clear reactions. This was published at that time by E.P. Velikhov, a top Soviet laser and fusion researcher, who is now one of the people in the Soviet Union who goes around the world and says that SDI is not scientifically feasible. Thank you very much, Mr. Velikhov.

In fact, I will relate a brief story which is interesting. I was at a fusion conference in Leningrad in the summer of 1981, and then visited the Lebedev Laboratory in Moscow, where they do a lot of their laser research. In the evening, I had dinner, I was invited by some Soviet scientists—I think I should perhaps not name names—but in any case, they told me over dinner, "Look, wouldn't it be a great idea to use lasers for ballistic missile defense?" This was in August 1981. And I looked at them, and thought, "Yes, probably it's a good idea, we better think about it fast." So, Soviet scientists have been thinking about this without any question in more detail and with more precision than we have in the United States for a longer period of time. Anybody who doubts that, should simply question some of your own scientists and ask them what Soviet scientists know about that from their own standpoint in scientific conferences.

One aspect of magnetohydrodynamic devices is so-called super-capacitors: Capacitors today can store about 100 joules per kilogram. SDI has now demonstrated capacitors that can store up to 20,000 joules per kilogram, so you can see energy storage is going to make some major steps forward. What that means for industry again, I think I do not have to elaborate.

New materials are being used for rocket nozzles that are flexible and can be moved in order, for example, to withstand very concentrated energies, and be used to move a battle station around.

A new type of gyroscope has been developed to replace the present type of gyroscope, based on fiber optics. This, of course, is another area in which, in fact, Japanese industry has a significant lead over other world industries, in fiber optics—not specifically with regard to gyroscopes. In fact, your space agency doesn't like gyroscopes, because there are some people who say that if you put a gyroscope in somewhere, it might be used for military applications.

I cannot go into more details, but I think it should be clear that what is implied in economic and technical terms by SDI research is broader than any similar research program in the past. Therefore, quite apart from all specifics, to jump into this at this point, I think is the right thing to do. More importantly, I would like to emphasize that there have been some people in our government who have themselves questions whether SDI might survive the Reagan administration. I think if you see the kind of research that is now going on, the kind of efforts that are now being made, it doesn't ultimately matter what happens after the Reagan administration. On these kinds of programs, I do not think there is any way of turning back.

LaRouche's 1982 SDI proposal

Lyndon LaRouche conveyed his thoughts in writing to the participants at the Tokyo conference.

Twenty-four years ago, Soviet Marshal V.D. Sokolovsky wrote his shrewd insight into the flaws of the U.S. ballistic missile defense program then being developed. He foresaw that high-speed interceptor rockets and related kinds of so-called kinetic-energy weapons could never provide an effective defense against offensive ballistic missiles. He foresaw that only by using what we described then as advanced physical principles, such as laser weapons, could defense obtain the superiorities in firepower and mobility needed to supersaturate a strategic thermonuclear offense.

It is a matter of physics principles and therefore, also valid for the United States, that a strategic defense based upon what are called new physical principles, will have at least a 10 to 1 superiority in firepower, mobility, and cost over a ballistic missile offense.

Many techniques for deploying beam weapons have been discussed, including the techniques of strategic defense which my associates and I first proposed in 1982. During my discussions with French military officials in 1982, those officials asked me if it were not true that what I was really proposing was not any single set of defense systems, but rather that I was projecting very high rates of technological attrition in defensive systems over the decade ahead. I responded that the French military's assessment of my proposal was correct. As rapidly as one set of defense weapon systems is deployed, work will begin to develop effective countermeasures against such systems. To overcome those countermeasures, improved defensive systems must be deployed.

The most critical feature of my 1982 proposal for a U.S. strategic defense initiative was my assessment of the economic feasibility of sustaining the costs of such a defense policy. A few, but not most of the military features of my proposal, were original to me. The Soviets have been committed to their own version of SDI since 1962. So, if we pursue SDI we can therefore concentrate on the economic benefits to our economies.

The starting point of my economic analysis is not unfamiliar to Japan. My standpoint is broadly identical to that of such exponents of the American System of political-economy as Alexander Hamilton, the Careys, and Friedrich List. opponents among economists therefore label me either a mercantilist or a neo-mercantilist. butions to economic science is the principles of physical economy first developed by Leibniz. bution to economic sciences is my use of the work of Bernhard Riemann to solve the problem of correlating measurable advances in technology with resulting rates of increase in the productivity of labor. at the center of my proposals for the U.S. Initiative.

It is this connection between the new technologies of SDI and increase of productivity in the economy generally to which I turn your attention now. connection between technological progress and productivity is demonstrated by comparing the potential population of so-called primitive societies, of about 10 million individuals at most, with the present population approaching 5 billions. This increase is due entirely to those kinds of modifications in human behavior which the past 500 years' associates with scientific and technological progress.

We can sum up the results of economic science by stating that the possibility of increasing the potential population-density of humanity depends upon conducting technological progress in an energy-intensive, capital-intensive mode. means that the amount of usable energy per capita and per square kilometer must be increased. portion of work allotted to capital improvements in land and workplaces must increase as a percentage of total work. example, without development of infrastructure and without increasing rates of capital investment per operative, no nation is capable of sustaining technological progress in agriculture and industry.

By economic science, we mean economic science as originally defined by Leibniz. ence, we might use the term used to describe the teaching of Leibniz's economic science in German universities during the 18th and early 19th century, physical economy. be recalled that Leibniz's founding of economic science was begun with his study of the principle of heat-powered machinery. economic system by Benjamin Franklin.

There are four principal factors correlating with increase of productive powers of labor. tion of capital goods must increase relative to production of household goods. supplied must increase, both per capita and per square kilometer. the relative coherence of energy supplies must be increased; fourth, technology, as Leibniz defined it, must be advanced.

We are at the verge of the greatest technological revolution in mankind's history. greatly increasing the volumes of usable energy, both per capita and per square kilometer, with emphasis in leaps in the levels of high energy-density cross-section, with increasing emphasis on the electro-hydrodynamics of plasma process, and the role of coherent forms of electromagnetic pulses in production, and on new qualities of robotics by means of which operators will be enabled to control production of such high energy-density characteristics.

Perhaps the best way of demonstrating the impact of SDI technologies on the economy is by considering the application of these technologies to the colonization of the Moon and Mars. Mars and the need for continuously powered flight by flotillas at one gravity between Earth orbit and Mars orbit, require the technologies of controlled thermonuclear fusion, of coherent electromagnetic pulses of very high energy-density, self-focusing effects, and of optical biophysics. dedicated types of parallel processing computers, in the megaflop range. We shall be greatly advantaged to have analog-digital hybrids of the quality indicated. takes such a colonization program seriously, we could begin colonization of Mars during the third decade of the coming century.

Such a target has already been recommended by a U. commission. Obviously on Mars, it is a much easier task to apply the same technologi-

Carlos de Hoyos

Lyndon LaRouche (left) and Uwe Henke von Parpart (right) are briefed by a staff member at the Tsukuba City, Japan's high-energy physics laboratory during a 1984 visit.

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es to such tasks as developing rich agro-industrial complexes in the middle of the great deserts of Earth.

to revolutionize the design of new qualities of cities in the more agreeable climates of Earth.

the Earth's food supplies can be produced far more cheaply, more abundantly, by energy-intensive industrial process methods aided by application of optical biophysics.

The connection between the technologies of an SDI system and space colonization technologies is so immediate that the research and development of one is nearly identical with that for the other.

be confronted by governments and industries in connection with SDI, is the question of assuring ourselves that this desired kind of spillover of technology into the civilian domain does occur.

through improvements in the technology of capital goods produced.

in capital goods, the greater the rate of investment in capital goods per capita, the greater the rate of increased productivity generally.

Thus, the buildup of the capital goods sector for SDI and space development is the most efficient mechanism by which such technologies are transmitted directly into the civilian domain.

on a scale significantly greater than that required from SDI and space requirements, and to cause the excess capacity to spill over rapidly into capital goods for civilian production. To ensure that this desired success occurs, we must adopt the policy of increasing greatly, the percentages of employment devoted to scientific and engineering occupations, while increasing significantly the percentage of national output devoted to capital goods production and infrastructure building.

A target of not less than 10% of national labor for employment in relevant science and engineering occupations and a doubling of present percentages of national incomes allotted to capital goods and infrastructure would be a good choice of targets for the coming 10 years.

We must shift employment away from emphasis on non-scientific services and redundant administrative and selling functions, moving these percentages of the labor force into either science and engineering or capital goods production. This requires, obviously, adjustments in education policies, and also in policies governing priorities in preferential tax rates and in flows of credit.

On condition that we inspire our populations to associate personal achievement with contributions in these directions, and that we educate our populations to cope with the new technologies I have indicated, we shall accomplish the desired victory of strategic defense over thermonuclear offense and we shall solve the principal non-military strategic problems of our planet.

If we adopt the proper policies, the creative powers of many millions of scientists and individual operatives will do the rest for us.

The Soviet science attaché responds

The following exchange took place between Mr. Synonov, the attaché to the Soviet embassy in Tokyo and Mr. Parpart, regarding the Soviet view of SDI.

Mr. Synonov: I want not to ask a question, but to give some remarks.

I thank Mr.

disagreement with his very bright, but incorrect detail, that the innovator of the laser, Mr.

not the only one, and not maybe the most important distortion and error of fact connected with him.

Now, the problem of the SDI and the policy of the U.S.S.R.

nov, attaché for science and technology of the U.S.S.R. embassy.

It is not only one fact where the audience heard distortion, and are missing some very important things about SDI weapons and U.S.S.R.

that I speak with an accent, but you can understand that English is not my native tongue.

There was much talk this year about the Soviet nuclear strategic threat.

government for developing our economy.

read the documents and understand this distortion.

is convenient for American propaganda, it talks about the very poor performance of our economy, science, and technology.

people or world opinion for the next military program American officials spoke about, [they talk of] our superiority in that or other technology.

Japanese participants of this meeting, that they understood this twist.

I want to quote one article from yesterday's *Japan Times:* It was about American Congressman Ed Markey's [D-Mass.] statement.

threat do not encourage Russian constraint.

get time, we always hear that the Russians could be pulling

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The great

It is merely