

New Farmers for a New Century*

John Ikerd

*Presented at Youth in Agriculture Conference. Ulvik, Norway, 14-15 February 2000.

Farming would seem to be a dying occupation - if we look only at long run trends. Throughout much of human history, the number of farmers worldwide has been in almost continuous decline. In the beginning of agriculture, when humans first began cultivation of crops and livestock for human use rather than just hunt and gather, the number of farmers grew. But once people became capable of producing more food than they needed for their own families, the number of farmers began to decline. The ability to produce more than needed for home consumption, allowed some people to leave the land - to become neither hunters, gatherers, nor farmers - and to barter with farmers to meet their needs for food and fiber. Those who left the farms became medicine men, warriors, blacksmiths, storekeepers, dentists, schoolteachers, entertainers, etc - they did the things that farm families were least able to do for themselves. At times of famine or other crises, such as the Great Depression of the 1930s, people returned to the land to produce their own food and fiber, to increase their odds of survival. But throughout most of modern history, those leaving farms consistently have outnumbered the total of those continuing and beginning to farm.

At the turn of the twentieth century, however, America was still an agrarian nation. In the 1890 census, forty-percent of the U.S. population still listed their occupation as farming - by far the largest of any occupation. However, a hundred years later, in 1990, the percentage of farmers in the U.S. population had dropped to less than two-percent, and the Census Bureau proposed dropping farming from the census occupation categories. The number of U.S. farms had dropped from a depression-years peak of 6.6 million in 1930s to less than two million some sixty years later. In the span of a century, the nation had transformed itself from rural-farming to urban-industrial nation. The other so-called developed or industrial nations of the world followed similar patterns of transformation from rural to urban.

Against this historical backdrop of declining farming numbers and continuing urbanization, why would anyone want to consider farming as a future occupation - particularly anyone not currently vested in farming? Some argue that with the aging farm population there will not be sufficient numbers of farmers left when the current generation retires unless we find some new farmers. However, the historical decline in total numbers of farmers actually dictates that there be fewer replacements than retirees, and thus, that farmers, on average, remain old. The average age of farmers has been above 50 years for at least a couple of decades, and supplies of agricultural commodities have remained more than adequate. A young person pursuing a future in farming would certainly seem to be swimming against the historical tide of change.

In fact, if historical trends were to continue, a young person might well be ill advised to consider farming as their life's work. Certainly, there are examples of young people who have beaten the odds and have succeeded in becoming farmers over the past sixty years. However, the vast majority of these did not start farming from scratch - they didn't have to pay for a farm with income earned from farming. The conventional wisdom in American agriculture has been that the best ways to get into farming are either inheriting or marrying into a farm. With the initial investment secured, and with a good bit of luck, a young couple just might be able to hold on to

the farm long enough to pass it on to another generation. Of course, declining farm numbers dictated that fewer farmers succeed from each new generation of farmers. So even those young farmers who inherit or marry into a farm are betting against the odds.

However in the last decade, an increasing number of new farmers are finding ways to *change* the odds of success. They are a new breed of farmer with new ideas. They are changing the definition of farming and redefining the occupation of farming. They are finding ways to capitalize on the weaknesses of conventional farming -- the industrial system that has dominated agriculture for the past century. They are successfully bucking the trend toward larger farms, meaning fewer farms and farmers. They are finding ways to make a better living on smaller farms, making room for more, rather than fewer, farms and farmers. They are lowering the barriers for beginning farmers by creating an agriculture that depends more on knowledge and understanding of nature, including human nature, and less on capital and access to technology. This new breed of farmers is creating new opportunities for anyone who has a willingness to work hard, a commitment to continual learning, and a love of the land and its people. They are the new farmers for the new century.

The Old American Farm

To understand why the "new" farms work, we have to understand why the "old" farms don't work - at least don't work to benefit farmers. The conventional farm of today is a product of the industrial revolution. Industrialization, with its specialization, standardization, and mechanization of production, required large numbers of people to "man" the assembly lines and offices of large manufacturing operations. People move into cities by the millions as a country goes through the industrialization process. In America, the simultaneous industrialization of agriculture - mechanization, specialization, and standardization -- made it possible for fewer farmers to feed more people better and at a lower cost. This "freed" farmers and other rural people to go to work in the cities and freed up consumers' incomes to buy those things the industrial economy produced.

The same technologies that pulled rural people toward the cities pushed them off the farms and out of rural communities. These technologies increased production per person by substituting capital and commercial inputs for labor and hands-on management. As successful new farming technologies were developed, they invariably reduced production costs - per bushel or per unit of production - but only if each farmer operated at a larger scale and produced more output. Thus, the incentive to realize greater profits by reducing costs inherently was an incentive to buy bigger equipment and more commercial inputs in order to farm more land and produce more output. As farmers individually responded to these incentives, production in total invariably increased, market prices fell, and the earlier promise of continuing profits vanished. The new technologies then became necessary - no longer for profits but now for survival. Those who adopted and expanded too little too late were unable to compete. This is the process by which they were "freed" from their farms to fill the manufacturing jobs in the city.

The farms that survived grew larger and fewer in number. In fact, with a limited population to feed and a limited amount of land to farm, it was possible for only fewer and fewer farmers to survive. In addition, the large specialized farms that survived often bypassed their local

communities in purchasing inputs and marketing their products in order to remain competitive with other large farms, both at home and abroad. Thus, as farms grew fewer and larger, rural farming communities also withered and died.

Today, there are few people left in farming to move to town and no longer any societal justification for moving them. The old industrial manufacturing era is coming to a close in the developed countries of the world. The old industrial firms are "downsizing" and "outsourcing" -- laying off workers by the thousands. Food costs is no longer a major factor in the costs of living. As consumers, we spend on the average a little over a dime out of each dollar for food and the farmer only gets a penny of that dime. The rest goes to pay for commercial inputs and marketing services - packaging, advertising, transportation, etc. Poor people may spend as much as half of their income for food, but even then the farmer only gets a nickel. We simply can't eliminate poverty by making farming more efficient. Society simply no longer has much of anything to gain from the further industrializing of agriculture. But yet, it continues.

As the industrialization of agriculture moves into its final phase - the centralization of control and decision making among giant agribusiness corporations - there might seem little hope for family farms. Within a decade, the independent producer of basic agricultural commodities, such as corn, hogs, soybeans, cattle, may be a rarity. Those not on the payrolls of the large agribusiness corporations quite likely will be producing under comprehensive corporate production contracts. So, the future of conventional farming most certainly is at risk; nevertheless, there are signs of hope on the horizon. The industrial era appears to be nearing an end elsewhere in the economy, even as it continues to consume agriculture. A new post-industrial, knowledge-based era of human progress is emerging - most prominently in other sectors of the economy, but also in agriculture. This new era of human development is creating opportunities for a new and better kind of farm.

The Inevitability of Change

Admittedly, if the dominant trends of today were to continue, there would be little hope for beginning farmers. But, trends never continue, at least not indefinitely. A few years back, a couple of scientists proposed a list of the top twenty "great ideas in science" in Science magazine, one of the two most respected scientific journals in the world (Pool). They invited scientists from around the world to comment on their proposed list. Among the top twenty were such ideas as the relationship between electricity and magnetism, the laws of gravity and motion, and the first and second laws of thermodynamics. The top twenty also included the proposition that "everything on the earth operates in cycles;" everything physical, biological, social, economic - everything. Some scientists responding to the Science survey disagreed with the proposed theory of universal cycles, but most left it on their list of the top twenty great ideas in science (Culotta).

In essence, the theory of universal cycles implies that trends never continue forever. Trends are nothing more than phases of longer-term cycles that eventually will turn and move in the opposite direction. In reality, it's just common sense - everything that goes up eventually comes down, and everything that goes around eventually comes back around.

The theory of cycles implies that farms will neither get larger nor smaller forever, but instead will cycle between larger and smaller over time. If we think back over past centuries and around the globe, we can find examples where control of land became concentrated in the hands of a few, such as in feudal times, only later to be dispersed among the many. The most significant example in the U.S. may have been the development and later demise of plantation agriculture in the South. The most significant such occurrence in the world at present is taking place in what once was the Soviet Union - large communal farms are being divided into individual farmer-owned plots. Cyclical turning points typically have been associated with major historical events. However, large-scale, industrial agriculture is coming under increasing environmental and social challenges all around the globe. A major historical change may well be in the offing.

The Transition to Sustainability

Many futurists, people who study trends and cycles, believe we are in a time of a *great transition*.

"We are at that very point in time when a 400-year-old age is dying and another is struggling to be born - a shifting of culture, science, society, and institutions enormously greater than the world has ever experienced. Ahead, the possibility of the regeneration of individuality, liberty, community, and ethics such as the world has never known, and a harmony with nature, with one another, and with the divine intelligence such as the world has never dreamed."

These are not the words of a priest or a philosopher but of Dee Hock, founder of one of the largest financial institutions in the World, the VISA Corporation.

Hock is certainly not alone in this thinking. A whole host of futurists from the political and business communities, including Alvin Toffler, Vaclav Havel, Tom Peters, Peter Drucker, John Naisbitt, and Robert Reich agree that we are in a time of fundamental change. They talk and write of a shift in worldview from the mechanistic, industrial model of the past, where people derived power from control of capital and the technical means of production, to a new life-centered, post-industrial era where knowledge has become the source of power, of wealth, and of future human progress. The two world views are fundamentally different. One views the world as a complex machine, the other views the world as a living organism. Factories are mechanistic. They are build, they function for a while, inputs go in and outputs come out, they eventually wear out, and must be replaced. Knowledge is biological rather than mechanical in its fundamental nature - it is discovered, it changes, it grows, and multiplies over time pretty much on its own. Living things can't be build, and are difficult to control, instead they must be nurtured and cared for. Thus, the knowledge based era of human progress will require greater understanding of and respect for living systems, including people.

The transition to the post-industrial paradigm of *sustainable agriculture* is but small parts of *the great transition* that is taking place all across society. The questioning that is driving changes in agriculture, however, exemplifies the broader questioning of society that is fueling *the great transition*. The questions relate to sustainability - is society in general, or agriculture in particular, sustainable over time?

Using almost anyone's definition, concerns for sustainability imply concerns for intergenerational equity - meeting the needs of our current generation while leaving equal or better opportunities for those of generations to follow. The three cornerstones of a sustainable agriculture - ecological soundness, economic viability, and social responsibility - rest upon a foundation of intergenerational equity. An agriculture that is not ecologically sound, economically viable, and socially responsible simply is not sustainable over time. Sustainability applies the Golden Rule across generations.

Intergenerational equity has its foundation in human spirituality. Paraphrasing William James - a well-known religious philosopher - we may define spirituality as a "felt need to live in harmony with some unseen order of things." The sustainability issue ultimately is rooted in a perceived "need to be in harmony with the order of things" -- in spirituality. Finding harmony with a higher order requires an understanding of that order - wisdom not power and control. Sustainable farming means farming in harmony with nature - nurturing nature rather than dominating or manipulating nature. Sustainable farming means farming in harmony with people - within families, communities, and societies. Sustainable farming means farming in harmony with future generations - being good stewards of finite resources.

However, sustainable agriculture also requires economic viability. A farm is not sustainable unless it makes sufficient profits to stay in business financially. Sustainable farming systems generate profits by fitting the methods of farming to the farm, the farmer, and the community - not forcing either to fit some predefined prescription for productivity. Thus, sustainable farming must be knowledge-based - knowledge of how to work with nature rather than against it. Sustainable farmers must match their unique abilities and talents with their land, their community, and their markets. This requires a higher level of understanding of consumer tastes and preferences and the uniqueness of relationship markets. Sustainable farming requires a higher level of understanding of the land and of nature's productive processes. In general, sustainable farming requires more intensive resource management - more thinking and creativity per acre or land or dollar of investment. Sustainable agriculture is very much in harmony with a knowledge-based paradigm for future human progress - the post-industrial era of human development.

Wendell Berry, a Kentucky farmer, has clearly articulated the connections among people, the land, and sustainable agriculture.

"...if agriculture is to remain productive, it must preserve the land and the fertility and ecological health of the land; the land, that is, must be used well. A further requirement, therefore, is that if the land is to be used well, the people who use it must know it well, must be highly motivated to use it well, must know how to use it well, must have time to use it well, and must be able to afford to use it well" (p. 147).

The words of Wendell Berry, the farmer and writer, are completely consistent with Peter Drucker, the industrial business consultant and writer,

"In the knowledge society into which we are moving, individuals are central. Knowledge is not impersonal, like money. Knowledge does not reside in a book, a databank, a software program;

they contain only information. Knowledge is always embodied in a person, carried by a person; created, augmented, or improved by a person; applied by a person; taught by a person, and passed on by a person. The shift to the knowledge society therefore puts the person in the center (p. 210)."

Sustainable agriculture, the new vision for the future of agriculture, is a knowledge-based approach to meeting the food and fiber needs of society that decreases the importance on capital and technology by putting people at the center of productivity.

The New Sustainable Farm

Farming sustainably is no simple task. But, thousands of farmers are finding ways to sustain a desirable quality of life for themselves and to support their local communities while being good stewards of the land and the natural environment. They may carry the label of organic, low-input, alternative, biodynamic, holistic, permaculture, or no label at all, but they are all pursuing common economic, ecological and social goals. By their actions, these farmers are defining a new kind of farm.

These new farmers are a diverse lot, but they share a common pursuit of a *higher* self-interest. They are not trying to maximize profit, but instead are seeking sufficient profit for a desirable quality of life. They recognize the importance of relationships, of family and community, as well as income, in determining their overall well being. They accept the responsibilities of ethics and stewardship, not as constraints to their selfishness, but instead, as opportunities to lead successful lives.

These farmers, these common people, are the architects of the *new farm*. These farmers, not the experts or the scientists, are the ones on the new frontier - they are the explorers, the colonists, the revolutionaries, and the builders of a *new world*. Life is difficult on the frontier because no one really knows how to do what these folks are trying to do - they are creating the future. They are getting little help from the government, their universities, or the agricultural establishment. They are doing it pretty much on their own. They will continue to confront hardships, frustrations, and there will be some failures along the road. But, more and more of these *new farmers* are finding ways to succeed.

There are no blue prints for the *new farm*. But a few fundamental principles are beginning to emerge. In general, the new farming opportunities arise directly from exploiting the weaknesses resulting from misuses of industrialization -- specialization, standardization, and centralized decision making. The new farm relies instead on the advantages of diversity, individuality, and decentralized networks of interdependent decision-makers.

New farmers focus on working with nature rather than against it. The natural resource base that ultimately must sustain productivity is inherently diverse. Industrial systems have had to *bend nature* -- to augment, supplement, alter, and force it -- to create an illusion of conformity out of diversity in order to meet the demands of large-scale, industrial production. The ecological problems arising from industrialization are symptoms of natural resources being used in ways that are inherently degrading to their productivity. Thus, industrialization has created tremendous

opportunities for farmers who learn to utilize the inherently productive capacity of a diverse natural resource base, rather than wasting time and money trying to force nature to conform.

These new farmers utilize practices such as management intensive grazing, integrated crop and livestock farming, diverse crop rotations, cover crops, and inter-cropping. They manage their land and labor resources to harvest solar energy, to utilize the productivity of nature, and thus, are able to reduce their reliance on external purchases inputs. They are able to reduce costs and increase profits while protecting the natural environment and supporting their local communities.

New farmers focus on value rather than costs. They realize that each of us values things differently, as consumers, because we have different needs and different tastes and preferences. Industrial methods are efficient only if large numbers of us are willing to settle for the same basic goods and services - so they can be mass produced. So, industrialization has to treat us as if we're all pretty much the same. Customers have to be persuaded, coerced, and bribed to buy the same basic things rather than the things they really want. That's why we pay more for packaging and advertising of food than we pay to the farmers who produce the food. The industrial system creates tremendous untapped opportunities for farmers who can tailor their products to conform to unique needs and preferences of individual customers, rather than try to bend the preferences of customers to conform to their products.

New farmers market in the niches. They market direct to customers through farmers markets, roadside stands, CSAs, home delivery, or by customer pick-up at the farm. They use everything from the Internet to word of mouth to advertise their services. They market to people who care where their food comes from and how it is produced - locally grown, organic, humanely raised, hormone and antibiotic free, etc. They are often able to avoid some or all of the processing, transportation, packaging and marketing costs that make up 80 percent of the total cost of mass marketed foods. They increase value, reduce costs, and increase profits while protecting the environment and helping to build stronger local communities.

New farmers focus on what *they* can do best. They realize that we are all different -- as producers as well as consumers. We have widely diverse skills, abilities, and aptitudes. Industrialization has had to "bend people" -- train, bribe, and coerce them -- to make people behave as coordinated parts of one big machine rather than as fundamentally different human beings. Many social problems of today are symptoms of people being used by industrial systems in ways that are inherently degrading to our uniquely human productive capacities. Thus, industrialization has left tremendous untapped economic opportunities for farmers and others who can use their unique capacities to be productive rather than attempt to conform to systems of production that just don't fit.

These new farmers may produce grass finished beef, pastured pork, free range or pastured poultry, heirloom varieties of fruits and vegetables, dairy or milk goats, edible flowers, decorative gourds, or dozens of other products that many label as agricultural "alternatives." They find markets for the things they want to grow and are able to grow well rather than produce for markets where they can't compete. Or they may produce fairly common commodities by means that are uniquely suited to their talents. Their products are better, their costs are less, and

their life is better because they are doing the things that they do best. New farmers focus on creating value through uniqueness - among consumers, among producers, and within nature.

In general the new farmers link people with purpose and place. By linking their unique productive capacities with unique sets of natural resources to serve the needs and wants of unique groups of customers they create unique systems of meeting human needs that cannot be industrialized. The more unique their combinations of person, purpose, and place, the more sustainable will be the value to customers and producers alike. The sameness of industrialization creates opportunities for unique farmers who can create unique linkages with both resources and customers.

New Opportunities for Beginning Farmers

These new ways of farming represent new opportunities for beginning farmers. Lack of land and capital typically are the two greatest barriers confronting beginning farmers. However, by relying on more intensive management, sustainable farmers are able to make greater economic returns per acre of land or dollar of capital investment. They are able to sustain a more desirable quality of life on smaller farms - farms which require less land and capital. These new farmers simply reverse the process of the past, that has resulted in larger farms, by substituting hands-on management and labor for capital and labor-saving technology. Some refer to this process as increasing the "eyes per acre" ratio, or using the "managers footprints" as the primary amendment to the soil.

This does not imply that all small farms are sustainable or that intensively managed large farms are not. It simply means that farming sustainably requires a greater reliance on management, and as a result, requires less land and capital to produce any given economic return. This means that a beginning *new* farmer will need less land and capital to get started than will his or her conventional farming neighbors.

The new sustainable farms tend to be more labor intensive because they rely less on costly labor-saving technologies such as pesticides, commercial fertilizers, and high-tech equipment. This does not mean that new farmers rely on drudgery work such as hoeing weeds by hand, spreading manure with pitchforks, or plowing with horses - although such practices may fit some small scale farming operations. New farmers are just more likely to rely more on tillage than on chemicals to control weeds. They take the time to get manure back on the land where the feed was grown. They may use older, smaller, or cheaper equipment that does the job just as well, but takes more time.

Sustainable farmers also are more inclined to "swap work" with other farmers when possible. However, most sustainable farmers do not consider manual labor to be degrading, nor are they reluctant to pay a decent wage for a decent day's work when they need extra help. Cash costs of labor are likely to be far less than costs of the technologies they replace because the farm family often does most if not all of the work on their farm. However, even hired labor presents less of a financial obstacle than does expensive farm inputs and large investment in high-tech equipment. Thus, it requires less money to begin farming by more labor-intensive methods.

Substituting labor for capital and inputs has definite limits. The key to successful new farms is more intensive management. Beginning *new* farmers will need more knowledge and understanding of natural ecosystems - soils, crops, and livestock - than will conventional farmers. They also will need a better understanding and appreciation of people - their customers, themselves, people in general; than will their conventional neighbors. However, knowledge typically is easier to acquire and accumulate than is money - at least for those who are willing to invest the time and effort to learn. The knowledge needed to make a living by managing intensively is available to nearly anyone, by means such as independent study, apprenticeships, and ordinary work experience. For most, it's easier and more practical to learn more than to save or borrow more money.

In addition to lower initial costs, cash operating expenses for new farms are less as well. Sustainable farmers tend to be low input farmers. They use crop rotations, cover crops, and integrated crop and livestock systems to break pest cycles, maintain soil fertility, recycle wastes, and add value to products before they leave the farm. Low-input farming requires a higher level of management. But those who succeed with low-input methods are able to reduce or eliminate cash costs of pesticides, fertilizers, feed, and other inputs that must be purchased by conventional farmers. Thus, cash operating expenses are less for the beginning farmer who farms by more sustainable methods.

New farms are inherently less risky than are conventional farms. Intensive management invariably leads to a more diverse farming operation - more different crops and livestock enterprises, and greater stability of yields and production from year to year. Industrialized systems are specialized systems. Specialization tends to maximize potential yields when adequate quantities of all inputs, including water, are provided at the right time, but, consequently, tend to have greater yield variability over time because deficiencies of one or more inputs often limit yields. Systems that rely less on external inputs, and instead rely more on natural production processes, may have limited maximum yield potential, but tend to have more stable yields over time. A greater diversity of enterprises also reduced whole-farm production and market risks. When yields of some enterprises are down, others are likely to be up. When prices for some commodities are low, other are likely to be high. Profits tend to offset losses, limiting the potential for big profits but also limiting the risks of big losses.

Sustainable farmers build strong relationships with their customers, with other farmers, and with people in the local community. Relationships are important in sharing information, sharing labor, and in maintaining profitable direct markets. Relationships can translate into economic as well as social and ethical rewards - although relationships based solely on economics seldom last. Most important, a person's capacity for caring, sharing, and ethical behavior is not limited by a lack of land or capital. Thus, the beginning farmer who succeeds in cultivating positive relationships can live better with less land and money. Farming sustainably isn't just about making more money - it's about having a better quality of life, economically, socially, and ethically.

New farmers may have more difficulty borrowing money to begin farming because agriculture lenders don't understand what "new farming" is all about. Some new farmers may succeed in educating their lenders - particularly if they can point to some successful *new* farmers as proof that new farming makes economic sense. They can point that new farms require less land and

initial capital, have lower operating expenses, are more diverse, and thus, are less risky for lenders than are conventional farms. The new farmer is the one who takes the most risk, by making the initial investment in learning to manage intensively. New farmers can improve their odds for both getting and paying back a loan by outlining a carefully developed business plan - which includes not only the farm production plan but the plan for marketing and cash flow. New farmers often will have to research and supply information concerning markets and prices for crops, livestock, and value-added products that are not common to farms in the area.

In spite of their best efforts to educate lenders, many new farmers probably will have to put up more equity, more of their own money, than will conventional farmers. They may have to work longer, individually or as a family, and save more money before they can begin farming. One member of the family may have to continue working off the farm, at least for a period of time, and commit one salary to repaying a loan or paying for production expenses. While this may seem an unfair imposition, it may actually turn out for the best in the long run. More farmers have gone broke by borrowing too much money than by being able to borrow too little. More beginning farmers have gone broke by trying to begin farming on their own before they really knew enough to farm successfully than by having to wait too long after they actually knew enough to farm on their own. The security of an off-farm income can be very comforting, even if it is not actually needed, when a family is beginning something new on their own. Thus, difficulty in borrowing too much money too soon may actually be a positive rather than a negative for new farmers.

In general the new sustainable farmers must put more of themselves into their farms - as managers, workers, neighbors, friends, family - as people. But farming in harmony; economically, socially, and ethically, allows the farm, the farmer, and the family to become part of the same whole. So, there is no conflict between the personal, interpersonal, and spiritual because they work in harmony for a common purpose - to achieve a higher self-interest. A measure of economic success is necessary for harmony and balance, but getting wealthy is not a priority. A smaller farm may be better than a big farm - not only does it require less money up front, but it leaves more time for family and for caring for the land. So by putting more of themselves into a farm, sustainable farmers are better able to get started with less land and less money, and thus, are more likely to succeed.

New farms for the new century will center around people. New farmers will rely far more on knowledge than on capital or technical inputs. Knowledge is not impersonal, like money or technology. Knowledge does not reside in a book, a databank, or a software program - these things contain only information. Knowledge is always discovered by a person, enhanced by a person; taught by a person, and put to use by a person. The transition to the knowledge-based society will bring people back to the center of society and will bring people -- farmers, customers, citizens, -- back to the center of farming. New farms for the new century will create new opportunities for people.

REFERENCES

Berry, Wendell. 1990. What are People For. San Francisco: North Point Press.

Culotta, Elizabeth. 1991. "Science's 20 greatest hits take their lumps," Science, American Academy of Science, March 15, 251:4999, p. 1308.

Drucker, Peter. 1989. The New Realities. Harper and Row Publishers, Inc. New York, NY.

Drucker, Peter. 1994. Post-Capitalist Society, HarperBusiness, a Division of HarperCollins Publishing, New York, NY.

Hock, Dee. 1996. "The Trillion-Dollar Vision of Dee Hock," in SCSI Web Page, <http://www.Fastcompany.com/fasco/5/well/deehocl.htm>, by M. Michell Waldrop. December, 1996.

Hock, Dee W. 1995. "The Chaordic Organization: Out of Control and Into Order," World Business Academy Perspectives, Vol. 9, NO.1, Berrett-Koehler Publishers (pp. 5-21).

Hoval, Vaclav. 1994, "Transcending Modern," Columbia Daily Tribune, Columbia, Mo, July 10, 1994.

Naisbitt, John and Patricia Aburdene. Megatrends 2000. 1990. Avon Books, The Hearst Corporation, New York, NY.

Peters, Tom. 1994. The Pursuit of WOW!, Vantage Books, Random House, Inc. New York, NY.

Pool, Robert. 1991. "Science Literacy: The Enemy is Us," Science, American Academy of Science, March 15, 251:4991, p. 267.

Reich, Robert B. 1992, The Work of Nations. Vintage Books, Random House Publishing, New York, NY.

Schumacher, E. F. 1975. Small is Beautiful, Harper and Row, New York, NY.

Toffler, Alvin. 1990. Power Shifts. Bantam Books: New York, NY.