(By the way, what is the current pedagogical laboratory program in your neighborhood's secondary school? What is the pedagogical laboratory program at your chosen university, the one whose graduates you may regret you hired? What is the quality of the research-laboratory programs, at that university, or in the firm whose products you buy? By these standards, judging by the standard of U.S. national interest, which such institution deserves public support, such as more favorable tax treatment?)

It is the application of newly proven universal physical principles, to a broader range of media and physical processes and assemblies, by aid of crucial laboratory testing of those designs, which generates the new technologies on which we depend for better products and increased productivities.

That is the quality of scientific education which the U.S.A. has lost over the course of the past thirty to forty years—since about the time of the 1966-1967 preparations for the first manned Moon landing. That is the quality of thinking which has been ripped out of the West Point military academy (in favor of the soft-brained study of sociology, for example), and replaced by the inherently incompetent practice of so-called "benchmarking" in the industries of the U.S. and western Europe.

Incompetents, such as the followers of Bertrand Russell, Norbert Wiener, and John von Neumann, believe, that science begins inside "pure mathematics," essentially mathematics of the brain-damaged variety called "the new math." They insist, as John von Neumann insisted, for economics, from 1938 on, that all economic processes can be reduced to matters of solutions for systems of simultaneous linear equalities. They insist, as Professor Norbert Wiener did, that human cognition does not exist, that there is no such thing as knowledge of universal physical principles, but only "information."

The key issue here, as for military policy, is that no universal physical principle ever could have been discovered by such so-called "mathematical methods." New universal physical principles are discovered by a mental process, called "synthetic judgment," "reason," or "cognition," which Wiener and von Neumann, like Immanuel Kant earlier, denied to exist. These principles, once discovered, are then proven by the kind of experiments which Riemann termed "unique." That is the only way in which they could be discovered, proven, and successfully applied.

In science, mathematics was developed, not as a by-product of business-style accounting practice, but as a way of measuring the effects of applying a newly discovered universal physical principle, and the technologies derived from such principles. This was the way in which the greatest modern mathematician, Kant opponent Carl Gauss, defined mathematics, as "the queen—i.e., the consort—of the sciences." The earliest known forms of mathematics are known to have been developed tens of thousands of years ago, by ancient astronomers and transoceanic navigators, who observed the regular angular changes of position of Sun, Moon, stars, and equinoxes, for example. They learned their mathematics, as the Classical Greeks, from Thales through Eratosthenes did, as Johannes Kepler did, from the stars, from the discovery of universal physical principles which order the regular procession of events within our universe as a whole.

But, today's madmen disagree

Today's madmen disagree with what I have just summarized. They insist, that no physical principle exists in this universe which contradicts what they have chosen to believe.

Others, who can not afford the luxury of our Anglo-American madmen's arrogant conceits, driven by the desperate threats of madmen such as the Thatchers, Bushes, Gores, and Blairs, have no choice but to seek out new physical principles which would give them an offsetting technological advantage. Rich fools, such as Clown Prince George W. Bush, seek to rule by spending money to buy power. Poor people, lacking the George W. Bush campaign's vast wealth, must use their natural advantage, their brains, instead.

Those who seek such new universal physical principles, if they are scientifically qualified, will find them. It is my information that some such principles and their appropriate application have been discovered in a number of relevant places. It is time for you citizens to wake up to the new realities coming down upon you now. Thinking may seem painful at first try, but keep trying and it becomes fun!

Nuclear nightmare of the Information Age

by Laurence Hecht

A variety of warnings and hints, both in and out of the printed literature, suggest that, following the attack on Yugoslavia, Russia is in the process of reconfiguring its strategic and tactical defense capabilities, to take account of the serious perceived threat from NATO forces. It is likely that the plan includes an emphasis on new types of directed-energy weaponry which will target the special vulnerabilities of U.S. and NATO forces, particularly their heavy reliance on computer and information-age technology both on the battlefield and in civilian sectors.

A signal piece to this effect appeared last spring, right after the NATO bombing of Yugoslavia, in an article by First Deputy Defense Minister Nikolai V. Mikhailov (*Nezavisimaya Gazeta,* April 30, 1999). Mikhailov proposed there that despite the unequal ratio of U.S. to Russian defense expenditures (279:4 by his calculations), it were possible

for Russia to defend itself against an attack by NATO forces. The key would be the principle of *assymetrical deployment:* "That it is more efficient and economical to exploit the opponent's weak side, than to try to develop one's own strong sides."[1]

Mikhailov is an expert in the industrial and technical side of Russian defense. In 1997, he received a State Prize of the Russian Federation "for projects on the creation and development of warning systems against missile attack, space control systems, and anti-missile defenses."

Two clues as to what he might mean by *assymetrical deployment* are as follows:

First, on April 29, one day before publication of the Mikhailov warning, President Boris Yeltsin had signed two decrees and one other document covering "the development of the nuclear weapons complex and a concept for developing and using *non-strategic nuclear weapons*."

Second, China's *People's Daily* reported on June 8 that, as part of a new Russian strategy which would "make limited nuclear attack possible," Russia planned to produce 10,000 miniaturized and super-miniaturized nuclear bombs, having an explosive power equivalent to one one-thousandth of the bomb dropped on Hiroshima.

The key to interpreting these and other hints is to recognize that the "big boom" effect of nuclear explosions is not necessarily the best way to harness the power of the atom for military purposes. Consider the implications of the miniaturization reported by *People's Daily,* for example. Nuclear explosive power is measured in ton-equivalence of the conventional explosive, TNT, used in dynamite. The bomb dropped on Hiroshima was equivalent to about 20 kilotons of TNT. One one-thousandth of that is 20 tons, not much more than the explosive power of ordinary bombs carried on aircraft, though a lot more compact. But also remember, there are other uses for nuclear explosions than blowing a big hole in the ground.

Take, for example, the already known case of EMP, which is not necessarily the most serious threat.

Melted chips, not melted bones?

It happens that one of the "side-effects" of atmospheric thermonuclear explosions is the generation of an electromagnetic pulse (EMP) which propagates spherically (in all directions), and is capable of inducing a current in any piece of copper or other conductive wiring that falls in its way. Back in the mid-1980s, there was a lot of concern over the effect EMP might have on the U.S. electricity grid. Electric power lines are open to the atmosphere, and act like a long antenna for gathering up EMP signals. One scenario had it that a single high-altitude bomb exploded over the central United States could wipe out the entire U.S. power grid. An expert study of the matter concluded that that estimate was excessive, but that an area the size of, say, California, might be affected by a single high-altitude detonation.

But shielding power lines is expensive, and nothing was done.

Today, 15 years later, there is new consideration respecting both the known types of EMP and other possible more effective, perhaps more precisely "tuned" means of electromagnetic energy generation. As a result of the progressive cheapening of production techniques for integrated circuit boards and related technology, we have experienced a proliferation of computers and micro-processors into almost every aspect of our economy. Though not as exposed as open-air power lines, the wiring in these little devices could act like an antenna to pick up the electromagnetic pulses generated by a thermonuclear detonation. Unlike the electricity grid, the tiny wires inside the microchip cannot handle much power. The lightest-duty wiring inside the typical house electrical system will carry 15 amperes of current, before tripping the circuit breaker. The wiring inside a microchip is designed for currents measured in milliamperes (thousandths of one ampere).

Thus, the vulnerability of the civilian economy to EMP or similar types of effects is vastly increased now, as compared to 15 years ago. An EMP or other directed-energy pulse, perhaps not of the power to knock out the electrical grid, might still wreak havoc. Imagine this scenario: The citizen wakes up one morning, to find the buildings are still standing, nothing's on fire, the house electricity is still on, and everything appears about normal. But soon he discovers that nothing works. The television doesn't turn on; the car won't start; the phone doesn't work; there is no e-mail because the PC doesn't boot up; there is no regular mail either, because the post office couldn't sort it. The bank can't function, and the credit cards don't work either—merchants can't verify the charges when the computers don't work. There isn't even a Dow Jones average anymore (well there's some good in every calamity).

The cyber-battlefield

That's one scenario, but there's more. The EMP effect is just one, well-known example of the sorts of effects that can be produced by harnessing the burst of high-density energy released in a nuclear detonation. Rather than *EMP-effect,* the term *directed-energy weaponry* is more appropriate to describe the sorts of devices Russian military planners may be considering for field deployment in the near term. The modern battlefield is entirely dependent on computerized systems of communications and control. Thus, even if the military's public assurances that their equipment is effectively shielded against the known types of EMP effects is true, what of the other types of directed-energy weapons, which an economi-

1. Rachel Douglas, "Russians Seek 'Assymetric' Advantages in Military Technology," *EIR,* July 16, 1999.

cally weak, but scientifically capable power will attempt to deploy when pressed to the wall? Generals, especially of the more powerful countries, are notorious for their preparedness for fighting the last war. The weaker side is more often the innovator. It happens that the Russians are experts in just this area.

Sil'notochnaya elektronika is the term used in the Russian literature (for which no direct equivalent exists in the West) for the capability to generate controlled, high-power pulses of electromagnetic energy. It includes things like explosive cathodes and other technology for high-current relativistic particle beams, energy storage and pulse compression technology, non-linear plasma devices such as the plasma focus, "explosive" magneto-hydrodynamic power generation, EMP simulators, and so forth. This was a top-priority area for Soviet applied physics for decades. An *EIR Special Report* from February 1988, before the breakup of the Soviet Union, examined the Soviet efforts in this area, with particular attention to the anti-personnel uses of directed energy devices.[2] A convergence of the *sil'notochnaya elektronika* with the Vernadsky-Gurwitsch tradition in biology[3] (stressing the role of the electromagnetic spectrum in living processes) suggested the possibility of "tuning" directed energy weapons in such a way as to destroy cellular or brain activity, without requiring the deposition of large amounts of energy. Such applications remain a possibility. But, the special vulnerability of the modern "cyber"-battle group to such new types of weapons may be the place to look.

Documentation

LaRouche and associates' earlier warnings

Lyndon H. LaRouche, Jr., "Non-Linear Radiation: The True Total War," *excerpts from remarks addressed to a conference in Munich, Federal Republic of Germany, Sept. 3, l987:*

During the span of the coming four to five years, almost certainly, a technological revolution in warfare will have completed its first phase. It will be more awesome than that which exploded over Hiroshima and Nagasaki back in 1945. The full electromagnetic spectrum, from less than 10 hertz into the gamma-ray region, will emerge as the arsenal which dominates the arenas of strategic and tactical conflict. The powers which first master this field, will have gained the potential military capability to dominate this planet. . . .

The exploration of technologies of electronic warfare has been under way since no later than the 1930s. This field has had increasing importance since the war-time development of radar, and has become more and more sophisticated with the development of more ingenious uses of increasingly powerful individual and coupled gyratons.

Until recently, most of the attention was concentrated on what were called the thermal effects, such as the destructive heating of targets irradiated with microwaves. It was only with great reluctance that Western nations recognized the importance of non-linear electromagnetic effects, in which thermal effects have an almost irrelevant, or merely subsidiary role relative to the crucial effect produced.

My estimate is, that in the West, such non-linear effects, such as electromagnetic solitons, began to be studied seriously from a military vantage-point, only during the early 1980s. Even today, much missionary work is needed to convince many working in the area of radio-frequency weapons, that the most significant effects are, predominantly, certain among the non-thermal effects of sometimes very complexly constructed, non-linear forms of such radiation. . . .

Lyndon H. LaRouche, Jr., "Electromagnetic Pulse Weapons Based on Non-Linear Effects: A Technological Revolution in the Order Of Battle," *excerpts from an address delivered at a conference in Paris, France, on Nov. 26, 1987:*

. . ."Radio-frequency weapons" is a misleading name, carried over from a pragmatic understanding of earlier stages of electronic warfare. For example, it was thought, mistakenly, that the use of microwaves as antipersonnel weapons depended upon the heating effects of such waves upon targetted material. Today, it has been shown that properly tuned electromagnetic pulses have mortal effects at levels of energy-deposit as low as two or three orders of magnitude below those required to kill cell-tissue by means of induced thermal effects. This comparison illustrates the importance of the term "non-linear effects."

The most important of the near-term applications of non-linear electromagnetic effects are in the domain of optical biophysics, either as strategic or tactical anti-personnel weapons, or to produce global effects within the biosphere surrounding those personnel. However, there is also the prospect of disintegrating non-organic material, as well as the disruption of apparatus, through the same class of technologies. In applying the notion of technological attrition to all such

2. *EIR Special Report,* "Electromagnetic-Effect Weapons: The Technology and the Strategic Implications" (Wiesbaden, Germany: Executive Intelligence Review Nachrightenagentur, February 1988).

3. "Gurwitsch's Non-Reductionist Biology," *21st Century Science & Technology,* Summer 1998; and "Gurwitsch's Non-Reductionist Biology, Part 2," *21st Century Science & Technology,* Fall 1998.

electromagnetic-pulse weapons as a general class, it is the principles causing all of the indicated range of effects which must be considered as a unit for purposes of shaping strategic doctrine. . . .

Michael Liebig, "Radio-Frequency Weapons: Strategic Context and Implications," *excerpted from a paper presented at conferences in the Federal Rpublic of Germany, France, and Italy, in 1987-88:*

The theme of today's *EIR* seminar, "RF Weapon Systems: Feasibility and Strategic Significance," certainly lies somewhat outside the currently dominant strategic debate. The matter looks rather exotic, and many strategic experts will view it as "music of the future." Before 1983, many of these same experts called SDI-related laser and other beam technologies "science fiction." We of the *EIR* in the United States and *EIR Nachrichtenagentur* in Europe have always focused our attention on qualitatively new scientific-technological and strategic trends. . . .

Our founder and contributing editor, Lyndon H. LaRouche, Jr., published a series of articles in *EIR* magazine on the scientific-technological, and stategic potential of RF technologies in the early spring of 1987. Since then, more articles on that topic by physicists, biologists, and strategic analysts have appeared in *EIR*. On Sept. 3, 1987, we held the first *EIR* seminar on RF weapon systems in Munich, West Germany.

It is obvious that the whole complex of RF technologies, precisely because of the vast potential for military application, is highly classified. Detailed information on RF systems is extemely scant in the public domain. Yet, we do know the scientific-technological *basics* of RF systems and their interaction with biological and other soft targets. While operational RF weapon systems may not yet exist as such, it can be stated categorically, that not just research, but development work toward operational RF weapons, is under way in East and West, especially in the East.

In March 1987, the Pentagon provided the following assessment of Soviet work on RF systems (*Soviet Military Power 1987,* p. 112):

"*Radio Frequency*. Recent Soviet developments in the generation of radio-frequency (RF) energy have potential applications for a fundamentally new type of weapon system that would degrade electronics or be used in an anti-personnel role. The Soviets already have or are working on much of the technology needed for such a system. . . . No significant technological obstacles stand in the way of a prototype short-range tactical RF weapon."

Editors' note: All the above excerpts are taken from the EIR Special Report, *"Electromagnetic-Effect Weapons: The Technology and the Strategic Implications" (Wiesbaden, Federal Republic of Germany: Executive Intelligence Review Nachrichtenagentur, February 1988).*

The Trilateral lunacy of world domination

by Michele Steinberg and Scott Thompson

Already last year, Lyndon LaRouche warned that the policies of the British-American-Commonwealth (BAC) oligarchy toward Russia—including the collapse of Russia's productive economy through liberal free-market reforms, as well as the orchestration of local wars and conflicts—were pushing a Russia deprived of in-depth war-fighting capabilities toward the use of *nuclear weapons* as its only remaining option.

To understand what is now happening in the Caucasus and Central Asia, one must go back to the 1970s, to the "soft underbelly" strategy of Madeleine Korbel Albright's mentor, Zbigniew Brzezinski, the first chairman of the Trilateral Commission, the institution created by the BAC to keep U.S. policy shackled to the British Empire.

Brzezinski was National Security Adviser for President Jimmy Carter from 1977 to 1980. But, the catastrophes of the Carter Presidency had been mapped out long before, at the 1973-75 meetings of the Trilateral Commission in Tokyo and Kyoto, Japan, and London and New York.

In the late 1970s, Brzezinski deployed the "Islamic Card" against the Soviet Union's "soft underbelly." Brzezinski also used the term "Arc of Crisis," referring to a geographic swath from North and East Africa, through the Middle East, into Turkey, Iran, Pakistan, Afghanistan, and into the Caucasus, to characterize the BAC's build-up of pseudo-Islamic fundamentalist networks against Moscow, and against any country in the Islamic world that was pro-development.

Contrary to the drivel from so-called strategic analysts today, the deployment of "Islamic fundamentalism" against Moscow was not a reaction to the 1979 Soviet invasion of Afghanistan, but rather, a geopolitical design of the BAC's Trilateral Commission dating from the early 1970s. This design went through several phases: the February 1979 overthrow of the Shah of Iran; the December 1979 Soviet invasion of Afghanistan, in reaction to terrorist and insurrectionary build-ups; and, throughout the 1980s, the Iran-Iraq War, which kept the region in a state of permanent destabilization.

Then came the Bush-Brzezinski-Thatcher crowd's 1991 "Desert Storm" war against Iraq, which tested the BAC's "new NATO" doctrine, which has kept the planet in a permanent state of low-intensity warfare. But, rather than "con-