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A GLOBAL SYSTEM GROWING ITSELF TO DEATH—AND WHAT WE CAN DO ABOUT IT

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The underlying purpose of today's global economy, most assume, is to transform natural resources into a continuously growing quantity of goods and services for human consumption. Even when people acknowledge the existence of myriad social and environmental problems such as widespread poverty, climate change, extinction of species, and the increasingly unequal distribution of income and wealth, they fail to see economic growth as a fundamental cause of these problems. In fact, many propose that we can "grow our way" out of serious social and financial challenges. Because they see growth as beneficial, they do not recognize that it makes "solutions" such as recycling and driving hybrid or electric vehicles ultimately ineffectual.

Any informed student of systems thinking recognizes that such strategies eventually fail because they merely treat symptoms. They do not cure root causes. On the contrary, in time, these actions may actually worsen our underlying social and environmental problems. For instance, the availability of recycling may boost consumerism. Indeed, our problems will not go away until we discover that unlimited growth cannot be the primary goal of economic activity and act on this discovery. Society must learn to run an economy that enhances human well-being while ensuring that all life on Earth, both human and non-human, flourishes indefinitely.

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To develop an economy that benefits Earth and its inhabitants, we need

- a good understanding of the state of our current economic system,
- a clear vision of the sustainability that must become the goal of our future economic system, and
- a willingness to take small steps to identify and remove the obstacles we encounter on the path to get us from our current economic system to the future system.

To achieve these goals presupposes that we identify the assumptions about reality that underlie our thinking. It also requires that we understand how we got to where we are today. Understanding how we arrived at this point allows us to make informed decisions about our economic activity and proceed wisely to develop a sustainable future.

Like performers in a jazz group, we have no full-blown score that shows us precisely what comes next. We do, however, have the ability to examine the past, consider the present, and create a viable path to a sustainable future.

The Origin of Belief in Economic Growth

How can we get to the core of the challenges that face us? How do we begin to make a significant difference? One place to start is by understanding and thinking carefully about the underlying assumptions that gave us economic growth as a viable business strategy in the first place. Adam Smith and the first generation of classical economists originally proposed the capitalist economic system as an answer to the question, "What is the best way to conduct economic activity so as to increase 'the wealth of nations'?" Their concern was how to secure national wealth. Their focus was on providing an alternative to the 17th- and early 18th-century mercantilist nations' efforts to amass precious metal reserves through conquest and one-sided trade surpluses. Early classical economists advocated gaining national wealth instead by encouraging industrial employment through the manufacture of and trade in products and commodities. In other words, they saw a nation's economic strength in its productive employment and trade, not in vaults filled with dubiously acquired stores of gold and silver.

These economists put less emphasis on growth per se than on the social and legal conditions they saw as prerequisites to innovation, risk-taking, and investment. Thus, Smith and his peers argued that market exchange was superior to feudal custom as a basis for conducting economic activity. They also believed that manufacturers and traders should privately own the property and equipment they used

in their enterprises. In this way, capital that had previously been locked up in the "commons" on the feudal manor would reach entrepreneurs eager to invest it in novel ways.

Only long after Adam Smith did economists shift their attention to, among other things, growth in the human economy. To some extent, this shift was a response to the unprecedented expansion of the human population that began after the onset of the fossil fuel–enabled industrial era in the early 18th century. Along with that growth came cycles of boom, depression, inflation, deflation, unemployment, and financial instability. These events prompted European and American economists by the first half of the 20th century to develop so-called macroeconomic models to explain patterns of economic activity in the aggregate, as opposed to the microeconomic models of market and price behavior of individual consumers and firms that had been the chief concern of economists in the previous two centuries.

After the 1930s, government policy makers were using macroeconomic models and tools developed by John Maynard Keynes and other economists to deal with economic cycles, price-level fluctuations, and employment instability. Although the success of these models seemed to be confirmed by the long period of sustained economic growth in the Western democracies from the 1940s to the end of the 20th century—a welcome change after the long depression of the 1930s—it no doubt contributed to the environmental problems we now face, giving rise to the dilemma of today's policy makers to come up with ways to achieve "prosperity without growth" (Tim Jackson, *Prosperity Without Growth?* Sustainable Development Commission, U.K., 2009).

By the late 20th century, then, the relatively small-scale and competitive industrial economy had been transformed into the vastly larger-scale, more centralized, and more monopolistic global economy. At the same time, the question of how to increase a nation's wealth was replaced by an answer: transform resources into an ever-growing stream of goods and services for human consumption, without limit.

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The Impact of Newtonian Thinking

The way modern humans have thought about the economy derived mainly from Western religious and scientific cosmology passed on through educational, religious, and social institutions from the 18th century to the present day. Particularly important in shaping economic thought has been the mechanistic view of reality articulated by that most admired of Western 18th-century intellectuals, Isaac Newton.

Central to Newton's cosmology is the idea that reality in this universe is material "stuff" consisting of independent objects that connect only through external force. This force is of course known as "gravity." Economists after Adam Smith's time adopted the idea that the independent behavior ascribed by Newton to material non-human systems in the universe applied equally to all human, social, and living systems on Earth. Thus, *homo economicus* is an autonomous being motivated solely by his or her desire to maximize self-interest through winner-take-all competition and accumulation of material wealth. A social setting in which humans work, such as a business, achieves results that presumably can be measured as a linear sum of its parts. Holding the human economy together in a coherent way is an external force resembling gravity. Borrowing on Newton's ideas, Adam Smith described that force as "an invisible hand" that produces the "greatest good for the greatest number" when all individuals independently pursue their self-interest through economic exchanges based entirely on prices set in free markets.

Growth was not a feature of Newton's universe, but it became an inevitable part of modern economic thought as people increasingly viewed the goal of market exchange to be the accumulation of material "stuff" measured with abstract financial quantities. Having shifted the goal of economic activity from real, tangible things to abstract financial quantities, the race to grow without limit was on. After the early 19th century, more and more people began to take for granted what they presumed were limitless sources of power delivered by coal furnaces, internal combustion engines, and coal-generated electricity. They rushed to use such power to strip forests, mine minerals, produce steel rails and high-rise girders, travel great distances, and till millions of acres. They believed that inexhaustible resources would give them the necessary means to achieve unending growth. The adverse environmental impact of this growth was, for the most part, out of sight—either not yet readily visible or located far from major population centers.

Eco-philosopher Thomas Berry powerfully described this devastating transition in human history:

> In our times . . . human cunning has mastered the deep mysteries of the earth at a level far beyond the capacities of earlier peoples. We can break the mountains apart; we can drain

the rivers and flood the valleys. We can turn the most luxuriant forests into throwaway paper products. We can tear apart the great grass cover of the western plains and pour toxic chemicals into the soil and pesticides onto the fields until the soil is dead and blows away in the wind. We can pollute the air with acids, the rivers with sewage, the seas with oil—all this in a kind of intoxication with our power for devastation at an order of magnitude beyond all reckoning. We can invent computers capable of processing ten million calculations per second. And why? To increase the volume and the speed with which we move natural resources through the consumer economy to the junk pile or the waste heap. Our managerial skills are measured by the competence manifested in accelerating this process. If in these activities the topography of the planet is damaged, if the environment is made inhospitable for a multitude of living species, then so be it. We are, supposedly, creating a technological wonderworld (Thomas Berry, *The Dream of the Earth*, Sierra Club Books, 1988).

A New Cosmology

Ironically, the Newtonian cosmology that legitimated this "wonderworld" in modern economic thought underwent a radical transformation in the late 19th and early 20th centuries, just as the social and environmental costs of sustained economic growth were beginning to appear on the horizon. This new cosmology embodies a view of reality that itself has the potential to help answer the question of how to run a sustainable economy. According to this worldview, sometimes referred to as "the universe story," our universe originated 13.75 billion years ago in an infinitely dense, small, and hot singularity—the "big bang"—containing the source of all the matter and energy that ever will exist. Since the "big bang," the universe expanded continuously and thereby became host to an evolving array of increasingly complex forms such as sub-atomic particles, galactic clouds of hydrogen and helium atoms, stars, elements of the periodic table, molecules of water and amino acids, planets circling stars, Earth, and Earth's life forms—ranging from prokaryotic microbes to human beings.

Consider the view of reality inherent in this cosmology. First, reality is not "stuff" put here all at one time in its present form. Instead, it is a continuously evolving process, or system, that itself produces all the forms we perceive around us. Moreover, that process embodies a small number of patterns that connect all matter and energy in relationships from which everything emerges.

Three features seem to permeate the universe:

1. Everything is connected to everything else. Nothing is independent. "The universe," Thomas Berry remarked, "is a communion of interconnected subjects, not a collection of independent objects."
2. Every form that has ever emerged from the evolutionary process is imbued with a unique self-identity, or "inwardness," that embodies the form and enables it to multiply and expand its influence.
3. The universal system of interconnected, self-defining forms sustains itself and flourishes indefinitely by continuously generating increasing diversity, or differentiation, and thereby preventing any one form's growth from extinguishing other forms (see Brian Swimme and Thomas Berry, *The Universe Story*, Harper Collins Publishers, 1992; Joel Primack and Nancy Abrams, *The Journey to the Center of the Universe*, Riverhead Books, 2006).

For nearly 14 billion years, relying on these three features, the universe has evolved, using an unchanging budget of matter and energy. All the increased complexity and differentiation intrinsic to the evolution of the universe has been accomplished with the same quantity of stuff—or, as an economist might say, "at zero marginal cost." The universe is sustained by the continuous generation of newness, using a fixed amount of matter and energy to do so.

We humans have posed the first threat to this sustainability by using our unique powers of technology to consume from Earth's fixed supply of resources and create waste faster than Earth can regenerate the waste, thus depriving resources to other life forms. This consequence of modern economic growth would not occur, however, were the human economy able to achieve prosperity and sustainability simultaneously, by consuming Earth's resources at a steady rate that does not threaten the ability of other life forms to thrive. How to achieve that goal is the most important question of our time, perhaps the most important question humans have ever faced.

As revealed by modern science, the behavior of the universe suggests the best way to run an economy intended to support human well-being while ensuring that all life on Earth, both human and nonhuman, flourishes. When we acknowledge the interconnectedness of all life on Earth and when we grasp the current state of our life-denying global economic system, we are poised to identify constructive actions that will lead to a viable future state.

Economic Growth and Nature's Systems

Anthropologist and systems thinker Gregory Bateson once commented, "The major problems in the world are the result of the difference between the

way nature works and the way man thinks" (as quoted by Bill Devall and George Sessions in *Deep Ecology: Living as if Nature Mattered*, Peregrine Smith Books, 1985). A viable future state requires that we see that nature works through a series of interconnected feedback loops that prevent any species from growing without limit, ensuring that life can flourish indefinitely, despite Earth's fixed supply of resources. Were it not for such checks on growth, population booms would lead to crowding and mass extinctions, thus reducing the number, diversity, and resilience of the planet's flora and fauna.

By contrast, "the way man thinks" is to assume that Earth can supply all the resources to sustain endless expansion of the human economy. In past centuries, when humans grew steadily in number, we did not seriously threaten the health of the planet. Since the Industrial Revolution, however, and especially today, the human economy has consumed Earth's resources at a pace that is causing environmental distress and the extinction of other species to a degree unprecedented since the extinction of the dinosaurs some 65 million years ago. When humans use our unique powers of language and technology to circumvent nature's ways of constraining growth, and when we engage in unlimited consumption of Earth's fixed, finite resources, our behavior compromises Earth's capacity to sustain life. If this unchecked growth continues, we may be jeopardizing the sustainability of our own species.

Conditions for Growth

The dedication to growth is rooted in two conditions that profoundly shaped the course of the industrial economy for the past two centuries. One condition is the discovery and ever-increasing use of fossil fuels—coal since the late-eighteenth century; oil since the mid-nineteenth century; and natural gas since the late-nineteenth century. Without these fuels, the massive extraction and transformation of Earth's resources into products for human consumption that has characterized the modern industrial economy would have been inconceivable. But helping drive that enormous consumption of resources was a second condition: the development and nearly universal use in the past century of abstract financial concepts to describe, explain, and direct economic activity.

When we view economic activity through the lens of financial numbers such as profit, cost, income, and GDP, it becomes a quantitative abstraction, completely separated from the concrete activities that produce such numbers. Indeed, corporations are seldom held accountable for the true social and environmental costs of their actions, including polluted air and rivers, toxic food, scarred landscapes, scarce or tainted water, discarded human lives and communities. Seen in this light, it is hardly an exaggeration to say that the modern industrial economy has been growing itself to death.

The rate of economic growth, especially in Western capitalist economies after the late 19th century, was also greatly accelerated by the use in limited-liability corporations of long-term debt and equity instruments. With access to large amounts of financial capital, companies produced—and consumers consumed—at higher rates than would otherwise have been possible. Since the early 20th century, financial capital has grown faster than physical capital (John B. Cobb, Jr., "Landing the Plane in the World of Finance," *Process Studies*, Vol. 38.1, Spring-Summer 2009). This discrepancy gave global financial corporations the monetary wealth with which to acquire and control large industrial corporations.

As a result, a small number of individuals in the financial sector came to own and control an increasingly large share of the economy's monetary wealth. To a much greater degree than ever before, inequality in the distribution of wealth increased rapidly. The predictable rise of political influence exercised by those at the upper end of the wealth distribution is now enabling political power in Western society to shift from popular democratic majorities to plutocratic minorities.

A Piecemeal Approach

Reinforcing this shift in power is our tendency to accept the growth of enormous corporations and to delegate virtually all of our economic decisions and fulfillment of our physical needs to them. As the writer, agrarian, and land steward Wendell Berry has said, "Most people in the 'developed' world have given proxies to the corporations to produce and provide *all* of their food, clothing, and shelter [and] . . . to corporations or governments to provide entertainment, education, child care, care of the sick and the elderly, and many other kinds of 'service' that once were carried on informally and inexpensively by individuals or households or communities" (Wendell Berry, "The Total Economy," in *What Matters?: Economics for a Renewed Commonwealth*, Counterpoint, 2010). Large corporations and governments thus capture vast financial wealth and political power while providing, on their terms, almost all the goods, services, and jobs that shape our lives.

Given the hardships and inequities that this growth has created, it is surprising that popular public opinion about national and global economic policies supports the relentless economic growth that financially benefits a select few. Presumably, this paradox derives in part from the influence that large business and government institutions wield over education and the public media. Also, the public's dependence on products, services and jobs created by

those institutions—and our seemingly unending appetite for consumer items—helps make us complicit in the global growth strategy.

Thus, in response to our deepening environmental crisis, rather than reining in large growth-oriented institutions, most of our strategies have focused on piecemeal approaches such as recycling waste, buying plug-in electric and hybrid automobiles, installing solar panels on rooftops, creating vegetable gardens in abandoned urban spaces, and grinding worn-out running shoes into material for making playgrounds. While environmentally friendly practices are commendable in their own right, they address symptoms, not the fundamental problem of inexorable economic growth.

A Positive Future Economy

The following steps suggest ways we might solve our economic problems and repair the current destructive global economy that is based on "the way man thinks." These steps propose a positive future economy based on "the way nature works."

1. Take back what Wendell Berry calls the "proxies" we have given over the years to corporations and governments to fulfill all our physical and economic needs. This implies consuming less of everything and having each community become more self-sufficient and less dependent on outside institutions for necessities such as food, clothing, shelter, recreation, education, and healthcare. In short, take back global by going local.

2. Produce and trade more of what we consume locally and import less from the outside world by carefully planned programs to promote import substitution. This creates more local jobs and more local opportunities to invest local savings.

3. Delegate to outside corporations and to regional and national governments only those economic activities that cannot be provided effectively in the local community. Then initiate programs to steadily improve the local community's ability to provide those activities.

4. Markets do well at defining prices for reproducible, homogeneous, fungible commodities but not for defining values of heterogeneous, nonrenewable, unique species. Most economists after Adam Smith and David Ricardo ignored this fact. Thus, modern economists take for granted that markets will set prices for land and labor as though they were fungible commodities. They increasingly regard Earth's natural resources, human labor, and life itself as commodities to trade. This idea must end.

5. Modern science tells us that reality is relationships and process, not "stuff" to mechanically collect, assemble, and accumulate. But humans have yet to learn that their well-being requires them to emulate in their social, business, and economic organizations the patterns of relationships found in nature, not the mechanistic patterns so pervasive in present-day financial management. To that end, people managing economic processes in the workplace must recognize that "cost" is a function of how they design human relationships in those processes, not a financial quantity that they control by changing the scale of those processes and the speed at which the processes transform inputs into output.

6. Endless growth in the human economy makes it impossible for Earth's remarkable life system to flourish over the long run. However, almost all present-day programs to promote "sustainability" or "sustainable development" fail to question the assumption that growth is a necessary condition of human economic activity. Thus, they do no more than treat symptoms of the underlying disease; they do nothing to prevent the disease itself. And by simply alleviating, temporarily, some of the adverse consequences of growth, they avoid tackling the fundamental problem, which is to produce a condition of long-term sustainability in a context of no growth.

If we should continue to pursue unlimited economic growth, the unanticipated consequences may exceed our most fearful imaginings.

7. Do not look to universities or academic researchers for answers to the social and environmental problems that we now face. Academic institutions are firmly entrenched in the status quo.

Undoubtedly no one seriously believes that the defining feature of the human economy should be the destruction of life. And yet today our economic activity is destroying Earth's capacity to support life. To alter this condition, we must thoughtfully scrutinize our reasons for advocating continuous growth in production and consumption. If we should continue to pursue unlimited economic growth, the unanticipated consequences may exceed our most fearful imaginings.

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