

Choices and Consequences for the Future of Food and Farming¹

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Food and farming systems of the future will be different – different from those of today and those of the past. Perhaps, this is the only thing we can say about the future with any degree of confidence – it will be different. In addition, the least accurate way to predict the future is simply to extrapolate linearly from the past, through the present, and into the future. All trends eventually change direction. Somewhere in the future there will be a time to choose, a time at which our choices will set a new and different course for the future. Or, perhaps the time to choose is now.

The future is not predetermined and there is no way of knowing for sure which choices we should make. The world around us is simply too complex to anticipate its evolution. However, we humans are interconnected with the world around us, and over time, we co-evolve with our environment. Perhaps, our actions will not determine our future, but we most certainly will influence our future with our actions – or our inactions. We all have choices to make and our choices will have consequences.

Some may consider the choice “to do nothing” as a choice for a future that will be much like the past, but that is not possible. If we do nothing, our communities, our nations, and our world of the future will be far different from the past, in ways that most now find difficult to imagine. If we, the people, choose to do nothing to shape our future, the almost certain result will be the homogenization of our economies, our nations, and our cultures – one economy, one society, one human culture around the globe. If instead, we want to maintain our economic, national, and cultural identities, if we want to maintain a diverse, dynamic, and sustainable global society, we must make conscious, purposeful choices.

If we choose to do nothing, we will continue the current trend toward a single global food system, with specialization of production of specific commodities in regions of lowest costs, for distribution around the world to those who are able to pay the highest prices. If we choose to do nothing, the global food system will come under increasing control of a small number of transnational agribusiness corporations with the power to decide where foods are produced, how they are produced, processed, and distributed, how much food will cost, and ultimately, who has enough to eat and who doesn't. If people within communities, nations, and regions of the world want to maintain their long run food security, they will have to make conscious, purposeful choices.

We live in a global ecosystem; in this, we have no choice. Such is the nature of the “natural world.” The atmosphere is global. Whatever we put in the air in one place eventually may find its way to any other place on the globe. Weather is global. The warming or cooling of the oceans in one part of the world affects the weather in another, which in turn affects the temperature of oceans elsewhere on the globe. The climate is global. If we experience global warming in one part of the world, the climate is changed in all parts of the world. All the elements of the biosphere, of the living world, are interrelated and interconnected, including its human elements. We are all

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members of a global community of nature – the global ecosystem. We have no choice in this matter.

Increasingly, we also live in a global social community – a global society. Global communications – print media, radio, television, and the Internet – have erased technical communications barriers among nations of the world, resulting in the spread of common cultural values around the globe. Global travel has become faster, easier, and less expensive, resulting in greater person-to-person sharing of social and cultural values among people of all regions and nations. Consequently, the distinctiveness of our regional and national cultures has diminished. We seem to be moving toward universal membership in a common global culture.

However, in matters of society and culture we still have the right to choose. We have the right to maintain whatever aspects of our unique local or national cultures and communities that we choose to keep. We still have the right to protect our regional and national communities and cultures against the economic and political forces that are pushing us toward a single global society and culture. But, we also can choose to sacrifice that right, through the World Trade Organization (WTO) or other means, in our pursuit of greater economic growth.

In spite of recent set backs for the WTO, we seem to be moving toward a single global free market. International trade has increased dramatically over the past few decades, first under the various GATT agreements, then under the WTO, and now under various multilateral trade agreements among nations – such the North American Free Trade Agreement (NAFTA), the European Union (EU) and the Asian-Pacific Economic Cooperation (APEC).

All of the national economies of the world are interconnected through their dependence upon each other for trade. Problems anywhere in the world economy, with Japan and Argentina being recent examples, create economic problems for nations all around the globe. However, the global economy is made up of numerous distinct markets – including national markets and various multinational trade groups, such as those mentioned above. However, the implicit purpose of the WTO is to remove all restraints on trade among nations and among trade groups, and thus, to create a single global free market.

In the matter of a single global free market, we also have a right to choose. Today, however, the natural right of every nation to protect its resources and its people from economic exploitation may be slipping away. In a single, homogeneous global free market, the social and political boundaries that now protect nations from economic exploitation would no longer exist. Today, we are being asked to make a choice to give up our right to choose.

If we give up this right to choose, we almost certainly will continue the current trend toward a corporately dominated global food system, which will threaten the long run food security of every nation of the world. The food security of any nation lies in the ability of its farmers to meet the minimum food and fiber needs of its people in time of crisis. A nation that cannot feed itself is no more secure than a nation that cannot defend itself. Food security does not require self-sufficiency, but it does require a sustainable level of domestic agricultural productive capacity. Our individual and national security demands that we never give up our right to choose.

Perhaps the best way to begin addressing questions of globalization is to examine the boundaries that currently restrain ecological, social, and economic homogenization and to ask why those

boundaries exist. The boundaries that exist in nature, the ecological boundaries, were put there by the forces of nature. Topographical features such as oceans, mountains, and even rivers and ridges, separate one physical bioregion from another. Why do such boundaries exist within nature? Nature is inherently diverse and physical boundaries are nature's way of defining its diversity. Boundaries separate and define the form or structure of those things that support life: sunlight, air, water, and soil. Boundaries also define the physical structure of all living things: bacteria, fungi, plants, animals, and humans. We know also that biological diversity is necessary for life; diversity that distinguishes cells, organs, and living organisms from each other; diversity gives resistance, resilience, and the regeneration ability to living communities. Without diversity, without boundaries, nature could not sustain life, including human life.

Cultural and political boundaries are those things that define distinct “communities” of people – including cities, states, and nations. People established such boundaries to facilitate relationships among people within boundaries and to differentiate between relationships among people within a given community and their relationships with people in other communities. “Within” cultural boundaries, relationships were nurtured to enhance social connectedness and personal security. Boundaries “between” communities maintain some sense of identity, and thus, maintain diversity among different groups or collections of people. Diversity among communities maintains choices and opportunity for those of the current generation and for those of generations to follow. Historically, whenever one human culture or society has become dominant, but then failed, alternative cultures and societies have always been available to restore health and growth, and thus, have provided resilience, and long run security for human progress. Without cultural diversity, there would have been nothing to replace the long line of failed societies of the past.

With some exceptions noted above, economic boundaries, over at least the past century, have been the same as national political boundaries. Historically, each nation has had its own currency, and has maintained economic relationships among those “within” nations as separate and distinct from economic relationships “among” nations. Economic boundaries allow for “free trade” within nations and “selective trade” among nations. Economic diversity, as defined by economic boundaries, is necessary for division of labor and specialization among nations. If all national economies were to lose their distinctiveness, becoming as one, all natural and human resources would be quickly exploited, and all further potential gains from trade among nations would disappear. Historically, economic diversity among nations also has been considered a necessity to ensure choice and opportunity – to ensure health, growth, resilience, and long run security of the global economy. Humanity has not been willing to put all of its “economic eggs in one basket.”

The dilemma confronting people of the world today is whether the potential benefits of removing the economic boundaries that separate national economies are greater than the potential costs. Are the potential short run economic benefits of a single global economy greater than the potential long run ecological, social, and economic costs? There is little doubt that a single global free market would result in an increase in global economic activity and would accelerate growth in global economic output – at least in the short run. However, such benefits would almost certainly be achieved through increased extraction of natural resources and exploitation of human resources, placing an increased burden on the global ecosystem and on global society. Thus, the fundamental question confronting humanity today is whether the economic benefits of global free trade are sustainable.

The short run benefits from a single global food system might be lower dollar and cent costs of food. Global specialization, standardization, and consolidation of the food system presumably would result in greater economic efficiency. However, over the longer run, it seems highly questionable whether benefits from increased efficiency would be passed on to either food producers or consumers or simply retained as greater corporate profits. Also, there seems little doubt that the removal of economic boundaries will lead to increase exploitation of the land, of farmers, of consumers, and of global society, as corporations are freed to maximize profits, globally. A global food system is simply not sustainable – ecologically, socially, or economically.

The ecological, social, and economic consequences of globalization are rooted in some of the most basic laws of nature. The first law of thermodynamics, the law of conservation of mass and energy, might seem to suggest that sustainability is ensured. Matter may be converted to energy and energy converted to matter, but energy and matter in total are conserved, and thus, remains undiminished. However, the second law of thermodynamics suggests that each time matter is converted to energy, or energy to matter, some of the “usefulness” is lost. This loss in usefulness is identified with the concept of 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.” So, the second law of thermodynamics might suggest that sustainability is impossible.

However, the first and second laws of thermodynamics relate to “closed systems” – where nothing is lost to the outside and nothing comes in from the outside. With “closed systems,” entropy is inevitable. Thus, the possibility of long run sustainability of life on earth is a consequence only of the “openness” of the biosphere, as a system, to the inflow of energy from the sun. Sustainability is possible only because the earth, as an “open system,” is capable of capturing and storing sufficient amounts of “useful” solar energy to offset the declining “usefulness” associated with the inevitable tendency toward entropy.

This dependence on solar energy suggests that sustainable development ultimately is dependent upon “living systems.” Living systems, by nature, are “open systems.” Living organisms capture energy from the sun, convert it to more diverse and “useful” forms, and thus, have the capacity to offset the inevitable degradation of usefulness of energy and matter. The natural tendency of “living systems” is toward greater diversity in structure, form, hierarchy, and pattern – away from entropy. Scientists continue to explore the potential of various kinds of synthetic solar collectors and of solar energy carried by wind and water. But living plants on land and living phytoplankton in the seas remain the only practical collectors of significant amounts of solar energy. Thus, the sustainability of human life on earth remains dependent upon the sustainability of other living systems.

A sustainable human society must conserve, recycle, and reuse materials and energy, if it is to slow, rather than accelerate, the process of entropy. And ultimately, human population and per capita consumption must accommodate the carrying capacity of the earth. But, the carrying capacity of the earth depends at least as much on our effectiveness in nurturing and using living systems to capture and store solar energy as on our efficiency in using stocks of energy and material with which the earth is endowed. Sustainability depends upon “living systems.”

Sustainable living systems must be regenerative systems; they must be capable of renewing and reproducing themselves, of maintaining their productivity and vitality from generation to generation, indefinitely. Living systems are “self-making.” Non-living or dead systems are not.

Bacteria, insects, plants, animals, and humans, are examples of living systems. Clocks, bicycles, automobiles, machines, and factories, are examples of dead systems. All systems, both living and dead, can be characterized by the pattern, structure, and process. But, the processes by which structure is created and recreated are fundamentally different for living and dead systems.

The “pattern” of a dead system is the organizational concept – the plan or blueprint by which it is constructed. The “pattern” of a living system is encoded in its DNA – the genetic code, which guides its process of development. The “structure” of both living and dead systems is the physical embodiment of pattern. For both living and dead systems, the structure is the thing that you can see, feel, touch, or otherwise perceive using your physical senses. The “process” of a system defines the means by which the system performs the functions necessary to fulfill its purpose. Something useful or meaningful results from the “processes” of both living and dead systems.

The primary difference between living and dead systems is in the “process” by which their “structure” is made and remade. Non-living systems must be constructed according to some plan or blueprint, which must be developed before construction begins. If non-living systems wear out, become obsolete, or lose their usefulness, they must be redesigned and rebuilt. Once built, the structure of dead systems remains constant. Dead systems may break or wear out, but their basic structure remains unchanged. Non-living systems can be remodeled, rebuilt, or redesigned, but they cannot make, remake, or redesign themselves.

Living systems, on the other hand, make and remake themselves, and given time, are even capable of redesigning themselves. All living organisms are living systems. Throughout its life, the physical structure of a living organism is continually changing. Living organisms, including humans, are born, mature, reproduce, grow old, and eventually die – by nature. The cells of living organisms are replaced continuously, even in mature organisms, creating essentially new structures, often many times during a single life span. While the pattern of an individual living organism, its DNA, remains unchanged during its lifetime, living species are capable of evolving over time, modifying their genetic code to accommodate a changing natural environment. Living and dead systems may both perform useful and productive processes, but part of the process of a living system is self-renewal and redesign.

The capacity of a living system simultaneously to produce, renew, and regenerate depends upon its strength and its health. The health and strength of any living organism depends on the health and strength of the relationships among its various structural units or components. Cells are a fundamental structural unit of all living organisms. All living cells are surrounded by membranes, which separate the water-rich cytoplasm inside the cell from a significantly different outside environment. The membranes, which define the boundaries of each cell, are “semi-permeable” – they let some things pass through, but keep other things in and out. Cells that are either permeable or are non-permeable, rather than semi-permeable, cannot support life. If living cells weren't semi-permeable, they wouldn't be able to retain moisture or minerals; they wouldn't be able to metabolize food, release energy, or eliminate waste. The organism would die. All living organisms are made up of cells, which are defined by semi-permeable boundaries.

This principle of semi-permeable boundaries extends beyond the cellular level to many other aspects of life. All living organisms are defined by boundaries – skin, bark, leaf surface, scales, etc. – which give them structure, form, and identity. As with cells, the boundaries of organisms must be semi-permeable or selective with respect to what they allow to pass through and what they keep in

or keep out. The human body is protected by boundaries, which must allow “food” to come in and “wastes” to go out, in order to sustain life. Plants exchange nutrients stored in their roots for nutrients needed from the soil, and the root boundaries are very selective in what they let in and let out. Boundaries are necessary, but they must be semi-permeable or selective.

The natural tendency of living systems toward the creation of greater biological diversity implies a tendency toward greater complexity and variety of living organisms, and thus, a tendency toward more boundaries. On the other hand, the natural tendency of closed systems, of “dead things,” toward entropy, is reflected in their tendency toward the dissolution or destruction of boundaries. Inevitably, “degradation of energy and matter” results whenever boundaries are destroyed to release energy from matter, because some energy must be used to restore the boundaries, leaving less “useful energy” than before – thus, the tendency toward entropy.

When an oak log is burned, energy, in the form of heat, is released and the structure of the wood is turned to ashes. The boundaries that once defined the structure of the log are destroyed through the releasing of energy. The human body converts food to energy by a similar process of digesting or breaking down the structure of the foods that we eat. In both cases, the energy consumed is renewable because new boundaries can be built and new energy can be captured from the sun by other living organisms. Fossil fuels, on the other hand, are non-renewable sources of energy – at least non-renewable in a reasonable human timeframe. Lacking a new infusion of energy from “outside” – as from the sun – systems that depend on non-renewable energy slowly lose their ability to restore the structural boundaries of matter, and thus, slowly lose their ability to store and release energy. This is the essence of entropy – the degradation of energy and matter, as systems lose their form, structure, and diversity through the destruction of boundaries.

Such contrasts of living and dead systems, of sustainability and entropy, are equally relevant to cultural, political, and economic systems – to issues of economic development, globalization, and trade. The dissolution of boundaries among cultures increases the efficiency of social and political processes, releasing the energy previously bound by cultural constraints. The dissolution of political boundaries, likewise, releases the energy bound by conflicting laws, regulations, and other political constraints. The dissolution of cultural and political boundaries removes constraints to economic specialization, standardization, and consolidation, the key characteristics of industrialization, thus allowing maximum productivity and economic efficiency. Thus, strong social and economic incentives exist to remove all cultural and political boundaries.

Agriculture provides both a prime example and a meaningful metaphor for anticipating the consequences of global free trade. All economic development ultimately is dependent upon the land, the earth, the dependency is simply more clear in farming. All social and cultural development ultimately is dependent on relationships between living organisms, including people, the dependency is simply more clear in farming.

Industrialization, characterized by standardization, specialization, and consolidation of control, has been the dominant model or paradigm of economic development of the past two centuries. Industrialization is the physical manifestation of a specific philosophy of economics, a specific concept of science, and a specific worldview. The mechanistic worldview emerged during the 1600's to 1700's. It was first articulated by early scientists such as Isaac Newton and Rene Descartes. During this Age of Reason, the world came to be viewed as a large complex machine with many interrelated parts – as clock-like in nature. The foundation of modern science was laid

during this period with development of the “scientific method” of inquiry and the “reductionist” approach to research. All complex systems could be reduced to their elemental parts, isolating individual causes and effects, and thus, to gaining understanding of systems as wholes.

Classical economics had its roots in this same period of Enlightenment. However, it was not until the early 1800's that neo-classical economists abandoned the “pursuit of happiness,” with its inherent social and moral implications, instead pursuing “maximization of utility,” and turning economics into a “mechanistic social science.” Today, the mechanistic scientific worldview, neo-classical philosophy of economics, and industrial paradigm of development dominate virtually every aspect of modern society – including the new electronic information and biological technologies.

Nowhere are the consequences of industrialization more clear and compelling than in farming. In farming, tremendous gains in productivity and economic efficiency have been achieved through the removal of boundaries. Farmers removed fences that had separated fields, as they moved toward more mechanized and standardized systems of farming. The diversity of crops and livestock enterprises that once defined the structure of typical family farms was abandoned to achieve greater specialization. The “landscapes” of many farms were left without form, pattern, hierarchy, or differentiation. These new “more efficient” farming methods allowed farms to become larger, through consolidation, removing the boundaries of ownership and identity that once defined different farms within communities. As farms became larger, farmers reached beyond the boundaries of the local communities to market their products and purchase their inputs because it was “more efficient” to do so.

This transformation, this industrialization of agriculture, resulted in tremendous gains in agricultural productivity and economic efficiency. As with industrialization in general, it has released tremendous stocks of stored energy that were constrained by the boundaries that once defined different fields, enterprises, farms, and farming communities. Industrialization removes the boundaries allowing stored energy to be released. But, the industrial paradigm provides no means of restoring the inevitably lost energy.

Thankfully, we have another choice. An alternative paradigm of resource development is emerging. Sustainable development is the name most commonly linked to this alternative. Sustainable agriculture is but a part, albeit an important part, of the pursuit of sustainable development.

The new paradigm of agricultural sustainability is being developed by thousands of farmers all around the globe. They are doing it with little help from scientists, from government, or anyone other than each other. These farmers may label themselves as organic, biodynamic, holistic, biological, ecological, practical, innovative, or accept no label other than family farmer. However, they share a common philosophy of farming that fits under the conceptual umbrella of agricultural sustainability.³ These new farmers are helping to define an alternative paradigm of sustainable development – not just for agriculture, but also for all resource development activities. Sustainable development must meet the needs of the present while leaving equal or better opportunities for the future. A sustainable farm is a useful metaphor for a sustainable society.

³ For 50 examples of these new sustainable farmers, see “The New American Farmer – Profiles in Agricultural Innovation,” the SARE Program, USDA, Washington DC. (\$10 US – call: 802-656-0484 or e-mail: sanpubs@uvm.edu , also available free on line at <http://www.sare.org/newfarmer>)

A sustainable system of farming must be ecologically sound, economically viable, and socially responsible. The living ecological, economic, and social sub-systems, which constitute a sustainable farm, must all be renewable and regenerative. A farm that is not ecologically regenerative cannot be sustained over time, no matter how profitable or socially responsible it may be in the short run. A farm that is not economically regenerative is not sustainable, no matter how ecologically sound and socially responsible it may otherwise be. And, a farm that is not responsive to the needs of society will not be supported by society, no matter how ecologically sound or profitable it might be. A farm is a living organism – soils, plants, animals, people, all are living, growing, evolving living entities, and the farm exists in a living economic, ecological, and social environment. The ecological, economic, and social organs must all remain healthy and strong, if the farming organism is to be regenerative, and thus, sustainable.

The social, ecological, and economic problems which threaten the sustainability of agriculture today are all direct consequences of treating the soil, plants, animals, and people as if they were separable, replaceable, mechanistic parts of some sort of sophisticated biological machine. Ecological, social, and economic boundaries are treated as physical constraints to be manipulated or removed. Current biological technologies, as developed and promoted by the “life sciences” community, are but the latest products of a worldview that treats life as nothing more than a sophisticated mechanical process, which can be manipulated for economic gain. But, a farm is a living organism made up of microorganisms, plants, and animals. Farmers, consumers, members of society, are living, breathing, thinking, caring people. Solutions to the current problems of agriculture will require new ways of thinking – a new living systems worldview.

Each sustainable farming operation is site-specific, individualistic, and dynamic. To farm sustainably, the farming systems must fit the ecological, physical, and intellectual resources of the individual farm operation, which being a living system, continually changes and evolves over time. However, some general underlying characteristics of successful sustainable agricultural operations are beginning to emerge from the diverse experiences of these new farmers. From these characteristics, we can begin to understand how sustainable farms and other sustainable systems must be organized and managed.

Industrial management is characterized by specialization, standardization, and consolidation of control. Sustainable farm managers can realize economic gains from appropriate levels of specialization, standardization, and consolidation, but must do so without sacrificing the social, ecological, and economic benefits of positive relationships among diverse elements within holistically managed, interdependent systems. Instances of specialization, uniformity, and hierarchy can also be found within natural ecosystems, but only within the boundaries of nature. Sustainable farming systems, likewise, must respect the natural limits of living systems, including the economic and social systems within which they must function.

Sustainable farms must be managed holistically. In holistic management, each component of the farming operation – each practice, method, or enterprise – is treated as an inseparable aspect or dimension of the farm as a whole. Each rearrangement creates a new set of relationships among the components of a holistically managed operation, and thus, constitutes a new and different whole. In essence, the addition of a new crop or livestock enterprise or a change in production or marketing strategy creates a new farming system. When viewed holistically, farms embody something more than the simple sum of their parts. Relationships among parts are as important as the parts themselves. That something more than the sum of the parts, i.e. synergy, is the product of positive relationships.

Holistic managers create various spatial arrangements of crops, pastures, animals, etc. across the landscapes of their farms. They create different temporal arrangements by rotating crops, forages, and pastures, by sequencing different animal species on pastures, etc. during each season or from one season to the next. They arrange various types of plant, animal, and marketing enterprises so that the output of one enterprise becomes the input of another or the waste from one becomes a resource to another. And they arrange people so that the right people, including themselves, can do the right thing at the right time so that the things they produce can meet the individual wants and needs of their customers.

Through holistic management, the new sustainable farmers are able to reduce their costs while increasing productivity, making their farms more economically viable, as well as more ecologically sound, and socially responsible. They are able to conserve non-renewable energy by relying on solar energy and renewable human energy, without exploiting either land or people. And, they reduce or eliminate their reliance on costly non-renewable commercial inputs, which threaten human health and the natural environment. They make a good living while remaining stewards of the land and keepers of communities.

Sustainable farms must be managed for diversity. Nature is diverse, and the diversity of an ecologically sound farming operation must reflect the diversity of its ecological “place.” People are diverse, and the diversity of a socially responsible farming operation must reflect the diversity of the people who operate the farm and the customers it serves. Horizontal diversity is reflected in the number and nature of different practices, methods, and enterprises carried out on a specific farm, which allows farmers to fit what they do to the needs and capacities of the land. Vertical diversity is reflected in the number and nature of different functions performed in transforming raw materials into finished products, which allows farmers to fit what they do to the needs and preferences of their customers. By reconnecting vertically, sustainable farmers are helping to recreate local, community based food systems, which can be reconnected horizontally to form regional, national, and global food networks – without sacrificing diversity. Diversity creates opportunities for “economic synergy,” across space, among people, and over time, which allow ecologically sound and socially responsible farming operations to achieve economic viability.

The new sustainable farmers produce goods and services that meet the needs and wants of specific, unique customers. They realize that people, as consumers, have unique tastes and preferences, and many don't prefer the foods they find in supermarkets and fast food restaurants today. They produce for growing ecological niche markets – organic, hormone and antibiotic free, humanely raised, free range, natural, etc. Sustainable farmers recognize also that producers are people with unique abilities, aptitudes, and aspirations. They choose to do things that they do well but also things they want to do. They pursue their passions. By managing for diversity, their lives are more productive and fulfilling, their products are more valuable, and their farms are more economically viable, as well as ecologically sound and socially responsible.

Sustainable farms must maintain interdependent relationships, rather than strive for independence or accept dependence. Interdependent relationships are relationships of choice, not necessity. Obviously, we humans are dependent on nature, because we must breathe, drink, and eat if we are to live. However, we humans are now capable of degrading, if not destroying, nature, and thus, nature also depends upon us. Thus, we must recognize that nature will not continue to support us, at least not many of us very well, unless we humans choose to conserve and protect our natural environment. We must create an interdependent relationship with nature, in which we choose to take care of nature so

nature will take care of us. Sustainable farms must maintain an interdependent relationship with the land.

Sustainable farmers also must maintain interdependent relationships with each other, with their neighbors, and with their customers. They must recognize that past struggles for greater independence has separated farmers from their families, their neighbors, and their customers, and ultimately, has led to their economic demise. In a confrontation of farmer against farmer, farmer against neighbor, farmer against consumers, and ultimately, farmer against corporation, the independent farmer was destined to lose. But neither can farmers be sustained through dependent relationships. The sustainable farm can't depend upon the charity of its neighbors or customers, nor can it depend upon government subsidies or corporate contracts; it must produce things of value and expect value in return.

The new sustainable farmers work together when to do so is to their mutual advantage – share equipment, market or process together, etc. – but retain the ability to “go it on their own,” whenever it is mutually advantageous to do so. They care about family and are active members of their community, but they negotiate the nature of their relationships with others, rather than either dictate or submit. They work with their customers, providing those things that each individual customer values, but not becoming dependent on any single customer for their economic well-being. Their customers are treated as real people, as friends, rather than markets to be exploited. Their farms are more productive and profitable, as well as more socially responsible and ecologically sound, because they maintain interdependent relationships.

Interdependent relationships are the ultimate consequence of holistically managed, diverse living systems. And, interdependent relationships depend on healthy semi-permeable or selective ecological, economic, and social boundaries. By maintaining healthy, selective boundaries, sustainable farming systems are able to realize the synergy inherent in holism and diversity, through win-win relationships with nature and with people, rather than through extraction and exploitation. Sustainable farmers sustain their productivity and profitability by caring for the earth and caring for people. Sustainable farms are renewing, regenerative, healthy living systems.

These lessons of sustainable farmers can help inform the choices of human society in general as we address the issues of globalization and free trade. Humanity can realize economic gains from appropriate levels of specialization, standardization, and consolidation, but we must do so without sacrificing the social, ecological, and economic benefits of positive relationships among diverse elements within holistically managed, interdependent systems. We must respect the natural boundaries that separate geographic regions, cultures, and economies. To sustain healthy ecosystems, societies, and economies, the boundaries defining them must be selective – allowing relationships within to be different from relationships among.

The ecosystem is inherently global in nature, but we must respect its natural boundaries to keep it healthy and regenerative, thus helping to sustain its bounty. We can realize the benefits of a global society, of sharing among cultures, but we must respect and value human diversity by maintaining our separate regional and national cultural identities. We can realize the benefits of a global economy, but all nations must retain their rights, and must accept their responsibilities, to protect their people and their natural resources from economic exploitation. We must maintain healthy, semi-permeable economic boundaries if we are to maintain healthy interdependent relationships among bioregions, communities, and economies.

We can choose holism, rather than reductionism, recognizing that we cannot find truth through analysis or separation, but instead must seek truth in the whole of things. The ecological, economic, and social dimensions of alternatives are inseparable aspects of the whole of human experience. The personal, interpersonal, and spiritual are inseparable aspects of our quality of life, which is inherently affected by our choices. All bioregions, economies, and societies are inseparable parts of the global ecosystem, global economy, and global culture, which are inseparable parts of the biosphere – the same whole. We must learn to make choices, giving due consideration to the whole.

However, holism does not imply homogeneity. In choosing holistically, we can choose diversity, rather than homogeneity, recognizing that diversity is necessary to ensure resistance, resilience, regeneration, and sustainability. Loss of diversity inherently leads to loss of form, structure, identity, toward dissipation of matter and energy, toward entropy. We can choose to maintain the separate identities of our families, communities, regions, nations, and cultures, without sacrificing the sustainability of human society. We can maintain diverse ecosystems, economies, cultures, and still realize the benefits of appropriate specialization, standardization, and consolidation. In fact, we must choose diversity if we are to sustain those benefits.

We can choose interdependence, rather than dependence or independence, recognizing the mutual benefit to be gained from relationships of choice. Interdependent relationships among diverse elements of holistic organizations are the key to a sustainable quality of life – for farms, families, communities, nations, and humanity. Relationships of choice require healthy, selective boundaries among farms, families, communities, regions, and nations. Each living entity must be free to make the choices necessary to protect themselves from domination and exploitation, if all are to benefit from their relationships with others. Mutual benefits are assured only by relationships of choice, not of necessity. Gains from “free trade” are possible, even necessary, but gains from trade are sustainable only if all parties are “free not to trade.”

We can choose a global network of local community-based food systems rather than a single corporate global food system. The key to success in the new food system will be “relationship markets.” The most common examples of relationship markets for foods today are farmers markets, roadside stands, community supported agriculture organizations (CSAs), and other forms of direct marketing between farmers and consumers. However, relationship markets exist anytime there is a sense of personal connectedness and trust between those who produce food and those who eat it.

Relationships of integrity can exist not only among people within communities, but also can exist among people in different communities, regions, and nations. Such connections are far easier to establish and maintain where farmers, processors, retailers, and customers all live in geographic proximity. However, such relationships can be established and maintained among communities and nations, as long as they are characterized by interdependence, integrity, and trust. Regardless, it will be far easier to meet the diverse needs and preferences of consumers with a network of interdependent decision-makers, separated by selective boundaries, rather than with some global scheme of corporate central planning carried out within a single global market.

Soon, we will all be asked to make choices that either will lead to the removal of all economic boundaries between nations, resulting in a single global free market, or alternatively will lead to retention of the economic boundaries needed to define a diverse global economy. The choices, I believe, ultimately will lead to either an industrial, global society or a sustainable, place-based

society. If we choose “to do nothing,” we will have chosen the former – the natural tendency of unrestrained economic development is toward extraction and exploitation – toward entropy. If we choose to close our economic boundaries, to let little if anything either in or out, we will not have chosen sustainability, but instead our choices will cripple or kill the living economies within.

To choose sustainability, we must choose to maintain selective boundaries – letting some things in, keeping some things out, letting some things out, and keeping some things in. It will not be easy to choose what to let in, what to keep out, what to let out, and what to keep in, but we must make such choices if we are to choose sustainability. We make such choices every day regarding our own bodies, our food, our families, and our circle of friends and acquaintances. We must learn to extend these same principles of living systems to choices concerning ecosystems, economics, and societies.

We are nearing a time when we must choose, a time at which our choices will set a new and different course for the future. Or, perhaps that time is now. Perhaps, our actions will not fully determine our future, but our choices most certainly will influence our future. We all have important choices to make and our choices will have important consequences.