoption, based on CIMMYT and IRR data.

This table is from a 2006 slide show presentation of Norman Borlaug in Washington, D.C., showing steady increases in wheat and rice yields as the Green Revolution practices took hold in Asia.

But Borlaug persisted and won the approval for the idea from the Rockefeller board members.

As he expected, the first field trials were a success, and as the word got out, and other countries of the developing world started to send their best agriculture students to Mexico to work with Borlaug.

Borlaug's high-yield wheat enabled Mexico to become a net exporter of wheat by 1963, and later it allowed wheat yields in India and Pakistan to double.

Agricultural Training Institutes

In 1960, the International Rice Research Institute (IRRI) was one of the first agricultural training and research institutes to be set up by the Rockefeller Foundation. Located in the Philippines, the institute grew out of the concern of Rockefeller's Harrar with the rice problem. In 1958, Harrar made an offer to the Ford Foundation to join forces to build a research institute that would develop hybrid varieties of rice, drawing on Borlaug's work with hybrid wheat. The IRRI was dedicated in 1962, and its first staff was drawn mainly from the students and others who were trained by Borlaug.

Over the next 13 years, the number of agricultural research institutes grew to the present number of 15. These institutes receive funding through the Consultative Group on International Agricultural Research (CGIAR), which was founded in 1972, after a series of conferences held in

Bellagio, Italy. CGIAR is headquartered at the World Bank in Washington, D.C.

In recent years, the funding to these Green Revolution institutes has been slashed. Now, with the ongoing food crisis, funding to these groups must be restored, coupled with a real drive for development of agricultural infrastructure, such as water management. As Borlaug's work showed, this is the only solution to the crisis.

Wheat Rust

In 1999, a strain of wheat rust was found in Uganda, labeled UG-99. This strain was thought to have been beaten in 1999, but it started to reappear in Kenya and other African countries in 2001. Norman Borlaug was brought in to find the solution to this rust infection. What Borlaug found was that the CGIAR institutes' funding had been slashed, and that without the needed funding there was little if any research progressing, as it had in the past during the days of the Green Revolution. The seed bank was very low, because of the funding cut, and there were almost no seeds that were resistant to this strain of wheat rust.

Borlaug commented on the situation: "The wonderful, cooperative, international, worldwide, multi-location testing network that was in place during the 1960 to 1980 period for evaluating experimental wheats against new races of diseases has broken down, and most of the Mexican-trained wheat scientist in the interna-

Lack of Infrastructure Is Killing Africa



Kilometers of paved roads per million people in selected countries

	Km		Km
USA	20,987	Guinea	637
France	12,673	Ghana	494
Japan	9,102	Nigeria	230
Zimbabwe	1,586	Mozambique	141
South Africa	1,402	Tanzania	114
Brazil	1,064	Uganda	94
India	1,004	Ethiopia	66
China	803	Congo, DR	59

Source: Encyclopedia Britannica, 2003

Another illustration from the Borlaug presentation in 2006 emphasizes the necessity for infrastructure development, along with agricultural advances, to stop the killing in Africa and other developing countries

tional wheat fraternity have died or retired and a new generation has not been trained to replace them. There has not been a serious epidemic of stem rust anywhere in the world since 1954. As a result, administrators, scientists, and those who fund science have become complacent. When everything looks fine, they say, "why do it?"

Green Revolution vs. Malthus

Borlaug's Green Revolution, the main theme of the book, is a solid example of how the application of modern agricultural methods could make it possible to feed billions of people worldwide. Borlaug also always stressed building the necessary infrastructure—roads, schools, health centers, and so on—so that rural communities would have both the necessary nutrition, and the means to make progress.

In 1968, genocidal Malthusian Paul Ehrlich wrote in his book *The Population Bomb* that it was a fantasy that India would "ever" feed itself. But by 1974, India was self-sufficient in the production of all cereals. (This, however, hasn't stopped the still-Malthusian Ehrlich from continuing to "predict.")

How author Leon Hesser writes about the Green Revolution and his personal experience of working with Norman Borlaug recreates for the reader the sense of excitement that the rural farmers in Pakistan and India felt as they were actively working to solve the their countries' food

crisis. It was not only the farmers in India who were excited by the results of Dr. Borlaug's wheat: India's Prime Minister Indira Gandhi turned a flowerbed at her house into a test plot for Borlaug's wheat! She was not alone; most ministers of the government and most college professors did the same.

This should be a lesson to today's youth, that by applying human creativity there is no problem that can not be solved.

Nobel Prize

Norman Borlaug was awarded the Nobel Peace Prize in 1970 for his efforts to

fight world hunger. There is a funny story of how he found out that he had been awarded the Nobel. Borlaug was working in the field, as he did every day, and he was told that he had a phone call from the Nobel Committee. He thought it was a prank and didn't take the call right away. The Committee called back later in the day, and still Norman thought it was a joke. After the third call, his wife finally convinced him that he really had won the Nobel Peace Prize.

In his Nobel acceptance speech, Borlaug voiced concerns that population

might outstrip resources, which was the popular Malthusian line of the time. But, to his credit, now Borlaug tells young people in his speeches at colleges that he was wrong for repeating that line about population outstripping resources, because, as he stresses, it is through human discovery that solutions to problems can be found.

Borlaug goes on to say that the next Green Revolution will be a "Gene Revolution," as increasing advances in biotechnology add to the quality and quantity of the food supply.

Six Degrees of Climate Porn

by Gregory Murphy

Six Degrees: Our Future on a Hotter Planet

Mark Lynas

Washington, D.C.: National Geographic Society, 2008

Hardcover, 335 pp., \$26.00

Six Degrees: Our Future on a Hotter Planet is an extreme example of "climate porn." This term was coined by the Tyndall Center at the University of East Anglia in Norwich, England, itself a promoter of global warming, to describe any overly dramatic and fatalistic scenarios of climate change. This description, inaugurated in a Tyndall Center white paper,¹ would include, for example, the statement from Sir John Houghton, first chairman of the Intergovernmental Panel on Climate Change, that "We have to talk about disasters, or no one will listen."

It would also apply to Stanford University's Stephen Schneider, who said, "... we have to offer up scary scenarios, make simplified, dramatic statements, and make little mention of any doubts we might have..."²

The present work does not let us down on this account. The author of *Six Degrees* is Mark Lynas, the green columnist for the Fabian Society's magazine *The New Statesman*, and a frequent contributor to Teddy Goldsmith's deep ecology magazine, *The Ecologist*. Lynas's scary book is based entirely on the computer models of

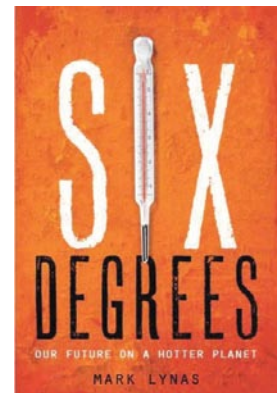
the U.S. chief global warmer, James Hansen, of NASA's Goddard Institute for Space Studies, and the computer models produced by the International Institute of Applied System Analysis in Laxenburg, Austria. (IIASA, it should be noted, is in the cybernetics tradition of denying a role for human creativity.)

These IIASA models are also the basis for the reports of Working Groups 2 and 3 in the Third Assessment Report of the IPCC, released in 2001. Working Group 2 deals with the impacts of global warming, and Working Group 3 covers mitigation and adaptation scenarios.

The IPCC's Working Group 3 concludes in Chapter 2 of the Third Assessment Report, that a doubling of CO₂ in the atmosphere would lead to a temperature rise of between 2° and 6°C, and it gives a scenario for what will happen at each degree of temperature rise.

Lynas uses this outline to give the reader a shock and awe tour of what could happen to the Earth at each and every degree. This same tour is mind-numbing, when one views the companion *Six Degrees* video, which contains computer-generated footage of New York, London, and Venice drowning in 25 feet of water. To make sure viewers don't miss the shock effect, the same computer-generated footage is repeated several times.

In the chapter titled "The Future We Will Choose," Lynas advocates cutting carbon emissions by 80 percent or more.



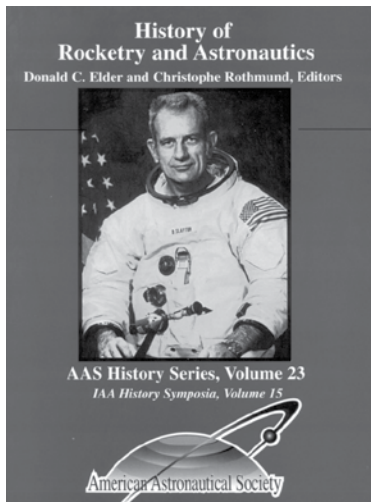
He also pushes the Middlebury College monster Bill McKibben's local control and fascist model of neo-feudalism, which includes forcing the population to adapt to shopping only at local stores and local farmers markets.

The Mussolini Factor

We agree with the assessment of British climate researcher Richard Courtney, in his paper "Crystal Balls, Virtual Realities, and 'Storylines.'" Working Group 3 begins Chapter 2, stating that it considers "societal visions of the future" that "most share a common goal: to explore how to achieve a more desirable future state." Courtney rightly asks, "Do they mean a more desirable future state like that of Mussolini?"

The conclusion of that same Chapter 2, calls for changes to socio-economic policies that are not climate policies. (At the very least, this IPCC conclusion provides an excuse for such changes.) We can see the sort of changes intended in Lynas's book.

In *Six Degrees*, Lynas calls for cutting back on building infrastructure, and he rules out nuclear power as not needed. The energy needs of the world could be



**HISTORY OF ROCKETRY
AND ASTRONAUTICS
BOOK SERIES**

**AMERICAN ASTRONAUTICAL
SOCIETY HISTORY SERIES**

For a complete listing of these excellent volumes on the history of rocketry and astronautics, including brief descriptions of each volume, tables of contents of most of the volumes and ordering information, please visit the following pages in the book sections of our Web Site:

- http://www.univelt.com/Aasweb.html#AAS_HISTORY_SERIES
- http://www.univelt.com/Aasweb.html#IAA_PROCEEDINGS_HIStory_ASTRONAUTICS_SYMPOSIA
- <http://www.univelt.com/htmlHS/noniaahs.htm>

BOOKS ON MARS

These volumes provide a blueprint for manned missions to Mars and a continued presence on the planet's surface, including what technology is required, and what kinds of precursor missions and experiments are required. For more information on the Mars books available, please visit the following page in the book section of our Web Site:

- <http://univelt.staigerland.com/marspubs.html>

If you would like for us to send you more information, then please contact us as follows:

**Univelt, Inc., P.O. Box 28130,
San Diego, CA 92198, USA
Tel.: (760) 746-4005;
Fax.: (760) 746-3139
E-mail:
76121.1532@compuserve.com
Web Site:
www.univelt.com**



National Geographic Society

Climate Porn: Washington, D.C. under water in this scene from the video of Six Degrees

met with wind and solar, he says. Lynas, however, writes that he is an optimist because we can solve the global warming problem by following his prescription of necessary carbon emission cuts of 80 percent. In truth, the policy Lynas is peddling is nothing but genocide.

As one would expect, the only groups to give positive endorsement of this book and video have been Friends of the Earth, Greenpeace, and the high priest of the Dionysian cult of global warming, Al Gore. The premiere of the *Six Degrees* video on the National Geographic Society channel was almost a total flop, and so far there has been little mention of the video except in the publications and blogs linked to the Friends of the Earth, Greenpeace and the Fabian Society's *New Statesman*, which continue to praise the book and the video.

A Separate Standard of Truth

Around the same time in 2007 that *Six Degrees* was launched, WAG TV producer Martin Durkin premiered "The Great Global Warming Swindle" on British television's Channel 4, a documentary that created a sensation overnight, and was widely viewed on websites like YouTube.com and Google Video. It is of note that Mark Lynas was one of the members of the media to savage Martin Durkin's film, and demand that it not be released in DVD format because it had several "errors." (Durkin did correct some small errors.)

Lynas's book and companion video, meanwhile, both repeat several large er-

rors that Al Gore was told to correct by a British court in October 2007, which Gore has still failed to do. To this day, Gore repeats things like "sea level will rise 21 to 25 feet," because of global warming. We suggest that Lynas apply the same amount of rigor to his writing (and that of his friend Al Gore) that he demands of Martin Durkin.

The good news is that the success of Durkin's "Great Global Warming Swindle" shows that Mark Lynas and Sir John Houghton are dead wrong when they say that the public will only learn and take action by being scared to death. You can sell a movie without climate porn.

Notes

1. "Is This Climate Porn?: How Does Climate Change Communication Affect Our Perceptions and Behaviour?" by Thomas D. Lowe, Tyndall Centre Working Paper 98, December 2006: http://www.tyndall.ac.uk/publications/working_papers/twp98.pdf
2. The full quotation from Schneider is: "On the one hand, as scientists we are ethically bound to the scientific method, in effect promising to tell the truth, the whole truth, and nothing but which means that we must include all the doubts, the caveats, the ifs, ands, and buts. On the other hand, we are not just scientists but human beings as well. And like most people we'd like to see the world a better place, which in this context translates into our working to reduce the risk of potentially disastrous climatic change. To do that we need to get some broad-based support, to capture the public's imagination. That, of course, entails getting loads of media coverage. So we have to offer up scary scenarios, make simplified, dramatic statements, and make little mention of any doubts we might have. This 'double ethical bind' we frequently find ourselves in cannot be solved by any formula. Each of us has to decide what the right balance is between being effective and being honest. I hope that means being both" (Quoted in *Discover* magazine, October 1989).

