



Courtesy of Mohd Peter Davis

Biosphere Technology In the Nuclear Age

by Mohd Peter Davis

Nuclear power for energy production is undergoing a welcome renaissance as country after country announces plans to build nuclear power stations. This marks a return to the science and sanity of the post-World War II era of my youth. I am now able put my own late 1950s to late 1970s experience as a budding scientist into much better perspective, by diligently studying, over the last four years, the outstanding intellectual material in the weekly magazine and quarterly science journal published by the movement founded by American statesman and physical economist, Lyndon LaRouche, a political follower of Presidents Abraham Lincoln and Franklin D. Roosevelt.¹

My generation grew up not only with the horror of nuclear weapons, but also with the optimism of nuclear power. As youth we were inspired by Atoms for Peace and Nuplexes (nuclear-powered industrial complexes) which heralded abundant supplies of cheap electricity for domestic and agro-industrial use, and unlimited desalinated water for the Green Revolution in agriculture to feed

the world and green the deserts. Science and technology further dominated the world with air travel, space exploration, DDT, penicillin, and polio vaccines. There seemed nothing that science could not handle to make the world a better place for all human beings on Earth.

I embraced this scientific optimism and was inspired in particular by a science book which proved that life could not exist on our nearby planets, given their prevailing physical and chemical conditions.² This began a lifelong interest in the evolution of life on Earth and potentially other planets in the universe. At 16 years of age, I was recruited from school to the nearby Pfizer research laboratories, part of an ultra-modern terramycin antibiotic factory in Sandwich, England, which had been recently built by the American parent company. The pay, the working conditions, the five-day week, the five-week Christmas bonus, and the opportunity for further education while working, were light years ahead of any other job I could have gotten in my economically depressed part of England (I now know that this was all part of the American

A 1969 design for a nuplex, an agro-industrial complex powered by two 1,000-megawatt nuclear reactors, which would produce electricity for local residents and industry, and desalinate 1 billion gallons of seawater per day. Inset: Peter Davis in February 1969 was a fresh 26-year-old biochemist and had just completed a 4-month overland journey from England to Australia with his brother John. "With just £900 between us for the entire trip, we experienced firsthand the harsh realities of the Third World countries. However, I was entirely optimistic that most of the Medieval poverty, diseases and hardship we had witnessed could be solved or greatly alleviated with a sensible application of the science and technology I had been taught and the grand science missions I knew were in the pipeline."

postwar efforts to rebuild and remoralize Europe, based on the advanced industrialization that took place in America under President Franklin Roosevelt during World War II).

Terramycin was one of the second-generation antibiotics, and followed the spectacular medical and entrepreneurial success of penicillin, the miracle drug which dramatically cured a wide range of bacterial diseases that had afflicted humans throughout history. By 19 years of age, I was part of a pioneer research team combatting viruses, the next great mission for medical research, designing the biological methods for mass screening old and new organic compounds as potential new drugs against viruses.

Virus Theory of Evolution

By the age of 26, after moving to Australia, and after years of struggling to reconcile the great wealth of new experimental findings with the prevailing concept of viruses, I began to break out and develop a virus theory of evolution.³ I could see that there was circumstantial evidence coming out of the world's laboratories that viruses were the agents for

transferring genes between species. I saw viruses as travelling genes, contemptuously ignoring the species barrier which kept the genetic material tightly guarded within each individual species. In my mind's eye I could see viruses swapping genes between the species as the driving force of evolution.

The exciting new field of genetic engineering was really not so new after all, but the brilliant technological exploitation of a process which had been occurring on Earth for perhaps billions of years. Viral transfer of genes, rather than the old dogma of random point mutations, explained why a bacterium could become multiply resistant to penicillin and to many other new antibiotics soon after they came into general medical use. The problem with this quite simple virus concept was the preoccupation in the scientific and medical community with another concept, which regarded viruses as agents of diseases such as polio, which had caused so much death and suffering to children. There was an underlying hatred of viruses, and a determination to wipe them off the face of the Earth. Viruses were seen as non-living alien invaders and lethal enemies of the cell.

However, this head-on, warlike approach to viruses, which had been so successful against bacteria and tropical diseases like malaria, was doomed. The evidence was piling up that viruses were normal and natural residents of every cell. They were not aliens; they belonged in cells, even though they went visiting extremely frequently. To eliminate viruses would require the extermination of all life on Earth. Viruses as agents of disease was secondary to a much more fundamental and essential role in the evolutionary process.

The Unity of Life

Life on Earth was not really a hierarchy as we had been taught. All the millions of species of animals, plants, insects, and microorganisms were interconnected by a wide range of discrete viruses. All species were equal but some were more complex than others. Beneath the tremendous visual diversity of species that so awed the early naturalists, there existed at the subcellular level an amazingly similar biochemistry (my chosen field of study). Indeed, at the subcellular level, all species are broadly identical: The internal organs of the cell are simi-



Courtesy of Mohd Peter Davis

Honeycomb thermal comfort housing, a new Malaysian invention by Architect Mazlin Ghazali (right) and Mohd Peter Davis, will allow nature and modern agriculture and industry to be integrated into nuclear-powered cities built along the routes of the Eurasian Land-bridge, long proposed by the LaRouche movement.

lar; they share the same biochemical pathways, almost identical enzymes, and they reproduce DNA, RNA, and proteins in virtually identical ways.

The general conclusion from experimental biochemistry and genetics is that once we get inside the cell, all cells are basically the same. The biochemistry of the much-studied bacterium *E.coli* tells us the essentials about the general house-keeping of each cell in all the other millions of different species on Earth. My virus theory of evolution explained how this similarity came about. It was the consequence of the constant spreading and sharing of genetic material by viruses throughout the millions of species.

What was driving life to adapt to the ever-changing Earth was not so much the slow natural selection of point mutations caused by crude chemical and physical forces in the external environment, but the everyday, healthy activity of the viruses as a natural part of every living cell, reproducing, escaping from the host cell and spreading to other cells and other species. Each species was not an island unto itself, but a part of a com-

plex web of living matter on Earth consisting of millions of distinct species, all genetically interconnected by a wide assortment of viruses.

What an advantage this gives to all species! Consider new genetic material originating in a single cell of a single species; a rare mutant gene (coding perhaps for a novel enzyme to break down the penicillin molecule), or a new cluster of existing genes (coding perhaps for a new biochemical pathway capable of extracting energy by metabolizing a new chemical in the environment). The new genes along with the essential viral genes get packaged into hundreds of daughter virus particles, which escape from the host cell, spreading to neighboring cells and potentially, by innumerable hops via other viruses, to all other species on Earth, and ending up integrated into nuclear DNA passed on to the next generation.

The process might be complex, but the idea was simple. New genetic information is acquired, not directly from the environment, but from other living cells. Thus, a new genetic invention by one cell gets multiplied, transmitted, and

tested throughout the living world. New genes or combinations of genes are spread by viruses in a complicated way much like new ideas spread throughout the human population.

Recovery from Environmental Catastrophe

The living matter on Earth can respond to a changed environment, both locally and globally, with incredible speed. Life on Earth is able to recover almost instantly from environmental outrages, including, for instance, our completely novel man-made antibiotics, or, on the larger scale, the quite frequent meteorites and ice ages which, according to the fossil evidence, have caused numerous mass extinctions of species over the last few billion years.

The everyday activity of viruses, combined with the great overproduction at each generation, generates a continual supply of new species. Under stable environmental conditions, the new species rarely get a foothold and are wiped out by natural selection. However, with an environmental change or catastrophe, the competition from existing species is greatly diminished, and the new freak species get their opportunity to blossom.

Following a natural catastrophe such as a meteorite collision with Earth, or an ice age which can exterminate most of planetary life, the Earth is very quickly repopulated with a dazzling array of old and new species. The fossil scientists have termed this process—where long periods of species stability are interrupted by a global catastrophe, followed by the dramatic emergence of totally new species—as punctuated evolution.

Of course, there is almost no difference in the biochemistry and genetics of the set of species before and after the catastrophe; the two sets just look different, like the caterpillar turning into a butterfly. Life on the planet can take an extremely heavy depopulation, and even a loss of, say, half of the species, but simply shudders for the duration, and eventually marches on with a mixture of old and new species, as if nothing had happened. Thus, life on Earth has a tremendous resilience and continuity, and has survived every catastrophe for perhaps 4 billion years.

Now stand back from this intellectual discourse on viruses and evolution, and observe a quite ordinary 16-year-old boy maturing into professional adult-



THE KING IS DEAD, LONG LIVE THE KING

*Australasian Pastoralist's Review, from the Loir Collection,
Adolph Basser Library, Australian Academy of Science*

In this 1893 cartoon, Australia's rabbit king is flanked by two banners, "King Bunny for ever" and "We hold the land." The rabbit population explosion, decimated ground cover, leading to the demise of many native species and the destruction of cropland. It was the virus used to kill 600 million rabbits in the 1950s that gave this author food for thought about the potential dangers of viruses.

hood and challenging scientific orthodoxy. This is creativity. Youth in general, if given an intellectual and experimental working environment like the one I was given, and provided they are willing to work hard and study well, quite naturally become very creative and can truthfully challenge deeply held beliefs, fundamentally changing the way we think about the world. This natural human creativity comes not from special people, but from special conditions which a good society must provide to guarantee its own well-being and future survival.

The Dark Side

I soon realized, with my enlightened view of viruses, that their dark side was far more dangerous than we had ever suspected. It still gives me nightmares. I was working in Australia alongside the scientists responsible for the biological control of rabbits using myxovirus. Rabbits who

were innocently introduced in the 1850s, had gone wild and completely overrun Australia, eating out the continent and threatening the sheep and cattle industries on which Australia's well-being depended.

My fellow CSIRO (Commonwealth Scientific and Industrial Research Organization) scientists told me that in the 1950s, myxomatosis wiped out 600 million rabbits, 99 percent of the rabbits in Australia. The CSIRO biological control program had rescued the wool and meat industries and was a national institutional hero. CSIRO was proud of its achievement, but I was horrified, and started to ring the alarm bells: What was stopping a species-specific virus from similarly wiping out 99 percent of humans?

I dug around and discovered that the 1918 influenza pandemic (the Spanish flu) had killed 20 million human beings, some now say 100 million,⁴ when the world population was one third of today's. Clearly, viruses serve to naturally control "overpopulation," maintaining the diversity of species and preventing any species from overrunning a territory. As the out-of-control rabbit population in Australia demonstrated, it was just a matter of time. A virus with mutated genes or a new combination of existing or recombinant genes would sooner or later emerge, and with surgical precision, wipe out the overpopulated species without touching the other species.

This new understanding of the virulence of viruses was shocking in view of the huge increase in the human population made possible by modern agriculture and industrialization. Since any dreams of eradicating viruses were now foolish, we were obliged to stay one jump ahead with vaccines, drugs, public health measures, and better ways of living.

We could no longer tolerate the mass poverty and unhygienic living I had witnessed in my overland journey from England to Australia on a very tight budget, seeing how the "other half" lived: Fellow human beings in the gutter; all the problems of poverty quite solvable with a sensible application of existing science

and technology, and the tremendous developments I knew were in the pipeline. Unless we dramatically improved the standard of living and hygiene to the level of the Western countries, the Third World countries, with rapidly growing populations, but wallowing in the Middle Ages, would serve as an ideal incubator for a human viral pandemic.

Given the promiscuous mixing and marrying of genes between viruses and hosts, another 1918-type virulent influenza virus could suddenly appear, spreading round the world in two weeks, given modern air travel. But influenza virus is infuriatingly changeable, and new varieties appear faster than we can design new vaccines and produce them in chicken eggs. We had to radically change our strategy. The world's scientists had to cooperate as never before to develop the research and the industrial capacity to mass produce and administer a range of vaccines for the entire world population within weeks of a virulent strain emerging.

I had worked all this out and campaigned for it in the late 1970s to early 1980s. But it fell on deaf ears and it did not happen. Instead, a lot of this basic research on viruses was closed down (along with other areas of governmental basic research deemed "non-commercial"). I was transferred to research in sheep nutrition! Only in the last year or two, with the spread of avian influenza, have the world's scientists taken human pandemic influenza seriously by coordinating their action and demanding government support.

We lost a golden opportunity and surrendered a 25-year head start.

The Anti-science Agenda

My example is part of a much larger problem which must be fully aired by older scientists with similar stories of opportunities lost. However, this turn away from science was more than just a foolish mistake. It is becoming very clear from the fully documented work conducted by the LaRouche movement, that another agenda has been operating for at least 45 years, which has crippled science and technology around the world.

In the early 1960s, in the midst of the exciting and progressive development of science and technology in all fields, along comes journalist Rachel Carson with her bombshell book *Silent Spring* denouncing

DDT as a catastrophic threat to birds and wildlife.⁵ By the mid-1970s, DDT, the spectacularly successful chemical controlling mosquitoes and the diseases they carry, such as malaria, had been banned, despite the finding of an international nine-month American judicial inquiry of the Environmental Protection Agency that DDT was completely harmless to birds, wildlife, and human beings.

Other fear campaigns from a new breed of Green environmentalists were coming thick and fast, undermining the public's confidence in science and technology: Nuclear power was "dangerous" and "polluting," and all radiation was "harmful." Based on computer linear projections, the Club of Rome declared the world was about to run out of resources, caused by overpopulation—the old battle cry of the anti-human Malthusians. The term Spaceship Earth came into general currency, evoking the fear that we must ration out the resources.

Meanwhile, American Secretary of State Henry Kissinger enacted the National Security Study Memorandum 200, declaring that the development of Africa by Africans would deplete our resources, and advocating sheer evil: the control of population by American domination of the world food supply.⁶

In this backward march to the Middle Ages, science and technology became rejected, and research programs were shut down. The 1968 student revolts against America's Vietnam War also adopted a profound anti-science, anti-development philosophy. The problem was "too many children gobbling too many resources," the students said. We needed "zero population growth." The Earth was exhausted and the human population had exceeded the "carrying capacity" of the land. We had to give up industrial society and go back to nature, to a post-industrial society. It was all part of a fear campaign to destroy scientific creativity, and it was highly successful.

Back to Science and Sanity

For the last 35 years, we have foolishly succumbed to this evil nonsense and allowed science to be abandoned, adopting in its place a nonproductive service society based on speculative money that has consciously neglected to replace and develop the infrastructure and productive capacity essential for the general welfare of the population. This is suicide.

To support 6.5 billion human beings on Earth, and hopefully many more, each enjoying a decent standard of living without which we cannot control diseases, we must urgently return to the nuclear power and science of my youth. Then, we must make the scientific leap to nuclear fusion and re-create what the Sun does in fusing together hydrogen isotopes to produce unlimited energy and the lower elements of the periodic table. The first fusion reactor, recently agreed to be built in France with the support of top nuclear nations, can become commercial in 25 years.

While nuclear fusion is being geared up, we still need nuclear fission, the splitting of the uranium atom in the now 100 percent safe, commercially available modern nuclear reactors, to belatedly supply the world with cheap electricity and desalinated water.

We also need to build the larger high-temperature nuclear reactors which crack water at 800°C to produce hydrogen, as a replacement for gasoline to run cars, trucks, and planes. This will phase in the hydrogen economy and allow fuel to be produced in many countries, instead of transporting oil—a bulky, low value commodity—halfway round the world, tying up the world's ships and ports.

Once the political will exists to go nuclear and mass produce nuclear power stations, the present problem of what to do with the spent nuclear waste will solve itself. No longer does it have to be dangerously stored on land, frightening the life out of everyone. It becomes very economical to completely recycle the nuclear waste in breeder reactors, to produce even more fission fuel. The nuclear waste is turned into a valuable nuclear resource, thereby capturing a much higher percentage of the energy locked up in uranium.

This is energy production and energy efficiency on majestic scale, totally eclipsing the fossil fuels (see Table 1 on fuel and energy density comparisons). Well before the uranium reserves will ever run out, the mini-Sun nuclear fusion reactors, which will be commercial in 25 years, will begin to take over completely from fossil fuels. We can then stop burning and squandering our remaining valuable reserves of oil, gas, and coal, and stretch out their use for a higher purpose, as the chemical feedstock for the plastics

Table 1
FUEL AND ENERGY DENSITY COMPARISON

- 1 gram **fusion fuel**: Fusing atoms (deuterium & tritium isotopes of hydrogen), ca. 2030
- = 3 grams **Uranium fuel**: Splitting the atom
- = 9 tons of **Oil**: Fossil fuel
- = 11 tons of **Coal**: Fossil fuel
- = 42 tons of dry **Wood**: renewable fuel

Table 2
SOURCES OF ENERGY THROUGHOUT HUMAN HISTORY
(*Animals rely on sunlight for warmth and food chain*)

- **Renewable: Stone Age and Agricultural Man**
wood fire for warmth and cooking
- **Fossil Fuels: Industrial Man**
coal, oil, and gas for cooking, electricity, transportation
- **Uranium Fuel: Nuclear Man**,
20th Century splitting atom for electricity and desalinated water
- **Hydrogen Fuel: Thermonuclear Man**,
21st Century Fusion, building a Sun on Earth—unlimited energy

and other industrial materials required by every human being.

Vernadsky's Biosphere

The LaRouche movement's adoption and distribution in English of the little-known work of Russian biogeochemist Vladimir Vernadsky (1863-1945) puts the whole environmental issue, including sustainability of resources and nuclear power, into proper scientific perspective.¹ Vernadsky's lifetime work explained the 4-billion-year development of the Biosphere (the envelope of living matter and its thick crust of dead fossils surrounding the Earth, including the oceans and atmosphere) and the unique role that human beings now play in its further development.

Vernadsky discovered that mankind, through the mastery of science and technology, had become by the 20th Century a creative geological force (the Noösphere), far more powerful than living matter itself for shaping the Biosphere. Man's creativity has enabled the human population to now grow several thousandfold, to more than 6 billion, compared to the natural carrying capacity of the Earth of just a few million for higher apes.

However, the expanding human population is increasingly living off the stores of Earth's fossils (the 1- to 2-kilometer crust of dead bodies of all the different species deposited over several billions of years). These biological fossils required to sustain mankind include not only the oil, gas, and coal, but also minerals which get recycled through living organisms, such as iron, copper, zinc, and so on, and also the products of previously living matter, the water and oxygen.

Particularly over the last 50 years, the drinkable water and oxygen have been seriously depleted. Some 20 percent of human beings are living on fast-disappearing underground fossil water left

over from previous ice ages.

Oxygen is being consumed faster than it can be replaced by photosynthetic trees, plants, and microorganisms.

The easy deposits of basic minerals required by modern society have been mined out. We can no longer get minerals on the cheap. We have to dig deeper and mine the oceans, using ever more advanced technology.

The Earth's super-concentrations of minerals are in the remote Arctic regions of Siberia, and will require "space-habitat" mining cities and maglev trains to transport the ores to the centers of population for new cities and industrial complexes. To pay for these more expensively mined minerals will require a world population with a higher standard of living and a decent wage. The billions of human beings barely surviving on a few dollars per day cannot afford to buy the mineral and energy resources they need to survive.

However, the human population will sooner or later run out of essential resources if we rely solely on the dead products of living matter in the Biosphere (see Table 2 on sources of energy throughout human history). They are nonrenewable, in the sense that what took billions of years to form by living matter is now being consumed in centuries by modern man.

There are only two solutions. The first solution (or more aptly the final solution) is the "Back to Nature" advocated by the Green environmental movement. This is really the depopulation program of fascism: Reduce the "useless eaters" by war, famine, and disease. The 40-year genocide in Africa is the dress rehearsal for the rest of the world: Reduce the present 6.5-billion population to a globalized world of under 1 billion, living under primitive feudal conditions and

ruled by a privileged elite, as envisaged by Hitler's International SS. That will stretch out the resources.

Back to Science!

The only alternative to this evil is a "Back to Science" approach. To sustain the present world population and allow the population to grow with sensible family sizes means that we have to urgently start *producing* the basic requirements of human existence, not simply harvesting them from the Biosphere. This means rejecting the anti-nuclear back-to-nature environmentalism of the Green fascists and winning over the bulk of their supporters who do have a genuine concern for defending and improving the environment.

We must out-green the Greenies with a sane scientific approach to the environment, based on universal human need. We must replace the fossil fuels and produce the energy for electricity and drinkable water, and produce the hydrogen for transportation and the oxygen for life. We must transform the elements and do what the early alchemists could not do: Turn lead into gold.

The Vernadsky/LaRouche transformation of the elements will fuse together the basic hydrogen-atom building blocks at 3 million°C to form the useful elements in gigantic quantities. All this advanced production, of course, is a daunting task, and will require a scientific and technological leap, driven by international crash science programs of the type that got man to the Moon.

We need to re-create on Earth our own miniature Sun, bringing nuclear fusion and its products to fruition in the 21st Century. It will be a coming of age for mankind, where we become self supporting and able to give back to the Biosphere the resources we borrowed while reaching maturity.

Biosphere Technology

With abundant nuclear-desalinated water now coming back on-stream, we have the essential ingredient for greening the deserts. The Biosphere technology now being pioneered by Universiti Putra Malaysia can produce in the natural greenhouse environment of Malaysia, not just millions, but *billions* of 4-year-old nursery trees in polybags every year, year after year, on a sustainable basis. Shipped in containers, these nursery trees can transform near-worthless deserts and arid lands into green oases with cooler livable cities, agricultural land, and Nupexes, as envisaged in the Atoms for Peace program.

From Vernadsky's grand scientific view of the Biosphere, we can begin to see the great potential of the Malaysian rainforests, home to the world's oldest and richest source of biodiversity, as serving as the Earth's "Noah's Ark," which regularly repopulates the planet with living species, following the frequent major and minor ice ages. These dramatic climate changes are caused during the Earth's orbit around the Sun, made more complex by the gravitationalal interference from other planets.

During ice ages, land-based life is almost totally exterminated, except for a few pockets of equatorial rainforest, and lies dead and buried under hundreds of meters, even kilometers, of ice. The Green environmentalists cannot, or will not, see this big picture, and fret over a few endangered species and imagined global warming, accusing man's sinful development for destroying the environment. As the glaciers melt and recede, the survivors of the ice age, the millions of species crowded into the rainforests, start to recolonize the sterile continents.

The mighty reproductive power of each species, described in Vernadsky's book *The Biosphere*,⁷ is an unstoppable force, and starts greening the Earth and reestablishing a complex food chain of interdependent species. The Biosphere gets replenished with living species, and the percentage of living matter on Earth increases dramatically over very short geological times, around 20,000 to 100,000 years (50,000 years ago much of North America was covered by one kilometer of ice).

Biosphere technology, based on Vernadsky's scientific concept, aims to greatly speed up this natural recoloniz-



Courtesy of Mohd Peter Davis

ing process, accomplishing the same task in perhaps 100 years.

Instead of depleting the Biosphere, we can dramatically speed up its regeneration and increase the percentage of living matter on Earth, for the benefit not only of human beings, but every other species on Earth. Mankind becomes in the 21st Century the caring Manager of the Biosphere. This is a whole lot better than the doom and gloom coming out of the Green environmental movement.

Commercializing Rainforest Biodiversity

The micro-climate created by rainforests—high rainfall, high humidity, plenty of sunlight, and all-year-round temperatures between 25-35°C—provides the ideal natural greenhouse conditions for maximum production of biomass.

Trees in Malaysia and the Amazon countries grow really fast, which permits economical mass production in polybags, suitable for export anywhere in the world. As a purely theoretical calculation, Malaysia could produce 14 billion 4-year trees per year on a sustainable basis, using the 12 million acres of plantation land, and without touching another acre of virgin forest. This gigantic production of 3-meter-high nursery trees, planted 6 meters apart, could green all

the world's deserts in 37 years!

The forests of the world, lost necessarily to agriculture, can be re-created with nursery trees grown in Malaysia, as modern intensive agriculture liberates grazing land and land now used for backyard farming. Production of sheep, goats, cows, cattle, and pigs under intensive conditions in hygienic animal houses, similar to modern biosecurity chicken farms, will liberate vast areas of grazing and agricultural land, and minimize the emergence of new diseases.

Synthetic forests can be created and repopulated with mass-produced wildlife. Instead of endlessly complaining about the loss of wildlife to urban development and poachers, let us give nature a helping hand and mass produce wildlife. The illegal poachers, raping the rainforests, which support only very low densities of higher animals, have nonetheless opened up lucrative markets for wildlife for exotic food and medicines. Let us kill their markets with far lower prices, by mass producing the desired species outside of the virgin rainforests.

What a splendid prospect for those genuinely concerned for the environment and the wildlife. Malaysia can be transformed into the tree factory and wildlife-production center for the world,

This tree, Leptospermum poligalifolium, grows very slowly in the Australian deserts but grew to this height from a seed in just 18 months in the perfect Malaysian rainforest climate. Billions of trees per year of any desired species can be propagated in polybags in Malaysian nurseries and shipped in climate-controlled containers to "Green the Deserts," a key mission of the 1950s-1960s "Atoms for Peace" program to provide copious quantities of desalinated water.

Wild fruit and berry trees from the rainforests, considered "rubbish species" by the British colonialists in Malaya, can be planted at 100 trees per acre in dense urban areas to create a complex ecosystem for Honeycomb towns and cities. The trees provide a home for birds, insects, and small wildlife to reproduce while the wild fruits and berries provide their food. Perhaps several hundred species of birds and semi-tame animals can safely coexist with human beings in urban areas.

When supplemented with food supplied by urban residents, any desired wildlife population density can be reached, including that of "endangered" species. Science can out-green the Greenies, disproving yet again their false Malthusian belief that the land has a fixed "carrying-capacity" for each species.

putting the 12 million acres of rubber and oil palm plantation land to much better, higher value use. We estimate that the mass production of nursery trees, for new towns and cities and for greening the deserts, can generate 25 times more wealth per acre compared to palm oil, Malaysia's golden crop.

Presented with this economic prospect, who will be prepared to defend the old industries of rubber and palm, run under the poverty-generating British plantation system? Opening up long-term markets for Malaysian-produced nursery trees and wildlife will generate the wealth to completely eliminate rural poverty and propel Malaysia to an advanced industrialized nation.

Other countries in Africa and South America blessed with rainforests can follow Malaysia's example.

As the new cities and the deserts/arid lands (25 percent of the Earth's landmass) become landscaped, suitable semi-tame wildlife species can be introduced to bring urban populations back into daily contact with nature. Now a radically more optimistic world environment program is possible, based on the production of the enormous natural biodiversity contained within the rainforests.

Currently, we use very few species.



Courtesy of Mohd Peter Davis

Only about 15 species of animals (former wildlife) have been commonly domesticated for meat production. The British colonizers deemed only 55 species in the Malay Rainforest commercially useful as timber species, and classified the remaining 3,000 trees as rubbish species. Perhaps a few thousand wild plant species have been artificially selected historically as agricultural crops. This number of species commonly produced and used by man is trivial compared to the total number in the Biosphere.

Estimates vary from 2 to 100 million, but the most commonly quoted estimate for the number of species on Earth is between 30 and 50 million. Each and every plant, animal, fish, insect, and microbial species is a precious renewable resource of the Biosphere, for present and, especially, future generations.

It would be insane to let any species perish. In fact we should be doing all we can to artificially produce new species. Once a market for a particular species exists, it can be sourced from the rainforest and mass produced on the already cleared land in modern nurseries, specialized plantations, wildlife production centers, and fish and insect farms.

The general techniques for mass producing any species are already well estab-

lished, and well within the scope of classical scientific disciplines such as botany, zoology, animal production, agriculture, forestry, fisheries, and so on. Given a market, creative scientists working alongside creative entrepreneurs will very quickly find economical ways to produce any species from the rainforest. The mass-produced live species are then available to a host of established industries such as landscaping, herbal medicines, drugs, vaccines, food products, cosmetics, industrial chemicals, biocomposite building materials, and so on.

For newer industries based on biotechnology, immunology, tissue culture, and genetic engineering, the availability of any species in large quantities opens new

horizons for supplying world markets with high-value, high-technology products.

Malaysia and other rainforest countries can enjoy a very prosperous future. This is a lot better than the free-trade British Plantation System supplying rubber and palm oil at rock bottom prices, which have kept too many generations of human beings in poverty as semi-slaves.

New Hygienic Cities

Slum living with backyard farming, which characterizes the living conditions of about half the world's population, is the ideal incubator for the emergence of a human virus pandemic, threatening not only the poor, but civilization itself. For a world returning to sanity, this means rehousing up to half the world's population in modern hygienic towns and cities, providing cradle-to-grave medical care, and establishing intensive agriculture in bio-security farms.

For the last decade at Universiti Putra Malaysia, we have been directly addressing the need to urbanize the population in developing countries, and see the need for 500 million modern dwellings.⁸ Malaysia has considerable practical experience to offer, having successfully urbanized 65 percent of a three-fold-larger population, since independence from the British nearly 50 years ago. (Green Malthusians

please note: This increase in population was accompanied, not by poverty, but by a big improvement of every measurable sociological parameter).

However, serious mistakes have been made (overheated houses, alienation from nature, a lack of public transport, and the trap of low-cost housing) but these have been carefully analyzed and do not have to be repeated, as other developing countries urbanize their populations.

Our Honeycomb solution, invented by a creative Malaysian architect, is a highly land-efficient and radically new town planning concept based on interlocking hexagons.⁹ New Honeycomb housing developments are being commissioned by several state governments in Malaysia.

All houses, now in a price range affordable for the entire working population, starting with young married couples, are arranged in cul-de-sacs, clustered around small child-friendly neighborhood parks designed to bring nature and a sense of community back to urban living. The houses are energy efficient and designed to stay cool in the tropics without air conditioning, while the trees shade the roads and cool down the outdoor environment.

More than 100 wild fruit trees per acre can now be planted from a huge selection of tree species. (A Malaysian nurseryman, James Kingham, shown in photo on p. 91, in just 10 year's exploration of the rainforest, has collected, propagated, and commercialized 800 new species of fruit and berry trees.) These fruit/berry trees will provide a complex food chain in Honeycomb housing areas, and support a high density of birds, insects, and even small wildlife specially bred and semi-tamed for free living in urban areas.¹⁰

We are now designing largely self-sufficient Honeycomb cities, using industrialized building systems, and we look forward to working with collaborators for incorporating a city nuclear power plant for domestic power, water, industry, and agriculture. Our present task involves designing prototype livable towns and cities with their own economy, tailored to the local climate and culture, while satisfying the needs of all sections of the population, including the need for future generations to upgrade the technology.

The Honeycomb concept does away with the grand geometric city designs imposed on the landscape, and is partic-

ularly suitable for preserving the cultural heritage of existing villages and towns while growing a city into the surrounding countryside, following the rivers and contours of the land. Each city will therefore be unique, with its own identity based on its earliest history, geography, landscape, and industries, and will fit neatly along the route of the Eurasian Land-Bridge, long advocated by the LaRouche Movement.

Green Insanity

The Green environmental movement boastfully flaunts its "self-sufficient" and alternative solutions, consisting, not of modern cities for the world's poor, but fairy-tale villages fed by organic farmers and powered by solar panels on sunny days, windmills on windy days, and biofuel after harvests. The windmills, the biofuel, and solar panels, advocated by the Green environmentalists as the renewable alternative to fossil fuels, are not really alternatives at all. They all consume more fossil fuels to manufacture than the energy they produce.

The current American campaign for ethanol biofuel to replace petrol is a good example. To supply all the ethanol (a renewable biofuel) required to replace America's consumption of oil (a nonrenewable fossil fuel) would require planting an absurd 50 percent of the American land mass with corn.

Two leading American scientists writing in the *Washington Post* July 2, 2006, and in other publications, demonstrated that the entire U.S. cropland, if used to grow corn for ethanol production, would produce only 15 percent of the American gasoline requirement. This option would leave America without domestic food production capability, for human or animal use.¹¹ The massive corn production advocated will greatly accelerate the depletion of ground water, threatening human survival.

It gets worse; only the sunlight is free. The fertilizers, farm machinery, transportation of the corn, its industrial fermentation to ethanol, and its transportation to the pump will consume more gasoline than America currently uses! Biofuel is the equivalent of eating babies to solve human malnutrition.

This madness, combined with all its other stupid technologies and shutdown of the nuclear industries, will take mankind back to feudalism and crash

the population from more than 6 billion to less than 1 billion. Seen from this perspective, the Green alternative is merely an alternative word for genocide.

The LaRouche publications have exposed how Rachel Carson and her environmentalist followers, who now occupy the top government and influential positions in the Western world, fooled most of the people most of the time over the last 40 years. The Green environmental movement has a lot to answer for and can be discredited; those who followed out of genuine concern for the environment can be won over.

This evil movement, which did all it could to destroy scientific creativity, can and must be broken up as the world comes back to its senses with a nuclear renaissance that intersects with Vernadsky's concept of the Biosphere. We share Vernadsky's optimism: The future is in our hands. We will not let it go.

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Notes

1. A wealth of original articles used in this essay is published in the LaRouche political weekly *EIR* (*Executive Intelligence Review*, Washington, D.C.) and the quarterly magazine *21st Century Science and Technology*. Links to recent nuclear and Vernadsky articles are on the homepage of the website <http://www.larouchepub.com>. This website also has a Google search engine of archived publications.
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4. J.M. Barry, 2005. *The Great Influenza. The Epic Story of the Deadliest Plague in History* (New York: Penguin Books).
5. R. Carson, 1962. *Silent Spring* (Boston: Houghton Mifflin Company), 1994 edition.
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7. V.I. Vernadsky, 1926. *The Biosphere*. (New York: Copernicus, Springer-Verlag), English edition, 1998.
8. Mohd P. Davis, 2000. "Environment Friendly Townships for Developing Countries," in *Workshop Proceedings* of same name, Universiti Putra Malaysia, Jan. 31.
9. Mohd Peter Davis, Mazlin Ghazali, and Nor Azian Nordin, 2006. *Thermal Comfort Honeycomb Housing*, Universiti Putra Malaysia.
10. Mohd Peter Davis, 2005. "Biosphere Technology," *Proceedings of the International Advanced Technology Congress*, Putrajaya Malaysia, Dec. 6-8.
11. Christine Craig, 2006, "Biofuels: A Losing Proposition," *EIR*, July 14, 2006.