

An Essay on the Intensification of Agriculture¹

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Like many people from Kentucky (although by no means all), I have a deep fondness for the work and philosophy of Wendell Berry. A writer of short stories, essays and poetry, Berry has developed a holistic philosophy that, while deeply personal and often poetic, is consistent with the ecological-evolutionary perspective developed in this book. Although obviously growing out of a very different tradition than social science, Berry's essays often focus on the same themes and processes as the sociological enterprise. The purpose of this essay is therefore actually two-fold: to illustrate the perspective of sociocultural materialism through a discussion of the book *The Unsettling of America* by Wendell Berry (1977); and to introduce Berry's perceptive critique/analysis of industrial agriculture and the wider society to students of sociology. For, though his focus is on agriculture, Berry believes that the industrialization of the American farm is but a part of the larger industrialization process, a process that has similar effects within other sectors of the social system.

The heart of Berry's analysis is centered on our relationship to the earth. He believes industrial agriculture is exploitative, an extractive industry in which maintenance and care for the land has given way to short-term production goals. The use of outsized equipment has forced many farmers to give up such soil conservation practices as contour plowing and wind breaks. The high levels of chemical use on the farm have caused an inevitable spill over into the wider environment. The

¹ An excerpt from *Industrializing America*, 1999, Praeger Publishers, pp. 109-116.

industrialization of agriculture has been at the expense of increasing the pollution and depletion of the environment. Based on nonrenewable resources, this type of agriculture is sustainable only as long as supplies of topsoil, water and oil remain plentiful, and pollution remains within tolerable limits. Berry believes that if we continue to intensify production, we will exceed these limits.

However, the focus here will not be on the impact of industrial agriculture on the environment. There is ample literature on that. The work of Berry and others has set off a great debate in agricultural circles over the concept of sustainable agriculture. The literature is rife with articles detailing environmental problems of depletion and pollution in agriculture and a counter literature that minimizes the problems. Proposed solutions to these problems advocate either a return to earlier agricultural practices or calls for further technological innovation to minimize environmental disruption. It is a debate worthy of your attention and I commend it to you. But in this essay I want to follow Berry down a different path. Specifically, I would like to examine the connection between the intensification of industrial agriculture and its effects on the wider sociocultural system.

Intensification of Industrial Agriculture

The industrialization of agriculture includes a high degree of specialization of farms to the production of a single crop or animal; the use of oversized mechanical equipment that tills, seeds, or harvests acres of land in minutes; the liberal application of chemical fertilizer, pesticides, and herbicides; the use of large amounts of water for irrigation; the scientific manipulation of seeds for their resistance against disease and attributes that will increase yield; and the practice of raising specially bred livestock in large

concentrations through the unsparing use of designer feeds, mechanized feeding and waste removal, and drugs. Further intensification can be expected as genetic engineering continues to advance. In sum, industrial agriculture depends on the investment of huge amounts of fossil fuel energy in the production process, the increasing application of science in manipulating the biology of plants and animals, an increasing scale of mechanization, and the introduction of business practices on the farm. These innovations have been used to both replace human labor on the farm and to maximize productivity.

The intensification of agriculture can be directly measured in terms of the growth in the production of various agricultural products. *Vital Signs: The Trends that are Shaping Our Future* is a highly respected yearly publication of the WorldWatch Institute. The publication monitors trends in food production throughout the world. Tables based on their data for Grain Production (mainly wheat, rice and corn), Grain Yields per hectare of land, and Meat Production all indicate that agricultural productivity has risen dramatically around the world since 1950; though it should also be noted that growth in the production of each commodity has been slowing in recent years.

Other measures of intensification of agriculture are the use of chemical fertilizer and water for irrigation. The use of fertilizers has shown a short-term decline in the last ten years--perhaps due to rising prices, changing patterns of government subsidies, and limits on a plants' ability to respond to any heavier applications. Nonetheless, artificial fertilizer, whose manufacture is highly energy intensive, has been one of the two main factors behind increasing land production since mid-century (Brown, 1995). As shown in the table on Fertilizer, the growth in the use of fertilizer

since 1950 has been extraordinary. Water is the other main factor behind increased agricultural productivity. "The growth in world irrigated area during the third quarter of this century was extraordinarily rapid, averaging some 3 percent a year" (Brown, 1995: p. 42). Again, this growth has slowed down in recent years as it has approached or exceeded its sustainable limits.

In order to attain this rise in productivity, the amount of energy invested in food production has gone up dramatically. Traditional agriculture used about one calorie of energy (usually in the form of human and animal labor) to produce 10 calories of food. David Pimental of Cornell University has shown that to produce and deliver one can of corn containing 270 calories now requires 2,790 calories of energy, almost all fossil fuel used to power machinery and manufacture pesticides, chemical fertilizers, and transport the food great distances to market (Harris, 1977). "The production of beef now requires even more prodigious energy deficits: 22,000 calories to produce 100 grams (containing the same 270 calories as in the can of corn)" (Harris 1977, 284). The productivity of industrial agriculture depends upon these tremendous energy deficits-- deficits that can be maintained as long as fossil fuel remains abundant.

Concentration

Based on huge capital outlays, industrial agriculture promotes the growing concentration of farmland in order to achieve economies of scale. Concurrent with the industrialization of agriculture has come the decline of farm families and communities and the rise of agribusiness. Each year since World War II, farm holdings have become larger, owners fewer. Berry contrasts the industrialization of the American farm with forced collectivization in the former Soviet Union:

"I remember, during the fifties, the outrage with which our political leaders spoke of the forced removal of the populations of villages in communist countries. I also remember that at the same time, in Washington, the word on farming was "Get big or get out"--a policy which is still in effect and which has taken an enormous toll. The only difference is that of method; the force used by the communists was military; with us, it has been economic--a "free market" in which the freest were the richest "(Berry, 1977: 41). The people who have been moved off the land often gravitate to large urban areas, many to become a permanent underclass, excluded from participation in modern society. It seems possible, then, that industrial farming has not only destroyed farming communities, but has contributed to the disintegration of urban life as well.

The concentration of American agriculture continues. The changes in farm technology has reduced the emphasis on labor-intensive agriculture, reducing the need for farm workers and even many farmers themselves. Because they are so expensive, the use of the new technologies is not efficient on small farms; consequently, the new technologies fuel a process of concentration as many farm owners are forced to sell, as others invest in the technologies and expand. This process, already well advanced by the 1960s, is illustrated by comparisons of US Government statistics. From 1963 to 1993, farm employment fell by half (from 4,364,000 employed workers to 2,041,000). In that same time period, the number of American farms dropped from 3,572,000 to 2,065,000 (a 42 percent decline), the average farm size has increased from 322 acres to 474 acres (an increase of 47 percent), and production has soared almost by half (Ilg, 1995). Real economic concentration (and power) is shown by the fact that American "(f)arms with annual sales of more than \$500,000 account for 1% of the number of

farms, 30% of the total agricultural production and 45% of net farm income"

(Anonymous, 1988, p. 73).

The driving force behind the concentration of agriculture has been the technological developments that force farmers to either grow or get out of agriculture completely. In order to compete, farmers need to increase the size of their farms to achieve economies of scale. "The result is a farm sector with fewer operators and still fewer laborers and the role of farming in small-town America has become much less significant" (Ilg, 1995).

Feedback

Berry convincingly demonstrates that the intensification of US agriculture has been promoted by a collaboration of agribusinessmen within corporations, agriscientists within the university, and bureaucrats within government agricultural agencies. It is their interests, their ambitions and goals that have determined the direction of agricultural development. As such, it has been the interests of merchants and industrialists, academic careerists and bureaucrats that have guided the industrialization of the farm, "who have promoted so-called efficiency at the expense of community (and real efficiency), and quantity at the expense of quality" (Berry, 1977: 42).

Agricultural research is increasingly being dominated by Agribusiness and chemical firms. "Like the sorcerer's apprentice, the industry spends vast amounts of effort and money putting right the things it put wrong in the first place. . . . The research that private industry does, and which it solemnly publishes in the learned journals, is geared towards telling us the obvious--such as the fact that tethered pigs have high

blood pressure, or that fertilizers lead to soil erosion--and then finding hi-tech solutions to those problems" (Hutchings, 1989: 13-14).

Of the three bureaucracies promoting the intensification of agriculture, Berry heaps the most scorn upon agricultural professors: "The careerist professor is by definition a specialist professor. Utterly dependent upon his institution, he blunts his critical intelligence and blurs his language so as to exist 'harmoniously' within it--and so serves his school with an emasculated and fragmentary intelligence, deferring 'realistically' to the redundant procedures and meaningless demands of an inflated administrative bureaucracy whose educational purpose is written on its paychecks (Berry, 1977: 148). The professors, according to Berry, define agriculture in purely commercial terms. Their goal is to promote an agricultural system that provides food as efficiently as possible (meaning quickly, cheaply, with minimum human labor) as well as to provide a market for agricultural machines and chemicals. To advance in academe, or to make one's self marketable for lucrative jobs in other agricultural bureaucracies, Berry contends, one's research must be oriented toward agribusiness, not toward the land or the farmers who work it.

Aside from the fact that he was a professor at the University of Kentucky and knows them well, Berry is hostile to academicians because the land-grant college system was specifically instituted to promote the interests of the independent farmer, whom Jefferson believed to be the backbone of democracy. Like experts in many bureaucracies, the academics of agriculture defined their goals in quantitative, measurable terms. Productivity became the yardstick; values concerning the land, the welfare of the farming people themselves, even of the total society were simply not

considered. Partly as a result of their research, millions of farmers and farm workers have been forced from the land; the land itself is rapidly becoming depleted and polluted. Consequently, bureaucracies originally set up to help the farmers and farm communities actually pursue goals that end up destroying the very groups they are supposed to serve. Berry describes the general process of the irrationality of zweckrational in words that strongly echo Weber: "The practical, divorced from the disciplines of value, tends to be defined by the immediate interests of the practitioner, and so becomes destructive of value, practical and otherwise" (Berry, 1977: 158).

Rationalization

What Berry is condemning in modern agricultural bureaucracy is the obsessive focus on the narrow goal of productivity (zweckrational or goal oriented rational behavior) to the exclusion of all other values, emotions and traditions. "Modern American agriculture has made itself a "science" and has preserved itself within its grandiose and destructive assumptions by cutting itself off from the moral tradition (as it has done also from the agricultural tradition) and confining its vision and its thought within the bounds of internal accounting" (Berry, 1977: 172). Like the goal-oriented behavior of other bureaucracies, the bureaucracies of agriculture ignore tradition, emotion (such as love for the land), and wider social values (care of people) in their attempts to achieve their goal of greater production.

Berry also perceives the corrosive effects of excessive zweckrational experienced outside the bureaucracies of agriculture on the farmers themselves.

The concentration of the farmland into larger and larger holding and fewer hands--with the consequent increase of overhead, debt, and dependence on machines--is a matter of complex significance. . . . It forces a profound revolution in the farmer's mind: once his investment in land and machines is large enough, he

must forsake the values of husbandry and assume those of finance and technology. Thenceforth his thinking is not determined by agricultural responsibility, but by financial accountability and the capacities of machines. . . . He is caught up in the drift of energy and interest away from the land. Production begins to override maintenance. The economy of money has infiltrated and subverted the economies of nature, energy, and the human spirit” (Berry, 1977: 45-46).

The structure of industrial agriculture promotes, even demands, that those who work the soil do so within the narrow goals of maximizing production, at the expense of all other values. Thus you have family farms like "Salter-American" that are increasingly run on a strict business-like basis, with five year plans, international marketing executives, and computerized cost-accounting systems down to 20-acre plots to get a better grip on profitability (The Economist, p. 73). "The trouble is that farming is now largely out of the hands of the farmersfarmers are on a treadmill that they are powerless to control. If the featherless chicken comes, farmers will be forced to breed it, or go out of business" (Hutchings, 1989: 14).

Again, to quote Berry, "Once, the governing human metaphor was pastoral or agricultural, and it clarified, and so preserved in human care, the natural cycles of birth, growth, death, and decay. But modern humanity's governing metaphor is that of the machine. Having placed ourselves in charge of creation, we began to mechanize both the creation itself and our conception of it. We began to see the whole creation merely as raw material, to be transformed by machines into a manufactured paradise” (Berry, 1978: 116). Berry is describing, through the use of metaphor, a change in the way modern people perceive the world. People's perceptions of the world and their place in that world, Berry argues, are greatly affected by how they go about making their living. An agricultural way of life encourages people to view their world in terms of natural

cycles and rhythms. By adopting an industrial mode of production we begin to view the world as raw material to be manipulated and exploited for our own ends. Berry's governing metaphor bears obvious similarities with Weber's concept's of human action and the rationalization process. Both men are attempting to describe the same characteristic shift in social thought--Berry more poetically, Weber more analytically perhaps, but the same social process.

Feedback

Berry recognizes the connections between the way we go about making our living, the social structure and our values. The removal of human values and traditions from productive activity, an activity that many would claim defines our very humanity, necessarily affects all areas of our lives. It leaves us cut off from our past, cut off from wider moral and social values, cut off from our humanity.

It is impossible to mechanize production without mechanizing consumption, impossible to make machines of soil, plants, and animals without making machines also of people(75)

If human values are removed from production, how can they be preserved in consumption? How can we value our lives if we devalue them in making a living?" (79).

But then it must be asked if we can remove cultural value from one part of our lives without destroying it also in the other parts. Can we justify secrecy, lying, and burglary in our so-called intelligence organizations and yet preserve openness, honesty, and devotion to principle in the rest of our government? Can we subsidize mayhem in the military establishment and yet have peace, order, and respect for human life in the city streets? Can we degrade all forms of essential work and yet expect arts and graces to flourish on weekends? . . .The answer is that, though such distinctions can be made theoretically, they cannot be preserved in practice. Values may be corrupted or abolished in only one discipline at the start, but the damage must sooner or later spread to all; it can no more be confined than air pollution. If we corrupt agriculture we corrupt culture, for in nature and within certain invariable social necessities we are one body, and what afflicts the hand will afflict the brain" (91).

A society that defines immediate productivity and efficiency as ultimate value, that judges all by these standards, cannot afford concern for tradition, for wider social concerns.

Modern bureaucracies, modern thought (zweckrational), promote continued intensification, implying infinite industrial growth and consumption. But considering wider cultural concerns, Berry argues, leads one to restraint in our pursuit of affluence. These wider concerns, however, have been weakened along with our families and communities; they are not given voice in our bureaucracies; they are not given value in our culture.