

Your Food Systems: Are They Secure?ⁱ

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Most Americans probably don't give much thought to the security of their food systems. They may have heard or read something about our food systems being an easy target for terrorists. However, most probably believe, with some justification, that such an attack would have no more effect on them personally than did the terrorist attack on the World Trade Center. A disruption of our food systems might create a scarcity of some products, higher food prices for a while, or some other temporary inconvenience. But Americans in general can depend on having an adequate quantity and variety of safe and healthful foods, readily accessible at a reasonable cost – so we are led to believe. Food security may be a concern for people of less developed, weaker nations, or maybe even for developed nations that lack an ability to produce food. But, we have the most productive economy, the most powerful military, and the most productive agriculture in the world; surely, our food systems are secure.

In the longer run, we should be able to count on our leadership in technology, particularly biotechnology, and our favorable climate and fertile farmland to ensure that Americans will always have plenty of food. The agricultural establishment, including most farm organizations, agribusiness corporations, government agencies, and even agricultural colleges, constantly *reminds* Americans that they have the most abundant supply of safe and healthful food, at the most reasonable cost, of any people of the world. We need only continue to support our current high-tech, industrial food systems to ensure that Americans continue to be well fed, they say. The agricultural establishment does not want Americans to raise questions about their food systems, including questions of food security. Once Americans start questioning, they might start discovering facts about the American food system in total that the agricultural establishment simply cannot afford to have revealed.

For example, they might discover that we cannot ensure our continued access to food, anymore that we ensure our continued access to oil in today's global economy. Ultimately, we will find that the costs of ensuring access to global resources, including fossil energy and food energy, by military means is simply too high, both in terms of dollars and in terms of human life. We simply cannot continue to spend hundreds of billions of dollars more than U.S. taxpayers are willing or able to pay to ensure our access to energy. To do so risks following the lead of the Soviet Union by destroying its domestic economy to support its military. If we were to become as dependent upon the rest of the world for our food as we are to day for our oil, how secure will our food systems be?

If American consumers start asking questions, they might also discover that the giant global corporations, which increasingly control both global energy supplies and food supplies, have no permanent allegiance to any particular nation. These corporations are owned by stockholders from all around the world who are motivated primarily, if not solely, by maximum returns on investment. These corporations will produce wherever in the world their production costs are

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lowest and will sell wherever in the world that prices are the highest. These corporations are not people. They have no families, no friends, no communities, national citizenship, and increasingly, no national loyalty. If these corporations come to believe they can get a higher return for their stockholders by investing in more rapidly growing economies, such as India and China, they will invest in India and China rather than in the U.S. If the people of Europe or Japan are willing to pay a higher price for food, they will sell to the Japanese and Europeans, rather than Americans. U.S. farmers are no longer the lowest cost agriculture producers in the world; the land and labor costs are far higher than other food producing countries, such as South America or China. With transnational corporations increasingly in control, how secure are our food systems even today?

Even more important for the future, sometime within the next decade, global oil production is destined to peak, and afterward, it will simply be impossible to produce enough oil to support continuing growth in the industrial economies of the world. After the peak, global oil production is destined to decline by an average of 2-3% per year for at least the next 50 years. Even if the largest oil field in history were discovered next year, which is highly unlikely, it would not reach peak production for another 30-40 years. The industrial revolution was fueled by fossil energy, with the last century of industrial growth fueled primarily by petroleum, by oil. The peak in oil will be followed by peaks in other fossil energy sources – natural gas, oil sands, oil shale, uranium, coal – in fairly rapid succession, as they are inherently inefficient substitutes for petroleum. And, each new alternative will be more costly, producing less net energy, at best, only slowing the rate of decline in total energy availability.

The impacts of “peak oil” will be felt not only in transportation and manufacturing but also in agriculture, as the industrial model now dominates agriculture as well. American agriculture currently uses somewhere between one and three calories of fossil energy for each calorie of food energy it produces, depending on who is doing the calculating. Food processing, distribution, retailing, and preparation are even more energy intensive, resulting in the use of about ten calories of fossil energy for each calorie of food produced by the American food system as a whole.

In addition, as food systems have become global in scope, all industrial nations, including the U.S., have become increasingly dependent upon food imports from other nations. U.S. farmers are no longer the lowest cost agriculture producers in the world; their land and labor costs are far higher than costs in other food producing countries, such as South America and China, and environmental regulations are more restrictive in the U.S. than in many other countries. As global food corporations have found agricultural production to be more profitable in less developed nations of the world, they have moved their agricultural operations to those countries, leaving the industrial nations increasingly reliant of food imports. The U.S. is now on the verge of become a net food importing nation for the first time in more than fifty years. And, as we become increasingly reliant on food imports, our food systems become increasingly dependant on fossil energy and on the civility of global society. How secure can our food systems be?

But, how much food security do we really need? Surely, no one would suggest that we should return to self-sufficiency where everyone produces his or her own food. The inefficiency and inherent costs for such systems are simply too high. Neither is there any real need to return to

community self-sufficiency or even national self-sufficiency, where farmers meet the food needs of the people of their respective communities or nations. Specialization and trade have real and important benefits at local, national, and global levels. And, we need not produce our own food or buy only food produced within our own communities or nations to maintain food security. Food security simply depends upon our maintaining the *freedom to choose* – to choose when, where, and from whom we acquire our food. When we lose our freedom to choose, our food is no longer secure.

Food security is found in food sovereignty. Sovereignty means being free from outside control, free to exercise power and authority for oneself – free to choose. Sovereignty does not imply independence, isolation, or self-sufficiency. Independent people have no need or desire to receive help or support from anyone else. But, sovereignty certainly does not imply dependence, which suggests being under the control of another or finding it necessary to trust or rely on another for support or help. Instead, sovereignty implies *interdependence*, trusting and relying on others for help and support as a matter of choice, not of necessity – being free to choose.

Independent people have no relationships with others. They are protected from potential exploitation, but they also sacrifice the benefits of positive relationships. Dependent people relate to others out of necessity. Thus, they are subject to potential manipulation and exploitation by those upon whom they depend. Interdependent relationships are relationships of choice. They are mutually beneficial relationships and exist only so long as both parties benefit, each being free to relate or not to relate as they choose.

For Americans to have true food security, we would have to be free to choose whether we buy food produced on the other side of the world, or instead buy food produced in our own community or own nation. We would know where our food comes from and who produced it. We would be free to choose whether we buy food produced by some a corporately controlled industrial agricultural operation that is driven by maximum profits and growth, or instead buy food produced by local family farmers who care for their land and care for their neighbors. If we had food security, people would be free to choose to pay the full price of food, rather than buy from those who *externalize* many of their costs by polluting the environment, eroding the land, exploiting their workers, or pressuring their suppliers, including farmers, to adopt extractive and exploitative practice. We could choose to buy food that was produced sustainably, food that meets the needs of the present, but also leave equal or better opportunities for the future.

If we had true food security, all Americans, including those with the lowest incomes, would be free to choose good food. All people, not just the middle-class and above, would have a sufficient quantity and quality of safe, nutritious, wholesome foods readily available at affordable prices year round. Food security doesn't mean that people with lower incomes are free to choose the same level of convenience or ease of preparation that people with higher incomes can afford; it simply means they have a right to *food* that is as *good*. On average, more than 80% of food costs in the U.S. are paid for processing, packaging, transportation, advertising, and other things that make food more convenient or attractive. While not everyone might be able to afford the convenience, even those with the lowest incomes could afford the food, particularly with existing food assistance programs. However, people with low-incomes today do not have the freedom to choose good food because they don't have access to good locally produced food nor

do most have the knowledge or ability needed to process, prepare, and store food for themselves. Food security is as much about the capacity of individuals to make different food choices as about providing them with choices. In times of crisis, even the middle-class and the affluent may need to be willing and able to acquire much of their food locally and to prepare it from scratch.

In fact, most Americans today do not have food sovereignty because we are not free to choose. We loudly proclaim our independence, our freedom of speech, freedom of press, and freedom to look, act, and live as we choose. Yet, we are hopelessly dependent on others in many of the most important aspects of our lives. We depend on others, primarily large public-owned corporations, for employment, which means for our income, our means of acquiring food, clothing, shelter, water, and nearly everything else that we need to survive. We depend on others, again mainly large corporations, to produce and provide food, clothing, shelter and the other things we buy, including medical care and much of our personal care. We are capable of producing or doing very few things for ourselves. If our transportation systems were seriously disrupted for even a month, many Americans would starve. We have unwittingly sacrificed our sovereignty, including our food security, in our pursuit of greater material wealth and well-being.

Perhaps in earlier times, this sacrifice of security was justified; people felt we could trust those upon whom we were becoming dependent. In the early 1900s, for example, most food was produced by local farmers, people could make their own clothes, houses were built by local carpenters, and people knew and trusted the people they relied on for their well-being. The relationships were mutually beneficial, farmers benefited from their relationship with those in the community, community members benefited from their relationship with farmers; farmers were free to choose their customers and customers free to choose their farmers; they were interdependent, sovereign, and secure. Even when grocery stores and restaurants became involved in the process, relationships were still mostly personal and local, and the American food system was secure.

But with the advent of large, corporate food processors and distributors, operating vast chains of supermarket and fast food restaurants, the nature of relationships within the food systems were fundamentally changed. In large publicly-held corporations, the relationship between corporate investors and corporate management is purely economic. In many cases, mutual funds and pension funds are the largest stockholders, and the motivation of such shareholders is clearly maximum return on investment. In addition, corporate investors are absolved of many of the financial responsibilities of individuals; they are only liable to the extent of their investment. Under such conditions, profit maximization and growth become the driving forces. In striving for greater market share and market power, corporations sought to eliminate competition, leaving customers with fewer choices. They used persuasive advertising to shape consumer preferences, leaving consumers less free to make their own choices. Corporatization of the American economy, including the food economy, has left Americans less free to choose, less sovereign, and thus less secure.

Globalization makes people of all nations, including Americans, even more dependent upon even larger transnational corporations, and thus even less sovereign and secure. Our food supply is not only vulnerable to the whims of nature – to drought, floods, or pestilence – but is also subject to the whims of global politics – embargoes, sanctions, and wars. And, as indicated

previously, the multinational corporations that increasingly control global food supplies have no allegiance to any particular nation because their first responsibility is to maximize economic returns for their stockholders. We are dependent upon them for our food but they have no commitment to us. They are free to choose, but we are not. And, Americans can't even choose domestically produced foods rather than imported foods in our supermarkets, because the government refuses to implement Country of Origin Labeling. Global specialization of food production may promise economic efficiency and lower food prices, but at what sacrifice in our food security?

Finally, our relentless pursuit of economic efficiency through industrialization, through unbridled specialization, standardization, and economies of scale, has left us almost completely dependent on dwindling supplies of non-renewable fossil energy. We don't have an interdependent relationship with fossil energy because we have failed to either preserve or create alternative sources of energy that would have given us energy choices. Today, the agricultural establishment is promoting biological energy sources – ethanol, bio-diesel, methanol, biomass – with little apparent thought to the dependence of food production on the dwindling supplies of fossil energy. If agriculture were able to convert all of the solar energy captured by green plants in the U.S. into fossil energy substitutes, we would still have to cut our fossil energy use by one-third, and we would have no solar energy left to produce food. In reality, American agriculture harvests only about 35% of total solar energy captured by plants, and food production claims about 17% of total U.S. fossil energy use, *in addition* to the energy captured from the sun. It is also questionable whether ethanol and bio-diesel can actually produce more *fossil* energy that is consumed in their production.

When we use the crops produced by fossil-energy dependent, industrial agriculture to produce fuel for automobiles rather than a low-input, sustainable agriculture to produce food for humans, our food systems, our economy, and our society are made less secure. Faced with the imminent inevitability of peak oil production, our first priority should be to make our food systems more secure, meaning less dependence on declining supplies of fossil energy. The only long run food security for any nation is in the natural productivity of healthy, regenerative, organic soils, which can produce food without nonrenewable amendments. Even if it becomes more profitable to produce fuel than food, how secure is any nation that chooses the luxury of automobiles over the food security of people?

The current threat to our food security, as well as our economic, social, and ecological security, is inherent in our dominant model of economic development. The industrial model of economic development quite simply is not sustainable, and thus provides no long run security. The differences between industrial and sustainable models of development are deep and fundamental. The central purpose of all *industrial* organizations is *productivity*. Industrial organizations seek to achieve maximum output with minimum input, which in economic terms translates into *maximizing profits and growth*.

The purpose of all *sustainable* organizations, on the other hand, is *permanence* – meaning sustained productivity. Sustainable organizations must be organized and managed to conserve, renew, and regenerate their resource bases, as well as to be productive and profitable. Thus, sustainable organizations must manage for *balance and harmony* among the *ecological, social,*

and economic functions. They must care for the natural resource base, in order to preserve its regenerative capacity as well as its productivity. They must care for their customers, workers, and neighbors, in order to preserve the society within which and for which the sustainable organization exists.

Industrial organizations quite simply are not sustainable – ecologically, socially, or economically.ⁱⁱⁱ The first law of thermodynamics states that the total of energy and matter is conserved. Energy may change in form, energy may change into matter, or matter may change into energy, but total energy, including energy embodied in matter, remains unchanged. Thus, sustainability might seem ensured. However, the second law of thermodynamics states that each time energy changes in form, or energy changed into matter or matter to energy, some of the *usefulness* of energy is lost.

The *usefulness* of energy, meaning the capability of energy to perform *work*, is directly related to the *concentration* of energy. Work dissipates energy, changing it from more- to less-concentrated forms. As energy becomes less concentrated, as when matter is transformed into energy, it becomes less useful. Dissipated energy can be *reused*, but it must be *re-concentrated* and *re-stored* to restore its usefulness. Unfortunately, the energy required to concentrate and to store energy is not available to do work; its *usefulness* is lost. Scientists refer to this process as a natural tendency toward *entropy*, “the ultimate state reached in degradation of matter and energy; a state of inert uniformity of component elements; absence of form, pattern, hierarchy, or differentiation.” A barren desert, without form, structure, or pattern, without life, is about as close to entropy as most of us have seen. Thus, sustainability might seem impossible.

Sustainability is possible only if *new* energy is made available to offset the energy inevitably lost when energy is used to perform any type of *work*. Without an infusion of new energy, the total supply of useful energy in any system eventually will be depleted. The sun, solar energy, is the only source of *new* energy on earth. Thus, systems that fail to utilize some form of solar energy to offset the unavoidable energy lost in performing *work* inevitably tend toward entropy.

Industrial systems are very efficient in doing *work* because they focus on *extracting* energy and *using* energy, but do nothing to *re-concentrate*, *restore*, or *regenerate* energy, unless such processes improve the efficiency of energy extraction and use. When they deplete one source of energy – natural or human – they simply find other sources. Resource regeneration and renewal are *non-productive* energy uses; it is more efficient to extract and exploit new sources. Once all sources of energy have been depleted, however, energy-extracting systems lose their ability to do *work*; they reach entropy.

The same scientific concepts apply to *non-material* forms of production, specifically human labor or other personal services. The energy resources in this case are social rather than physical in nature. Social capital or social energy is embodied or stored in the ability of people to benefit from relationships with each other, within families, communities, and societies. Kinships within families, friendships within communities, and civility within societies contribute directly to our

ⁱⁱⁱ For a complete discussion of differences in industrial and sustainable systems, see John Ikerd, *Sustainable Capitalism: A Matter of Common Sense*, 2005, Kumarian Press, Inc., Bloomfield, CT, available through <<http://kpbooks.com>>.

happiness and quality of life but also contribute to our ability to *work* together, to be *productive* and *useful* to each other.

Industrial organizations are very efficient in utilizing human resources because they focus on using existing social relationships to facilitate production, but do nothing to regenerate or restore the social capital that is inevitably lost. In industrial societies, families become business organizations, friendships become business relationships, and citizens become consumers, and little more. The social cohesiveness that makes societies productive as well as personally rewarding is lost. Using *social energy* to establish, maintain, and renew positive social relationships is considered *non-productive*; it is more efficient to find new people, communities, and societies to exploit. Exploited societies, left without a sense of fairness, equity, or justice inevitably fall into patterns of conflicts, which lead to the destruction of both natural and human resources, the results of which may be witnessed in many parts of the world today. An industrial society inevitably tends toward *social entropy*.

Economies simply provide means of facilitating relationships among people and between people and their natural environment in complex societies. There are simply too many people to produce their own food, clothing, and shelter or to barter with each other. Economies actually *produce* nothing; they only facilitate production. All economic capital, meaning anything capable of producing economic value, is extracted from either natural capital or social capital. Thus, when all of the natural and social capital in a system have been extracted and exploited, all of the energy in the system has been dissipated, and it can no longer produce anything of economic value; it has reached a state of *economic entropy*.

We have created an industrial economy, including an industrial food economy, which is inevitably trending toward entropy. It is simply not sustainable. It is extractive and exploitative, rather than regenerative and renewing, and it is rapidly running out of energy to extract and people to exploit. Industrial relationships are dominant or dependent, rather than interdependent and thus provide no sovereignty or security. Corporatization and globalization are natural consequences of unbridled economic industrialization as businesses relentlessly pursue ever-greater profits and growth. An industrial organization is like a cancerous tumor, multiplying and growing uncontrolled until it ultimately destroys the life of its host. The tumor of industrial economic development is rapidly depleting the fossil energy upon which it depends for its continued growth and ultimately for its life. And we humans have become dependent upon this tumor, not only for the physical comforts of life, but for our shelter, our clothing, our food, our very lives. If we fail to develop and choose a sustainable alternative to industrialization, humanity will not survive.

Thankfully, we still have choices and we still have time to act. We can choose a sustainable agriculture rather than industrial agriculture. We can help halt the cancerous growth of industrial agriculture by imposing common sense social and ethical constraints. We can choose an agriculture that is driven by the purpose of permanence rather than productivity, an agriculture that balances ecological integrity and social responsibility to achieve long run economic viability. We can choose an agriculture that relies on positive, interdependent relationships among people and between people and the earth. We can choose an agriculture that is

regenerative, and self-renewing rather than extractive and exploitative, an agriculture that thrives on renewable solar energy rather than non-renewable fossil fuels.

We could reduce the reliance of agriculture on fossil energy by at least a third, and quite possibly in half, by using sustainable farming methods that are already being used by many today. If we shift our public research and education priorities to sustainable food production, rather than industrial energy production, we could quite likely create an energy independent agriculture, while ensuring that all people have access to an adequate quantity of safe, nutritious, food that really tastes good, is reasonably priced and available year-round. And for those of us who choose, we can still have access to the animal protein we prefer. By choosing sustainable agriculture, we can choose long run food security over short run convenience and cost.

We can also reduce our reliance on the corporate, industrial food systems, as well as our reliance on fossil energy, by choosing to buy more of our food locally, from people we know and trust. We can insist that local farmers who want to produce our food produce it by means that reflect true stewardship of the land and citizenship of communities, and we can be willing pay prices high enough to allow them to do so. We can buy from local independent food stores and family operated restaurants that buy from local farmers who care about what happens to the land and the future of their communities. If we lack the money to pay for convenience as well as good food, we can choose good food and learn to prepare it and store it for ourselves. For those things that can't be produced nearby, we can develop relationships of trust with farmers and food producers in other communities, and even in other countries, who share our commitment to creating sustainable food systems for a sustainable human society. We can create an interdependent global network of local community-based food systems as a viable alternative to the global corporate food system; we can give people the freedom to choose. Through our choices, we can reclaim our food sovereignty and restore food security.

Thankfully, we can still choose sustainability, if we can find the courage to break our dependence on the current corporate, industrial economy – if we can find the courage to choose. The transition of the past – from a community-based, solar energy reliant, human-scale food systems to the global, fossil-energy dependent, corporate-scale food systems – occurred one person at a time. One-by-one, people chose to buy their food somewhere else, from some one else, and as farmers responded to or anticipated their new choices. And one-by-one, we must make the transition of the future from industrialization to sustainability.

But, it takes courage to change. To quote Susan B. Anthony, an early champion of women's right to vote, “Cautious, careful people, always casting about to preserve their reputation and social standing, never bring about reform. Those who are really in earnest must be willing to be anything or nothing in the world's estimation.” We must find the courage to challenge the conventional wisdom of an industrial food system. We have sustainable alternatives from which to choose today, and we can help create new alternatives where none now exists – if we can only find the courage to do so. We can choose interdependence and sovereignty over dependency and insecurity – if we can find the courage to choose. We may not be able to change the world, but we can change our little piece of the world, and the world always changes one little piece at time. As we choose to live, to work, and to eat more sustainably, we will help create greater food security for all – if we can only find the courage to choose.