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The SDI and new technology crucial for spillover benefits to the economy

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When it is said that the new physical principles aspects of the so-called Strategic Defense Initiative (SDI) technology would spill over to greatly beneficial effect into the civilian sector of the economy, one meets often incredulous responses which reflect a widespread and therefore understandable ignorance of the rudiments of a little-known science founded by Gottfried Leibniz called physical economy.

As Alexander Hamilton, who was directly or indirectly a student of Leibniz, explained in his December 1791 "Report to the U.S. Congress on the Subject of Manufactures," the secret of increase of the productive powers of labor is the infusion of scientific and technological progress in the form of energy-dense, capital-intensive investments.

This was well understood, at least pragmatically, by all competent industrial managements into about the 1960s until the time that various kinds of utopians, including demented characters from the Harvard Business School precincts, began to replace competent industrial managers in the direction of our crucial industries and related sectors. But, nonetheless, although there was a pragmatic understanding of the role of technological progress through the mediation of energy-dense capital-intensive investments, the general theory of this was not understood, because the relevant people had been given no education in even the rudiments of physical economy.

Essentially, it's this. Let's look at scientific progress. In scientific progress, what we do essentially, is we conduct a crucial experiment which overturns some significant theorem of existing scientific opinion. Because of the so-called hereditary principle of a deductive theorem-lattice, which modern classroom physical science attempts to approximate, the overturning in a conclusive way of any essential theorem of that lattice, any consistent theorem of that lattice, compels us to reexamine the fundamental assumptions underlying the lattice as a whole—i.e., the axioms and postulates, so to speak, of existing physical science.

The modifications which are imposed upon these fundamental assumptions, these axioms and postulates, generates a new deductive theorem-lattice, which is a greater or lesser revolution in scientific thinking, affecting every theorem in science.

This is the prototype of scientific progress.

Now, look at the crucial experiment which is used to prove the new principle involved. This takes the form of a laboratory apparatus, often constructed in a properly organized university, in the machine shop of the relevant university or laboratory under the direction of the physicist or so forth who designs the experimental hypothesis. Once the crucial experiment has been perfected—that is, it's been proven several times over with more and more refined apparatus, taking into account features of design of experiment and instrumentation not previously considered—we have a finished scientific, experimental apparatus.

The critical machine tool shop

Now, if we walk that apparatus over to a good machine tool shop, (of the type which perhaps no longer exists in the United States, since we've been shutting down our machine tool industry and relying largely on imports from West Germany and Japan for our own so-called domestic product), if we take it to that particular hypothetical and formerly existing machine tool shop, the scientific apparatus now takes the form of a basic feature of design of a machine tool.

That machine tool, then supplied for an application, that is, designed to be applied to a certain kind of application in manufacturing and so forth, becomes the means by which the product of labor and industry is quantitatively and qualitatively improved. The transmission of the knowledge associated with the scientific revolution, to the mind of the people running the plant and as operatives in the plant, is more or less the completing feature, which gives us a fuller picture of what happens in scientific and technological progress.

It is also to be noted, as another feature of physical economy, that generally speaking, the improvement to the effect of a more capital-intensive, more energy-intensive basic economic infrastructure, is the essential environment which is required to make possible the success or realization of technological progress transmitted, say, from the scientific apparatus through the machine tool shop into the increase of the productive powers of labor in the industrial setting.

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So, therefore, without an increase in the basic economic infrastructure's capital intensity, energy-density, we cannot for long absorb improvements in technology efficiently, in the economy, to effect significant net increases in the productive powers of labor.

The SDI revolution in production

Now, it happens that the SDI-related technologies, referring essentially to new physical principles and to the apparatus needed to support the application of new physical principles, represent a revolution in production, to take a narrow view of the matter.

Essentially, what we're doing, is we're increasing the energy-density applied to a target, whether a military target or a target of work application, at the same time that we're increasing the coherent organization of the application of power by means of lasers or other electromagnetic devices.

This means that we can, for example, locally heat a work target area to above the point at which tungsten is not only boiled, but is boiled into its plasma state. Obviously, at the point we reach that kind of application, we have burst a barrier in physical chemistry, applied physical chemistry, and we have a new scale of production.

This is, of course, all closely related to thermonuclear fusion, confined thermonuclear fusion processes, and the combination of the two, the new electromagnetic applications centered around lasers and kindred devices, together with controlled thermonuclear fusion magnetic confinement control, is an entirely new conception of production, which, once developed, will spread rapidly.

The development of new types of ceramics, and new types of materials, and all these kinds of things flow from it.

Targeted investment tax credits

Now, finally, on this subject, before coming to a theoretical note to be appended: The crucial factor in making this kind of spillover work, is, first, we require something like an investment tax credit program of the type we had under the Kennedy administration. Lowering the capital gains tax does not foster technological progress under conditions, particularly, where interest rates are much higher than average rates of industrial profit.

Lowering capital gains rates under those conditions is insane, if you think, by doing so, that you're fostering economic growth. You must have the tax benefit much more targeted, it must be targeted to the specific kinds of investment you desire. In other words, the effect must be to increase profitability, and capital gains related to profitability in industrial and agricultural and infrastructural enterprises, not in services, administration, or financial speculation.

We also require increased energy. That means today that what we really require is a production line, virtually, a generation of new, highly safe, nuclear plants of the type associated with the high temperature gas-cooled reactor in Europe. We should probably produce these in something over 100 megawatt to 200 megawatt capacity, that is, smaller units, in order to put up multiple units, which can be much simpler and much safer, etc., than anything we've done generally so far. We have the technology.

So, if we supply energy, if we increase the effectiveness of our rail system, which is, next to water, the cheapest form of freight and can be the quickest relative to cheapness, and if we improve water management generally, crank up our school system in a manner consistent with the technological revolution, improve the urban industrial infrastructure, we can have a great rate of growth.

This means focusing our resources through tax, fiscal, and related policies, upon those areas in which the greatest leverage is obtained.

A scientific appendix

All I have said involves a conceptual problem, even from the standpoint of today's qualified physicists.

The commonplace, accepted mathematics of the classroom today, is of the deductive theorem-lattice type we've described. That is, it is the objective of classroom and related mathematical physics, to reduce physics to a fully consistent deductive theorem-lattice structure. We never quite do that; but that is the objective of refinement. In the course of trying to do that, we have these troublesome minor and major, and middle-sized scientific revolutions, which upset the process, so that we have a new scientific view coming on faster than we can try to perfect to consistency the old, generally accepted view.

The development problem that arises is that on the one hand, as a result, as an effect, we are measuring increases in the productive powers of labor. I shan't here go into the complexities of how that measurement has to be made. However, it's obviously a physical measurement, a measurement of physical productivity.

On the other side, as to the ultimate origin in the causal sequence or function, general function, the source of the increase is discoveries which are made by individual human minds, by the creative processes of individual human minds, which, ostensibly, is some sort of metaphysical spiritual agency.

So we have a metaphysical, spiritual agency, from one point of view at least, which is causing, through the mediation of the machine tool sector and education, an increase in the productive powers of labor, i.e., a physical effect.

So we have what are ostensibly non-physical causes causing these much-desired physical effects.

A deductive mathematics cannot comprehend this kind of process. The ideas of ontology intrinsic to the deductive method, defines physical in one sense, a conventionally accepted sense today, and defines mental in a completely different sense, in the sense accepted today.

Now it happens that both of these assumptions are mistaken. Nonetheless, both are consistent, since Descartes, and actually since Aristotle, with a deductive method. So, therefore, without going to a non-deductive method as a replacement for the accepted mathematics of classroom mathematical physics today, we cannot develop an effective comprehension of this causal relationship between scientific progress and increase in the physical productive powers of labor.

This can be solved from a different standpoint in mathematics, if we abandon the standpoint of deductive mathematics for a mathematics which is based on what is called constructive geometry. And if we pursue the line of constructive geometry's elaboration which can be traced through fellows such as Nicolaus of Cusa, and Leonardo da Vinci in the 15th century, through and beyond Leibniz in the 17th and 18th centuries, into the work of Riemann, Weierstrass, and so forth in the 19th century, we have a comprehensible approach which demystifies the kind of causal relationship I've indicated.

So, without going into great detail further on the point here, I merely wish to identify the existence of a solution that is a method by which this very important connection is effectively demystified.

So this is the problem. On the one hand, there is a lack of pragmatic understanding today of the manner in which technological progress is effected. This lack of pragmatic understanding of the problem is a reflection of the replacement of the old-fashioned competent industrial managers, who ran the economy during and immediately following World War II, by the Harvard Business School types of mystics.

The second level, beyond the pragmatic level, is that physical science as commonly taught in the classroom, and certainly economics as commonly taught in the university classroom today, prohibits any profound comprehension of the causal relationship I've identified. And my point on this note is simply to indicate there is a solution to that which is elaborated in other locations.

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—Lyndon H. LaRouche, Jr.

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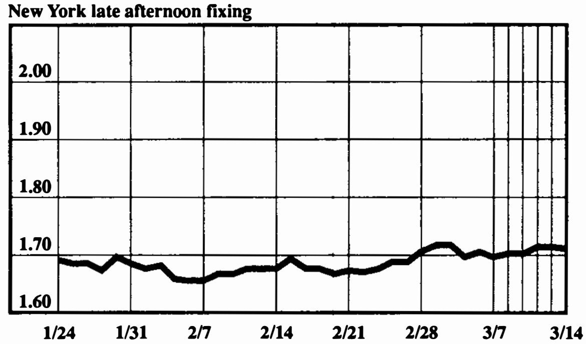

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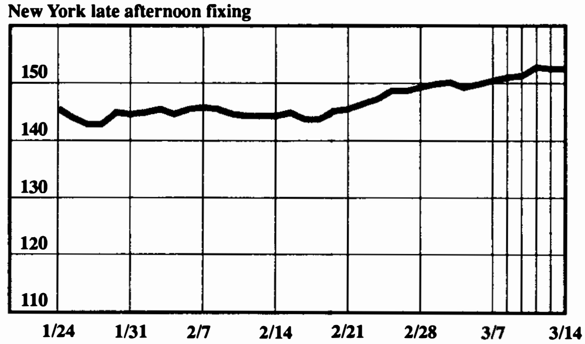

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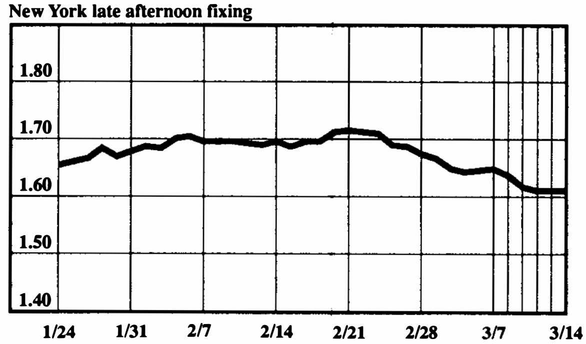

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