

Chapter 2

The Challenge for Rural America

Contents

	<i>Page</i>
Findings	35
Introduction	35
Defining Rural Areas	36
The Evolution of Rural America in a Historical Context	38
The Current Rural Situation	40
Key Trends Likely To Affect Rural America	45
The Shift to an Information-Based Economy	45
The Decline of the U.S. Competitive Position and the Emergence of a Global Economy	48
A Growing Concern About the Environment, and the Environmental Tradeoffs in Economic Development	50

Boxes

<i>Box</i>	<i>Page</i>
2-A. Forces Underlying The Global Economy	50
Z-B. New Forms of Global Competition	50
2-C. Maine's Sea Urchin Industry	51
2-D. Lake Cumberland, Kentucky	53
2-E. Development v. the Environment	54
2-F. Retraining Miners in Appalachia	55

Figures

<i>Figure</i>	<i>Page</i>
2-1. Number of Farms and Farmworkers	37
2-2. Census Regions of the United States	37
2-3. Nonmetropolitan County Distribution	39
2-4. Poverty Rates and Unemployment by Residence	43
2-5. Real Per-Capita Income	44
2-6. Net Nonmetropolitan Migration by Education Level, 1985-86	44
2-7. Structural Change and the Information Economy	45

Table

<i>Table</i>	<i>Page</i>
2-1. ERS Classification of Nonmetropolitan Counties	38

The Challenge for Rural America

Findings

Unless rural communities act decisively to reverse present trends, their economies will become more fragile. Without intervention, unemployment, poverty, and out-migration will likely increase, exacerbating the structural problems typical of rural areas. The growing importance of high-technology service industries within the economy and the higher value placed on employment in these fields, as well as greater environmental constraints, require that economic development strategies be broader-based while focusing more on such technology-oriented businesses.

To attract firms in these growth industries, rural areas will have a number of obstacles to overcome. Competition for such companies will be intense, coming from urban and other rural areas and increasingly from other countries. Unlike routine manufacturing industries that migrated to rural areas in search of lower production costs, today's high-technology industries are attracted both by a highly skilled workforce and communication networks to other economic markets and information centers. These are precisely what rural areas lack.

With ~~these~~ comparative disadvantages, it is clear that one key component of a successful development strategy is upgrading the labor force. A second component is the improvement of the communication infrastructures in rural areas.

Introduction

Although isolated and remote, rural communities do not exist in a vacuum. They are linked to the world surrounding them through a variety of transportation and communication networks and the commodities that flow over them.¹ Rural communities have, throughout American history, been shaped by advancements in transportation and communication technologies. By extending their ties and expanding their markets, these technologies have

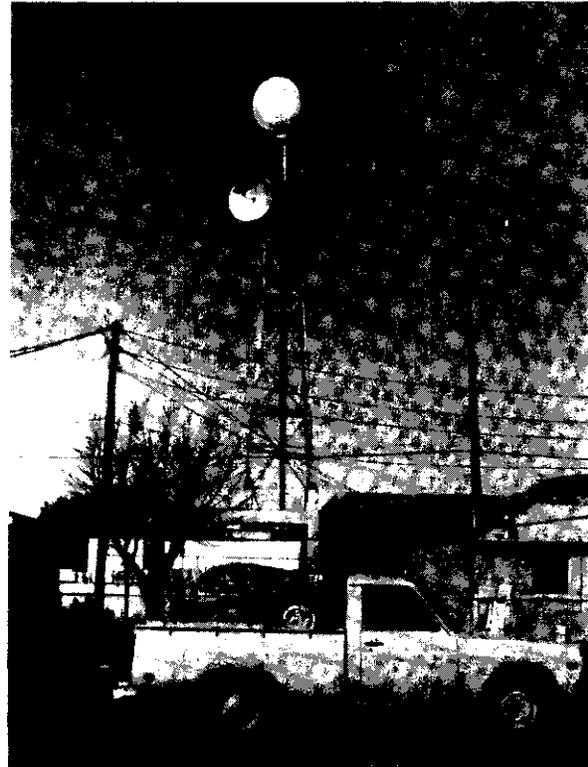


Photo credit: Mark G. Young

A microwave repeater looms over the back yards of Grants, NM, a uranium mining town that has endured the industry's booms and busts.

made rural communities more vulnerable to external developments and events.²

Rural America continues to evolve in response to its changing environment. Today, rapid advances in communication and information technologies are restructuring and redefining rural communities and markets. In the past, these technologies brought rural villages and towns into a larger, national community; now they link communities on a worldwide basis. As rural communities become even more interdependent, their futures will be determined by trends and developments far beyond their control.

¹Harold Innis, *The Bias of Communication* (Toronto: University of Toronto Press, 1951); see also James W. Carey, "Space, Time, and Communications: A Tribute to Harold Innis," James W. Carey (ed.), *Communication as Culture: Essays on Media and Society* (Boston, MA: Unwin Hyman, 1989).

²*Ibid.*

Many are concerned lest in this process rural America be left behind. Others believe that these social and economic changes could instead be a means to improve rural America's comparative advantages. Policymakers must have a clearer understanding of present conditions and the trends likely to affect rural communities in the future in order to evaluate rural communities' needs and prospects.

Defining Rural Areas

National rural economic development policies require a perceptive understanding of what the term rural America means—its location, its characteristics, its values. Present rural policy is not founded on such an understanding, so rural policies often reflect popular stereotypes instead of genuine needs.³ One such stereotype equates rural areas with farming. As a result, a disproportionate share of Federal funds for rural areas targets farming, although only 8 percent of the people in rural areas farm, and fewer own their farms⁴ (see figure 2-1).

These misperceptions persist, in part, because rural America is hard to define. Some policymakers use overly broad definitions deliberately, so they can appeal to a wide and diverse audience.⁵ Others, who aim to be more precise, characterize rural areas in terms of the data available. Their definitions tend to

be too constrained because reliable information about rural areas is limited.⁶ Most definitions juxtapose rural and urban areas.

Two agencies in the Federal Government—the Bureau of the Census, within the Department of Commerce, and the Office of Management and Budget (OMB)—have defined rural areas. The Census Bureau defines rural areas by exclusion: all nonurban areas are rural. According to the Census, urban America includes urbanized areas and urban places. An urbanized area consists of a central city and the contiguous, closely settled area outside the city's political boundaries (the urban fringe) that together have a population of at least 50,000. Its boundaries are drawn to include all areas with a residential population density of at least 1,000 persons per square mile. People living outside urbanized areas, but in places with 2,000 or more residents, are also considered part of the urban population.⁷

The OMB divides the United States into two groups of counties: metropolitan counties (MSAs) and nonmetropolitan counties. An MSA typically contains either a city with 50,000 or more residents, or is an urbanized area as defined by the Census Bureau. All counties outside MSAs are considered to be nonmetropolitan (see figure 2-2).

³For example, Jonathan Sher, a critic of past rural policy, complains that rural policy has shifted in accordance with two visions of rural America, the 'bucolic' and the 'bubonic.' He notes, "During periods in which the bucolic view prevailed, the presumption was that everything was just fine in the country side and therefore, governmental intervention constituted interference. This, in turn, allowed policymakers to feel comfortable about turning a blind eye towards rural issues. . . . [A]t other times the government pendulum swung to the opposite extreme. During the Great Society era, for example, some agencies and policymakers became transfixed by the bubonic image of rural people and their communities. Rural Americans were the People Left Behind and the self-appointed role of government was to save these backward folks. . . ." U.S. Congress, Subcommittee on Agriculture and Transportation, Joint Economic Committee, Jonathan Sher, "Rural Development Worthy of the Name," *New Dimension in Rural Policy: Building Upon Our Heritage*, June 5, 1986, pp. 515-516.

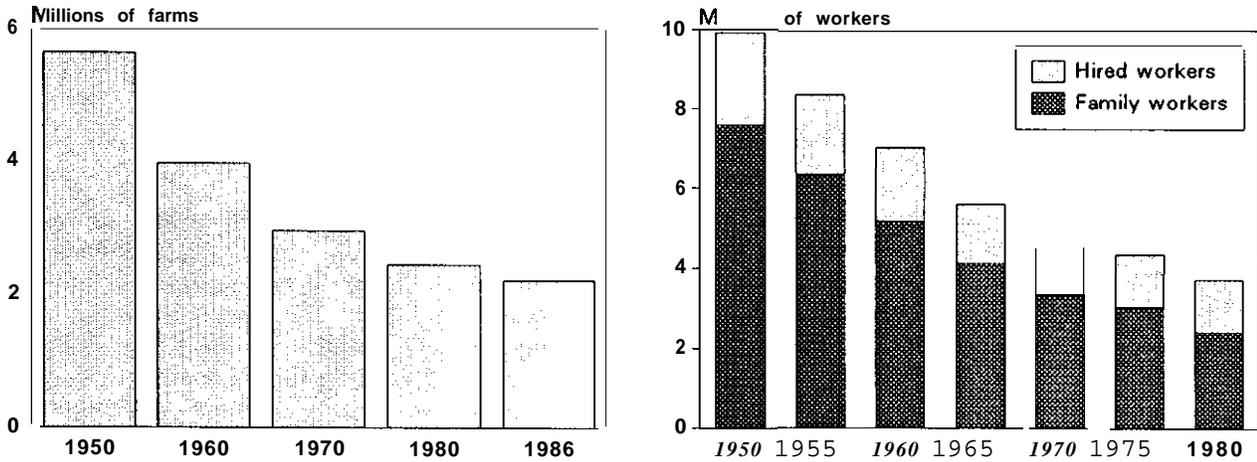
⁴In fiscal year 1987, \$29 billion was spent on development programs for all of rural America, while \$22.4 billion was spent on agricultural price and income support alone. Furthermore, a large proportion of agricultural subsidies were spent supporting the least needy farmers. In 1987, over half (57 percent) of direct government agricultural subsidies went to farmers who were in the top 15 percent in terms of wealth. See U.S. Congress, General Accounting Office, *Rural Development: Federal Programs That Focus on Rural America and Its Development*, Briefing Report to the Ranking Minority Member, Subcommittee on Conservation, Credit, and Rural Development Committee on Agriculture, House of Representatives, RCED-89-56R, January 1989, p. 29. See also, U.S. Department of Agriculture, *National Financial Summary, 1988, Economic Indicators of the Farm Sector*, Economic Research Service, ECIFS, 8-1, pp. 39 and 43.

⁵Consider for example the definition used in the policy report accompanying the Rural Development Policy Act of 1980. It states: "For the purposes of this document, the word 'rural' is used in general terms to describe geographic areas of relatively low population density—the countryside, the village, the small American town. . . . Even within. . . areas of high population density, there are communities of distinctively rural character. It is this character, which resists precise definition in the abstract but is universally familiar in practical experience, that makes rural America a special place." John R. Block, Frank W. Naylor, and Willard Phillips, *Better Country: A Strategy for Rural Development in the 1980s* (Washington DC: U.S. Department of Agriculture, Office of Rural Development Policy, 1983).

⁶It is quite expensive to collect the raw data on rural or nonmetropolitan areas. As a result, leading Federal agencies tend to collect less information about them. Moreover, as the National Academy of Science notes, "Our [factual] knowledge of rural people and their environment is imperfect and incomplete. [It consists mostly] of annual statistics for large aggregations of areas with only occasional benchmark data for census years for small areas. [And] aggregated data are often misleading because rural areas are so heterogeneous." As cited @ U.S. Congress, Joint Economic Committee, James T. Bonnen, "The Statistical Database for Rural America," *Towards Rural Development Policy for the 1990's: Enhancing Income and Employment Opportunities*, Washington DC, S. Prt. 101-50, Sept. 14, 1989, p. 27.

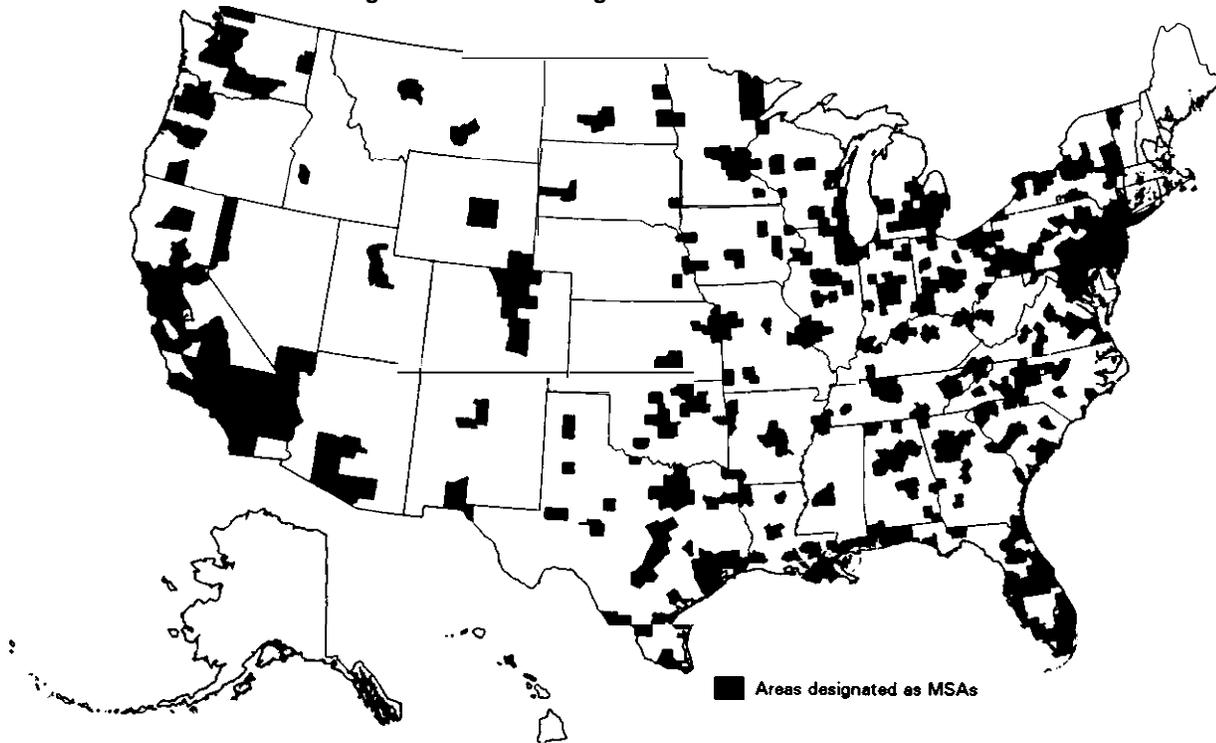
⁷U.S. Department of Commerce, Bureau of the Census, "Census and Geography—concept and Products," *Factfinder*, CFF No. 8 (Washington DC: U.S. Government Printing Office, August 1985).

Figure 2-1—Number of Farms and Farm Workers



SOURCE: Dorm Reimund and Mindy Petrusis, "Performance of the Agricultural Sector." David L. Brown and Kenneth L. Deavers (eds.), *Rural Economic Development in the 1980's: Prospects for the Future* (Washington, DC: U.S. Department of Agriculture, 1988), pp. 81,891 "

Figure 2-2-Census Regions of the United States



SOURCE: U.S. Bureau of the Census, *1980 Census of Population and Housing* (Washington, DC: U.S. Government Printing Office, 1982), p. 52.

Table 2-1—ERS Classification of Nonmetropolitan Counties

	Size of urban population		
	Less than 2,500	2,500-20,000	More than 20,000
Adjacent to a metro county	rural adjacent	less urbanized adjacent	urbanized adjacent
Not adjacent to a metro county	rural nonadjacent	less urbanized nonadjacent	urbanized nonadjacent

SOURCE: David A. McGranahan et al., *Social and Economic Characteristics of the Population in Metro and Nonmetro Counties* (Washington, DC: U.S. Department of Agriculture, Economic Research Service, 1986).

Having two definitions is confusing because they are not always interchangeable. There are Census Bureau-defined rural areas that include parts of MSAs, and there are OMB-defined MSAs that encompass rural areas. In 1980, 40 percent of the rural population lived in MSAs and 14 percent of the MSA population lived in rural areas.⁸ The census showed that 26.3 percent of the U.S. population lived in rural areas.⁹ The sizes of the rural and nonmetropolitan populations, however, turn out to be roughly equivalent.¹⁰

For general policymaking purposes, OMB's definition of rural areas is preferred. There are more extensive data for counties than for rural or urban places. Both definitions are inappropriate, however, for a study that looks broadly at economic development issues. Neither captures the broad range of variables entailed in development.

One way to incorporate development-related variables is to differentiate rural communities according to their urbanization and proximity to urban centers. These two variables can be enlightening because access to urban areas is advantageous for development.¹¹ Rural areas close to urban centers have greater access to urban goods and services and, more importantly, to urban consumers.

The U.S. Department of Agriculture's Economic Research Service has created such a classification by

subdividing nonmetropolitan areas into six categories (see table 2-1). This classification illustrates the geographic extent of the rural economic development problem. Figure 2-3 shows the distribution of nonmetropolitan counties for the years 1970 and 1980. In both time periods, there were fewer nonmetropolitan counties than urbanized counties. Less-urbanized counties—those with between 2,500 and 50,000 residents—were more common than either urbanized or rural counties, and rural nonmetropolitan counties were more urbanized than urbanized counties. Furthermore, the majority of nonmetropolitan counties were nonadjacent to metropolitan counties.¹²

Rural communities are much more than geographic entities. They are at one and the same time products of their pasts and incubators of their futures. In assessing the problems that rural communities face and their potential to overcome them, it is important to consider how the communities labeled "rural" have evolved.

The Evolution of Rural America in a Historical Context

In the earliest years, the United States was a Nation of small farmers. The farm was the mainstay of the preindustrial American economy, and the

⁸Maria Hewitt, *Defining "Rural" Areas: Impact on Health Care and Research—Staff Paper* (Washington, DC: Office of Technology Assessment, July 1989), p. 13.

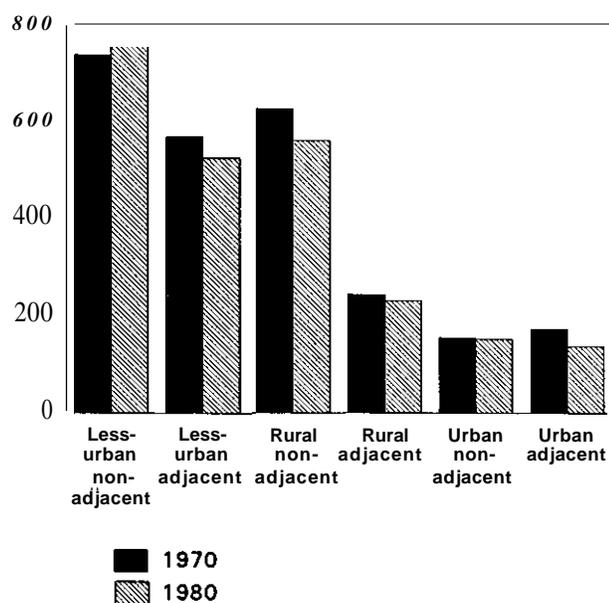
⁹"Characteristics of the Population," *1980 Census of the Population* U.S. Department of Commerce, Bureau of the Census (Washington, DC: U.S. Government Printing Office, 1981), pp. 1-37.

¹⁰U.S. Department of Commerce, Bureau of the Census, *State and Metropolitan Area Data Book* (Washington, DC: U.S. Government Printing Office, 1986), pp. 675-676.

¹¹As rural sociologist Kenneth Wilkinson notes, "Distance is perhaps the most enduring characteristic of the quality we call 'rural' and distance impedes access. Access is essential for wellbeing and ruralness impedes access. These simple facts form the core of the rural problem, a problem found in virtually all societies and all regions." Kenneth P. Wilkinson, "Information Access in Rural Areas," unpublished paper, Department of Sociology, Pennsylvania State University, University Park, PA, September 1989, p. 2.

¹²The data also show a decline in the total number of nonmetropolitan counties between 1970 and 1980. This decline was heaviest among the urban adjacent nonmetropolitan counties, a number of which have become metropolitan counties, and rural nonadjacent counties, a number of which have grown in population. The decrease in the number of adjacent counties was due in part to different definitions of adjacency in 1970 and 1989. Margaret A. Butler, Population Section, Economic Research Service, personal correspondence, July 21, 1989.

Figure 2-3-Nonmetropolitan County Distribution



SOURCES: David A. McGranahan et al., *Social and Economic Characteristics of the Population in Metro and Nonmetro Counties* (Washington, DC: U.S. Department of Agriculture, Economic Research Service, 1966) Rural Development Research Report No. 58, p. 3; Margaret Butler, Population Section, Economic Research Service, U.S. Department of Agriculture, personal correspondence, July 21, 1969.

attitudes of the farm community reflected those of the people at large.¹³ Most rural communities were self-sufficient.¹⁴ Together they sustained the livelihood and well-being of most agricultural trade centers. In fact, it was the agrarian economy that defined town boundaries.¹⁵

Social life within farm communities was also self-contained. The provision of services was unspecialized. The community provided the institutional context in which families organized to worship and educate their children. Members of each community relied on their families and other local institutions to cushion the hardships of rural life.¹⁶

Farms were also viewed as the building blocks of democracy.¹⁷ A high political value was attached to their continued well-being and the lifestyle they engendered. This perspective—epitomized by the views of Thomas Jefferson—presumed a “causal connection between the occupation of farming and the political system of democracy.”¹⁸ Jefferson’s vision of a nation comprised of small independent farms was enthusiastically embraced by a burgeoning constituency of yeomen farmers in the Middle Atlantic and Southern States. As these farmers and their counterparts in the emerging West began to vote, the idealization of farm life became a potent political idea.¹⁹

Rural America was transformed by two major events—the industrial revolution and the American Civil War. Both events greatly increased the demand for agricultural products. With the adoption of land- and labor-saving technologies to meet this rising demand—often financed by external sources—the American farm became commercialized.²⁰ As commercialization proceeded, the size and value of farms increased, while their number declined. The disappearance of the family farm undermined the viability and independence of rural communities.

¹³Grove Hambridge, “The Nature and Magnitude of Changes in Agricultural Technology,” Richard Rodenfeld et al. (eds.), *Changes in Rural America: Causes, Consequences, and Alternatives* (St. Louis, MO: The C.V. Mosby Co., 1978), p. 9.

¹⁴According to Louis Swanson, these communities were “self-contained production-consumption units. The quality of these material conditions reflected their own labor and technical capacities, which were usually limited to local natural resources and artisan skills.” Louis Swanson, “Rethinking Assumptions About Farm and Community,” A.E. Luloff and Louis E. Swanson (eds.), *American Rural Communities* (Boulder, CO: Westview Special Studies in Contemporary Social Issues, 1990), p. 21.

¹⁵*Ibid.*

¹⁶As Douglas Ensminger describes: “In the early development of neighborhoods and communities in the United States, one of the first patterns created by families living in a localized area was that formed by the grouping of twelve to forty families primarily for protection and mutual aid. These early groups were forerunners of today’s neighborhoods, and they soon provided the nucleus through which families organized for religious worship and for the education of their children.” Douglas Ensminger, “Rural Neighborhoods and Communities,” Rodenfeld et al., op. cit., footnote 13, p. 295.

¹⁷Witney A. Griswold, *Farming and Democracy* (New Haven, CT: Yale University Press, 1952).

¹⁸*Ibid.*, p. 19.

¹⁹As Grove Hambridge points out, “The opening of new lands and the westward expansion between 1790 and 1850 was marked by one of the greatest migrations in the history of the world. In 1790 there were 4,000,000 people in the United States, of whom 94 percent were in the 13 original States; within 60 years there were 23,000,000 people and 32 States.” Grove Hambridge, “The Nature and Magnitude of Changes in Agricultural Technology,” Rodenfeld et al., op. cit., footnote 13, p. 11.

²⁰As the *Prairie Farmer* depicted in 1869, “The old rule that a farmer should produce all that he required, and that the surplus represented his gains, is part of the past. Agriculture, like all other business, is better for its subdivisions, each one growing that which is best suited to his soil, climate and market, and with its proceeds purchas[ing] his other needs.” As quoted in Paul H. Johnstone, “On the Identification of the Farmer,” *Rural Sociology*, vol. 5, March 1940, p. 39.

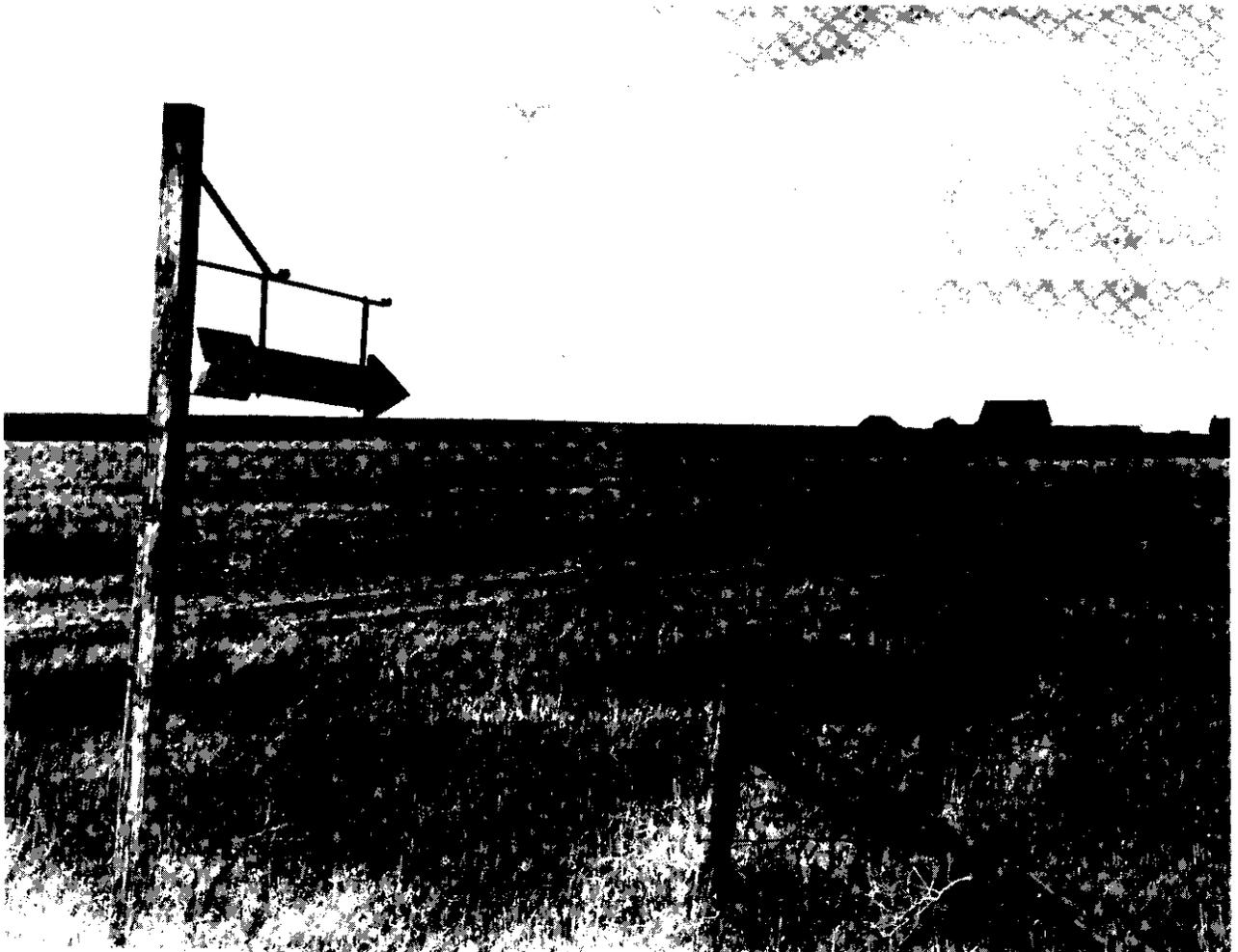


Photo credit: Post Wolcott

A sign along the road points the way to the telephone in Great Falls, MT, September 1941.

Many farmers suffered as a result. Fast growth in rural regions, resulting in part from easy credit extended by Eastern financial institutions, left farmers overextended. Especially in the semi-arid Plains, farm communities experienced hardship due to drought, low commodity prices, high freight costs, and high interest rates.²¹ Moreover, in this new commercial environment, farmers soon found themselves competing with one another for the first time. Failure in this competition often entailed a loss of

social status, with many farm owners and operators becoming tenant farmers or hired laborers. While the income level of some farming families increased, so too did the income disparities within the agricultural sector as a whole.²² Under such circumstances, many displaced rural Americans gave up farming and migrated to urban areas. At the same time, the proportion of the workforce employed in the agricultural sector fell from 72 percent in 1820 to 33 percent in 1910.²³

²¹Swanson, *op. cit.*, footnote 14. In these sections, the railroads, acting as the agents of development, had offered settlers free rides to available lands and easy credit to those who would settle on farms and along their routes. During a period of post-Civil War prosperity, eastern banks had been eager to loan money using farm land as collateral. With credit available, farmers purchased land, "improvements," animals, and implements. Many new settlers also bought land speculatively as values appreciated. Don F. Hadwiger, "A History of Rural Economic Development and Telecommunications Policy," contractor report prepared for the Office of Technology Assessment, May 1990, p. 11.

²²*Ibid.*

²³U.S. Department of Commerce, Bureau of the Census, *Rural And Rural Farm Population: 1988* (Washington, DC: U.S. Government Printing Office, 1989).

In this changing environment, rural communities became more dependent on outsiders to meet their social and economic needs.²⁴ Industrialization brought with it new kinds of problems, with which increasingly smaller farm communities could not deal.²⁵ To meet these developing needs, new towns and trade centers emerged, located at a reasonable traveling distance from farm communities. These centers were, in turn, linked more and more to urban areas. Thus, over time, the self-sufficient rural community became the exception instead of the rule.²⁶

The two World Wars, which gave rise to increased mechanization and greater agricultural productivity, exacerbated and finalized these changes. During World War I, manufacturing provided more employment than agriculture for the first time, a situation that became permanent after the Second World War.²⁷ Rural out-migration also increased because most of the new manufacturing jobs were located in urban areas. At the same time, farms became even more commercialized; between 1950 and 1986, the average farm size more than doubled, while the number of farms declined by 60 percent.

The Current Rural Situation

Most rural economies prospered throughout the 1970s. With a booming national economy, the demand for natural resources was quite high. Rural manufacturing was a special beneficiary of this growth. With labor costs and land values increasing, many manufacturing firms—especially those in low-tech industries producing standardized goods—

moved to rural areas where their input costs were lower.²⁸ As a result, manufacturing grew more rapidly in rural areas than in urban ones, while rural unemployment rates dropped below those in urban areas.²⁹ Farmers also benefited. With higher prices and high rates of inflation, they could make greater investments in productivity-enhancing technologies. Under these conditions, the total wage and salary from employment in rural areas rose from 19 percent to 22 percent between 1969 and 1984.³⁰

This prosperity came to an end at the close of the seventies. A number of factors contributed to this reversal, including the sudden hike in oil prices, the financial squeeze on banks holding Third World loans, the Federal Government's decision to pursue a deflationary monetary policy, the U.S. grain embargo, a glut in the world market for oil and other energy-based resources, and heightened foreign competition, especially from Third World countries.

Although these problems pervaded the national economy as a whole, they had the greatest impact on rural areas. Whereas job growth in urban areas simply slowed down, rural unemployment soared, increasing from 5.7 percent in 1979 to 10.1 percent in 1982. In the early 1980s, the average rural unemployment rate was 7 percent higher than the urban rate; by 1987 it was 40 percent higher.³¹

As in the previous decade, manufacturing is key to explaining how rural economies performed during this period. This sector is significant because 22 percent of all manufacturing occurs in rural areas, and manufacturing accounts for 40 percent of all

²⁴Ensminger, op. cit., footnote 16, pp. 295-296.

²⁵As described by Swanson, “. . . Previous social formations, such as the rural church or the one room six grade schoolhouse, gave way to the demands of new industrial employers and regional and national trade. Rural schools were now expected to prepare children for the financial and technical demands of a rapidly industrializing agricultural and nonfarm sector. Local socioeconomic networks such as cooperative harvesting (and risk taking) and quasi-barter exchange systems that mediated local production and consumption under non-commercial conditions were gradually subordinated to and/or eclipsed by new institutions.” Swanson, op. cit., footnote 14, p. 22.

²⁶Ibid.

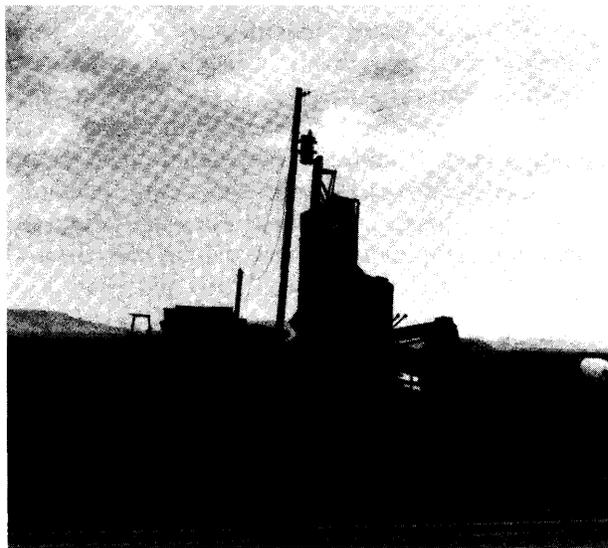
²⁷In the 1930s, the *Depression* slowed growth of cities and suburbs and returned people to rural areas. The politics of the Depression, specifically Franklin Roosevelt's New Deal philosophy, brought government money into rural areas, helping to attract and support business.

²⁸As Bloomquist notes, “The most notable rural advantage has been the cost of labor . . . Nonmetro areas have comparative advantages over metro areas in other ways as well. Construction of the interstate highway system, for example, substantially reduced transportation costs for many nonmetro places. Land and taxes are also generally cheaper in nonmetro areas. Finally, many nonmetro places made special concessions to firms in the form of tax exemptions, rent-free plant facilities, and so on.” Leonard Bloomquist, in USDA, *Rural Economic Development in the 1980's: Prospects for the Future* (Washington DC: U.S. Department of Agriculture, 1988), p. 52.

²⁹It is important to note, however, that the relatively low education level of the workforce attracted more low-tech manufacturing facilities than high-tech ones.

³⁰U.S. Department of Agriculture, David L. Brown and Kenneth L. Deavers, “Summary,” USDA, op. cit., footnote 28, p. 3.

³¹Edwin Parker, Heather Hudson, Don Dillman, and Andrew D. Roscoe, *Rural America in the Information Age: The Communications Policy for Rural Development* (Lanham, MD: University Press of America, Inc., 1989), pp. 17-19.



credit: Mark G. Ung

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rural employment.³² Moreover, rural manufacturing takes place in old industries for which there is relatively stagnant demand and severe foreign competition. Unlike the more vigorous complex manufacturing industries that completely recovered from the 1980 recession, these routine manufacturing industries had almost 12 percent fewer jobs after the recession than in 1979.³³

This decline in employment is probably permanent since many of these jobs have actually disappeared. Over the past two decades, there has been a major structural shift in the economy away from the routine manufacturing jobs typically found in rural

areas towards the more highly technological manufacturing and services jobs that are more prevalent in urban areas. This trend will likely continue; even in rural areas service industries now provide more employment than goods-producing industries.³⁶

Farm and farm-related workers were also adversely affected by the 1981-82 recession. Farm establishments continued to increase their productivity and size while reducing their need for employment, following the course established during industrialization. Between 1950 and 1986, the number of farms declined from 5.65 million to 2.21 million, while the average farm size increased from 213 acres to 455 acres.³⁵ The number of agricultural workers also shrunk dramatically, from 10 million in 1950 to 3.7 million in 1980.³⁶

Farm communities became much more susceptible to the national economic problems of the 1980s as a result of these developments.³⁷ Having borrowed and invested heavily during the high-growth period of the sixties and seventies, many farmers found themselves severely overextended when prices and land values dropped sharply. This financial situation was provoked by a decline in agricultural exports due to increased world production and a constrictive monetary policy that led to high interest rates.³⁸ Many farmers were forced to liquidate some, or even all, of their farm assets so they could meet their operating and debt-servicing expenses.³⁹ Agriculture like manufacturing, did not recover quickly or totally from these circumstances. Between 1981 and 1984, agricultural jobs in most regions declined at a rate of 2 percent per year.⁴⁰ With even greater productivity gains and consolida-

³²David A. McGranahan, in USDA, op. cit., footnote 28, p. 36. Testifying to the continuing importance of manufacturing in rural areas is the fact that developments in this sector account not only for those communities that did poorly but also for those that did well. However, it was the new manufacturing facilities that did well. See also, Herman Bluestone and Celeste A. Goat, in USDA, op. cit., footnote 28, p. 34.

³³Ibid., p. 40.

³⁴Brown and Deavers, in USDA, op. cit., footnote 28, pp. 5-6. According to the Bureau of Labor Statistics, 90 percent of all new jobs created between 1934 and 1995 are likely to be in services.

³⁵Donna Reimund and Mindy Petrusis, "Performance in the Agricultural Sector," USDA, op. cit., footnote 28, p. 81.

³⁶Ibid., p. 89. As characterized by Reimund and Petrusis, "No longer is farming insulated from developments in the rest of the Nation and the world, farming is a complex business, highly dependent on and linked to supporting input supply industries, food and fiber processors, distributors, retailers, and domestic consumers and international trade." Ibid., p. 78.

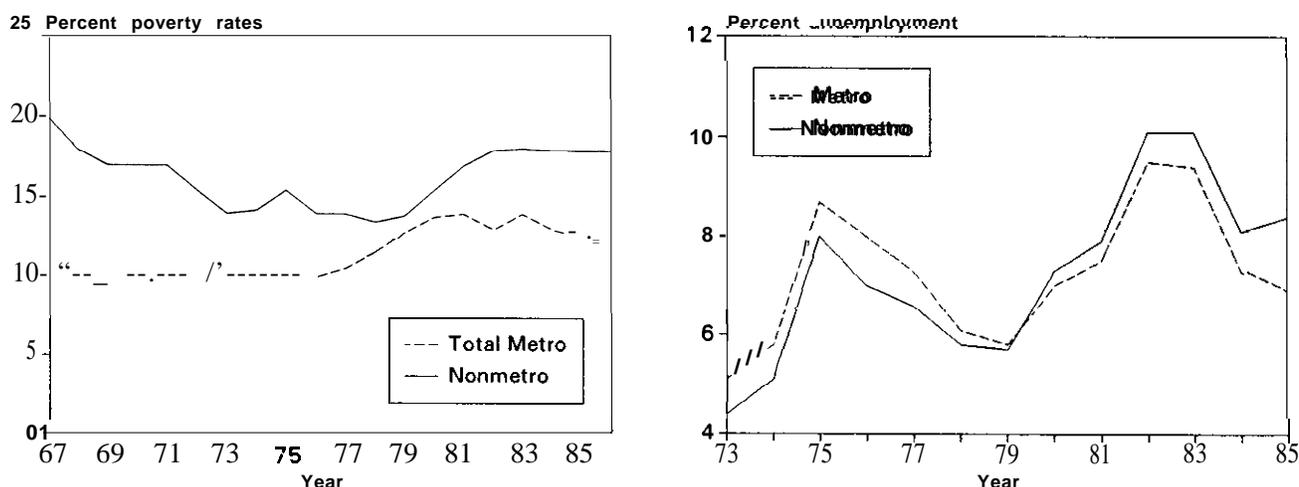
³⁷As Reimund and Petrusis stress, the economic problems that farmers faced resulted much more from "macro policies-tight monetary policy, stimulative fiscal policy, and financial market deregulation-than they were by agricultural incomes or policies." Ibid., p. 92.

³⁸Ibid., p. 81.

³⁹Ibid., p. 89.

@As noted, by Reimund and Petrusis, "Aside from gains in food and fiber wholesale and retail trade of about 157,000 jobs (about 3.3 percent per year), job losses reached almost 107,000 in the farm sector, 45,000 in the input industries, and some 53,000 in the processing and marketing industries. These job losses translate to negative annual growth rates of 1.3 percent in the farm sector, 5.8 percent in the input industries, and 1.5 percent in the processing and marketing industries." Ibid., pp. 97-98.

Figure 2-4--Poverty Rates and Unemployment by Residence*



● Metro-nonmetro: 1965 based on the 1960 Census, 1969 and 1971-63 on the 1970 Census, and earlier years on the 1960 Census. No 1984 data.

SOURCE: Bureau of the Census, Current Population Survey, as cited in USDA, *Rural Economic Development in the 1980's: Prospects for the Future* (Washington, DC: U.S. Department of Agriculture, 1988), pp. 3,12.

tions of farm establishments, agriculture will probably never serve again as a basis for economic revival in rural areas.

Nor have the energy-producing and extractive industries been any more successful in coping with the cyclical and structural changes that have taken place. The shift from inflation to a period of tight money was especially difficult for the timber and wood products industries. Inflation initially served to encourage the purchasing of housing. With the pursuit of deflationary policies, however, the real price of mortgages increased, and the housing market collapsed.⁴¹

Rural areas have few resources to help them overcome these economic problems. Poverty is

prevalent, having increased steadily since the late seventies until 1986 when it peaked.⁴² The most extensive poverty is in the South where more than half of the nonmetropolitan poor reside.⁴³ The poverty rate is particularly high among minorities. In fact, blacks living in rural nonmetropolitan areas especially among the elderly—are far more likely to live in poverty than those living in urban areas.⁴⁴ Because the rural poor consist primarily of the working poor, nonmetropolitan poverty tends to be more sensitive to fluctuations in unemployment than urban Poverty⁴⁵ (see figure 2-4).

These high poverty rates reflect, in part, a lag in nonmetropolitan wages. In 1982, the earnings gap between nonmetropolitan and metropolitan areas

⁴¹Bruce A. Weber, Emery N. Castle, and Ann L. Shriver, "Performance of National Resource Industries," USDA, Op. cit., footnote 28.

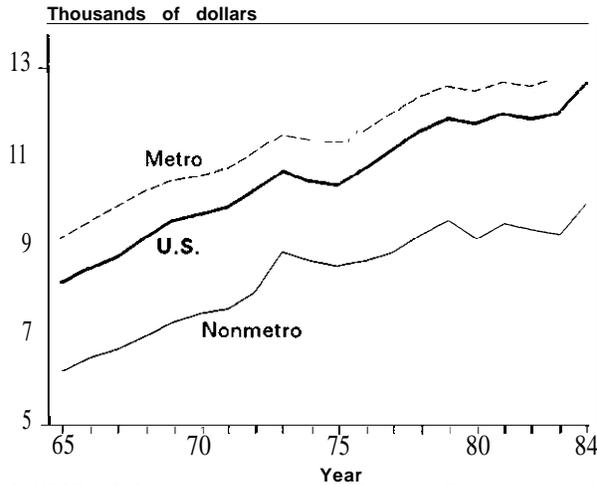
⁴²After 1962, nonmetropolitan poverty has been on the decline while metropolitan poverty has held steady. However, the nonmetropolitan poverty rate in 1988 was still 3.8 percentage points above the metropolitan rate in the same year, and 2.3 points higher than the nonmetropolitan rate in 1979, the year in which the last recession began. Robert Hoppe, Economic Research Service, U.S. Department of Agriculture, personal communication, Aug. 21, 1990. See also Kathryn Porter, *Poverty in Rural America: A National Overview* (Washington, DC: Center on Budget and Policy Priorities, September 1988).

⁴³Of the 100 nonmetropolitan counties with the highest incidence of poverty in 1980, 81 were located in the South. Per-capita income statistics further suggest that the rural poor tend to be clustered in three Southern regions. Of the 242 nonmetropolitan counties that have experienced persistent poverty, 92 percent are located in Appalachia, the Ozark-Quachita Plateau (which actually includes a portion of Missouri, a state in the North Central region), and the Mississippi Delta. See *Characterization of Poverty in Nonmetropolitan Counties*, Elizabeth S. Morrissey, Rural Development Research Report No. 52, Economic Research Service (Washington DC: U.S. Department of Agriculture, July 1985); and Thomas F. Hady and Peggy J. Ross, *An Update: The Diverse Social and Economic Structure of Nonmetropolitan America* (Washington, DC: U.S. Department of Agriculture, Economic Research Service, May 1990).

⁴⁴Kathryn H. Porter, *Poverty in Rural America: A National Overview* (Washington, DC: Center on Budget and Policy Priorities, April 1989), pp. 14-15.

⁴⁵*Ibid.*

Figure 2-5-Real Per-Capita Income

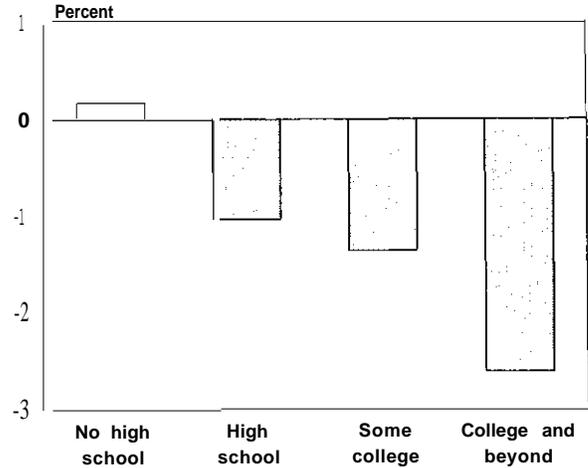


SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis.

was \$5,115 (in 1987 dollars). While wages had increased in both nonmetropolitan and metropolitan areas between 1982 and 1987, they increased less in nonmetropolitan areas, causing the early gap to increase to \$5,666 in 1987 (in 1987 dollars).⁴⁶ Per-capita income, which takes into account employment, wages, and population size, reflects the same discrepancy. Between 1985 and 1987, nonmetropolitan per-capita income was just over 72 percent of metropolitan income. Per-capita income statistics also suggest that the most rural areas are the worst off. Of those nonmetropolitan counties exhibiting persistent poverty, 6 percent were towns of 2,500 residents or fewer. These counties comprise 35 percent of all nonmetropolitan counties⁴⁷ (see figure 2-5).

levels of educational attainment in rural areas are also lower than in urban areas. In 1980, the median years of education completed by metropolitan residents was 12.6, while the same figure was only 12.3 for nonmetropolitan residents. The high school dropout rate was also higher (16.9 percent in rural areas as compared to 15 percent in urban areas), while the college graduate rate was lower (9.2 percent as compared to 12.8 percent).⁴⁹ This gap in

Figure 2-6-Net Nonmetropolitan Migration by Education Level, 1985-86



SOURCE: Bureau of the Census, Current Population Survey, March 1986.

educational attainment is exacerbated by the out-migration of better educated people from nonmetropolitan areas. During 1985-86, nonmetropolitan counties experienced a net loss in college-educated residents⁵⁰ (see figure 2-6).

Rural school districts also spend less on education than do urban districts. In the 1984-85 school year, for example, urban States outspent rural States by almost \$800 per pupil.⁵¹ One reason for this discrepancy is limited resources; as people leave rural areas, the local tax base shrinks, leaving less money to spend on public service for the people remaining. Rural areas may also have less incentive to invest in education, since graduating students are likely to leave home.

As in the case of other socioeconomic indicators, levels of education vary by region. With the exception of several predominantly white counties in the Ozark region of Missouri, a few Native American counties in Arizona and New Mexico, three counties on the North Dakota/South Dakota border, and an Alaskan county, nonmetropolitan

⁴⁶Linda Ghelfi, "Nonmetro Areas Lag Metro in Earnings per Job," Sara Mills Mazie (ed.), *Rural Conditions and Trends* (Washington, DC: USDA, spring 1990), p. 12.

⁴⁷Hady and Ross, op. cit., footnote 43.

⁴⁸USDA, op. cit., footnote 28, p. 20.

⁴⁹Linda L. Swanson and Margaret A. Butler, "Human Resource Base of Rural Economies," USDA, op. cit., footnote 28, p. 165.

⁵⁰Ibid., p. 170.

⁵¹Norman Reid, "Rural Areas in the 1990s: Prologue to the 21st Century," paper presented at "Risky Futures—Should State Policy Reflect Rural Diversity," the Policy and Planning Center Annual Symposium, Louisville, KY, Dec. 4-5, 1988.

areas with the lowest level of education (the bottom 10 percent in average years of education) lie exclusively in the Southern census region.⁵² In the South, regions of particularly low educational attainment include the predominantly white Appalachian Mountain region, much of the Mississippi Delta region, counties on the Virginia/North Carolina border, poor black areas of Georgia and Alabama, and Hispanic parts of southwestern Texas.⁵³

Key Trends Likely To Affect Rural America

How well rural areas cope with their economic problems depends not only on their present situation and resources, but also on future developments and events. There are three major trends that will likely affect rural communities:

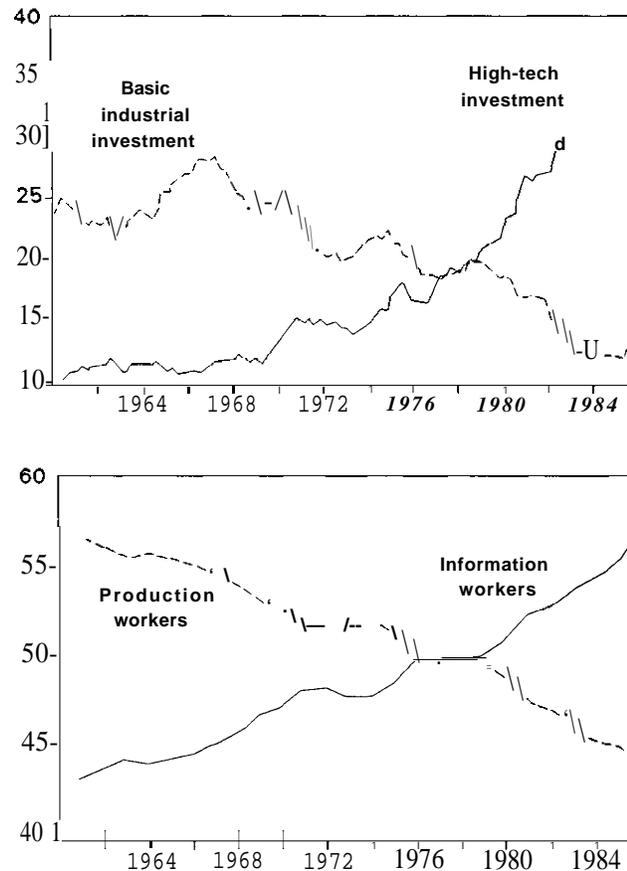
1. the shift to an information-based economy and the enhanced role of communication and information as a strategic weapon in business.
2. the emergence of a global economy and hence the growing need to compete on a worldwide basis.
3. a growing concern about the environment and the environmental costs of economic development.

These trends are eroding the boundaries of rural communities, making these communities more dependent on external events. Together, they define the context in which rural development choices will be made.

The Shift to an Information-Based Economy

The increasing importance of information to the economy is evident from the continued growth of the information sector, a trend that is occurring in all nations. It was to highlight this change that terms such as the “information society” and the “information age” were first employed.⁵⁴ The information sector now constitutes about 34 percent of the gross national product, and accounts for approximately 41 percent of the national labor force.⁵⁵

Figure 2-7—Structural Change and the Information Economy



SOURCE: Adapted from *Information Management Review*, vol. 1, No. 1, p. 14, with permission of Aspen publishers, Inc., Copyright summer 1985.

The changing economic role of information is indicated by the rate and extent to which businesses are deploying and using information technologies (see figure 2-7). Many are now applying computer technology to all of their activities—hiring and recruiting to laying off workers, from ordering raw materials to manufacturing products, from analyzing markets to performing strategic planning, and from inventing new technologies to designing applications and new products and services. These technologies can be

⁵²Swanson and Butler, op. cit., footnote 49, p.166.

⁵³Ibid.

⁵⁴Fritz Machlup was one of the first to note these changes and to measure the information sector in his pioneering work, now a classic, entitled *The Production and Distribution of Knowledge in the United States* (Princeton, NJ: Princeton University Press, 1962).

⁵⁵Michael Roger Ruben and Mary Taylor Huber, *The Knowledge Industry in the United States: 1960-1980* (Princeton, NJ: Princeton University Press, 1986). This volume updates the work done by Fritz Machlup.

used by rural and urban businesses alike to promote efficiency, effectiveness, and innovation.⁵⁶

Computer-based communication can improve efficiency in several ways. Technology can be used to improve business operations, by reducing the time it takes to exchange information among persons and machines. In manufacturing, computer links between machines speed up production and assembly. In service firms, such as insurance companies and banks, communication systems increase the efficiency of transaction processing.⁵⁷ A well-known example from banking is the reduction of time needed to process letters of credit using computerized files accessible from workstations in several departments. In retailing, the use of machine-readable product codes and automatic scanners in supermarkets increases the efficiency of store operations. Checkout time, inventory control, and accounting operations can be improved by linking the cashiers' stations to the store's computer and automatically recording sales information at checkout.⁵⁸

Faster communication allows businesses to integrate and coordinate widely scattered activities to improve efficiency and effectiveness. In the case of automobile manufacturing, transportation and computer-based communication technologies allow companies to produce components in different regions of the United States and the world, and to assemble them at various locations. Thus, they can reduce costs by taking advantage of favorable conditions in different regions, such as lower wages, cheaper materials, energy savings, liberal financing, etc. In addition, data communication systems allow companies to transfer information instantaneously so they can optimize production schedules, resource allocation, materials management, etc.⁵⁹

Being able to network among disparate locations also gives businesses more flexibility. Management can respond immediately to changes in demand and



Photo credit: Mark G. Young

The Information Processing Center in Presque Isle, ME, is an example of how rural areas are making the transition into the information economy.

issue orders to one or more manufacturing plants to reduce or increase output accordingly. Moreover, because programmable machine tools can rapidly be redirected to produce, for example, machine cams instead of gears, computer networks let manufacturers tailor highly differentiated products to customer specifications.⁶⁰

As businesses move to take advantage of these opportunities, the use of information-age technology is likely to be deployed more rapidly and to become more routine. Looking out only as far as 1993, business consultant Peter Keen outlines eight business realities that he expects will be commonplace for all large corporations. These are:

1. Twenty-five to eighty percent of a business' cash flow will be online.
2. Electronic data interchange will be the norm.
3. Point-of-sale and electronic payments will be one facet of core services.
4. Image technology will be an operational necessity.

⁵⁶A conceptual framework for identifying the new kinds of business opportunities that information-age technology offers, and a detailed description of how many businesses are taking advantage of them can be found in the OTA study, *Critical Connections: Communication for the Future*, OTA-CIT-407 (Washington, DC: Government Printing Office, January 1990).

⁵⁷Abbe Mowshowitz, "Communication and Comparative Advantage in the Business Arena: Operations and Technology Developments," contractor report prepared for the Office of Technology Assessment July 1988.

⁵⁸Judith Graham, "Bar Codes Becoming Universal," *Advertising Age*, Apr. 18, 1988, p. 36.

⁵⁹In the service sector, communication technology is more closely associated with the end-product. Brokerage firms buy and sell securities for millions of customers all over the United States and throughout the world. These customers are served by sales personnel in geographically dispersed offices. In banking, the automated-teller machine makes it possible for the retail banks to offer their services in a variety of locations and settings, some of which are not traditionally bank sites at all. For a discussion of the communication needs of financial institutions, see Deborah G. Turney, "Financial Institution Communication Systems," contractor report prepared for the Office of Technology Assessment, December 1986.

⁶⁰Ibid.

5. Businesses will reorganize and distribute work.
6. Work will be increasingly location-independent.
7. Electronic business partnerships will be standard.
8. The cost of technology failure will be high.⁶¹

Rural communities cannot stand still in the face of these rapid and fundamental changes in their economic environment. As with any business, they must take advantage of these changes by discovering new ways of becoming competitive, or they will be left behind.

The information age does, in fact, present a number of potential business opportunities for rural America. However, to capitalize on them rural communities must have access to technology and the knowledge of how to take advantage of it.

Previously, the mass-production process limited the kind of activities that rural economies could perform.⁶² Rural communities were rarely, if ever, able to operate on a scale large enough to initiate businesses organized around mass-production techniques because of their small size and limited financial and human resources. When rural workers did engage in mass production, it was generally in company branches located and directed from an outside urban center. The key suppliers and markets for such companies were also located far from rural areas. Thus, apart from the direct wages paid to labor, most of the economic benefits escaped the rural economy.

Today, however, given the structural changes mentioned above, these characteristic may no longer disadvantage rural communities. Now, most service-oriented businesses are not operated on a large scale. In fact, approximately one-half of the new jobs

created in 1989 were in companies with fewer than 100 employees, and more than one-third were in companies that have fewer than 20 employees.⁶³ Thus, rural communities' limited size may no longer have a detrimental effect on their ability to compete on an equal basis with urban areas for these businesses and jobs.

Businesses will also be able to operate on a smaller scale using these new technologies. With applications such as electronic data interchange (EDI), businesses can purchase supplies and produce and distribute products precisely when and where they are needed. Thus, they can avoid the considerable costs (and hence scale required) to procure, store, and distribute a large quantity of goods. In addition, by using technology to identify and target distant consumers, rural businesses will be able to create a demand that is sizable enough to allow them to produce a limited line of goods for niche markets. The number of such markets is estimated to grow in the future, because consumers tastes are increasingly becoming more diversified.⁶⁴

The restructuring and decentralization of business operations could also work in rural America's favor.⁶⁵ Depending on the particular case, a firm might decide to manufacture a product at its central headquarters, but transfer elsewhere such downstream activities as distribution, sales, marketing, and service. Rural areas could benefit from this development, to the extent that they can effectively compete for these newly externalized jobs. On the other hand, if conditions are better in other regions or in other countries, rural areas could lose out. This could easily occur because labor costs are often lower in other countries.

The quality of work life could also be improved with information technologies. Many workers will

⁶¹Peter G.W. Keen, "Business Integration Through Technology Integration" *Advance*, vol. 4, No. 1, pp. 1-2.

⁶²As Piore and Sabel have described: ". . . Mass production required large investments in highly specialized equipment and narrowly trained workers. In the language of manufacturing, these resources were 'dedicated': suited to the manufacture of a particular product—often, in fact, to just one make or model. When the market for that particular product declined, the resources had no place to go. Mass production was therefore profitable only with markets that were large enough to absorb an enormous output of a single, standardized commodity, and stable enough to keep the resources involved in the production of that commodity continuously employed. Michael Piore and Charles Sable, *The Second Industrial Divide: Possibilities for Prosperity* (New York, NY: Basic Books, 1984), p. 49.

⁶³Richard P. Adler, "Telecommunications, Information Technology, and Rural Development" paper prepared for Aspen Institute Conference on the Importance of Communications and Information Systems to Rural Development in the United States, July 24-27, 1990 (Menlo Park, CA: Institute for the Future, Paper P-154), p. 10.

⁶⁴*Ibid.* See also, Don A. Dillman, "The Social Impacts of Information Technologies in Rural North America," *Rural Sociology*, 1985, vol. 50, No. 1, pp. 1-26; and Don A. Dillman and Donald M. Beck, "Information Technologies and Rural Development in the 1990s," *Journal of State Government*, vol. 61, No. 1, January/February 1988, pp. 29-38.

⁶⁵See David R. Vincent, "Building the Information Based Corporation," *Computerworld*, Mar. 12, 1990, pp. 71-72. See also, Ralph Kilmann, "Tomorrow's Company Won't Have Walls," *New York Times*, June 18, 1990, p. 3.

not need to be organized on assembly lines, since new technologies allow businesses to carry out flexible manufacturing organized around craft principles.⁶⁶ Information technologies can also upgrade and enhance jobs, when they are deployed together with education and human development programs. However, for this to happen management will need to make a definite commitment. All too often, such a commitment is lacking, and technology ends up deskilling workers. Deskilling is a particular danger in rural areas where skill levels are low to begin with. Local business leaders in rural areas may even oppose human resource development, because the kinds of jobs they want to fill are at or near the minimum-wage level and require an unskilled labor force.⁶⁷

Rural businesses may find it difficult to benefit from new technologies in a number of other respects as well. New technologies provide a competitive advantage precisely because skill and ingenuity are required to apply them effectively. The necessary technical sophistication and understanding is not common in many of the small businesses found in rural communities.⁶⁸ Being small, rural businesses may also be unable to get the kinds of discounts and higher quality services large businesses enjoy.⁶⁹ The same is true for gaining access to market data and strategic information. Large conglomerates, which are able to aggregate multiple data sets from multiple sources, are better off than small firms. It is also much harder for small companies to get financing for new technologies. This is particularly true in rural areas where access to capital is very scarce. While large manufacturers can absorb the cost of \$70,000 for computerized tools, small

manufacturers most likely cannot. To a small business, \$10,000 is a major investment.⁷⁰

Small rural businesses may also be unable to gain access to new technologies if the public switched communication network in their areas is inadequate and they lack the resources required to deploy and manage their own communication system. One D3 circuit, for example, which provides a transmission pipeline operating at the rate of 45 megabits per second, costs approximately \$1 million per year. Thus, the costs for a business to operate a large-scale telecommunication system on its own can be prohibitive.⁷¹

The Decline of the U.S. Competitive Position and the Emergence of a Global Economy

The technological and economic foundations that once gave the United States a dominant position in the world economy have been slowly and subtly changing for at least three decades. But it was not until the early eighties—when the balance of U.S. trade began to worsen dramatically—that the end of U.S. hegemony became starkly apparent.⁷² Much of the increased trade competition is in the area of primary goods and low-tech industries. Rural areas could easily suffer because these are the industries in which they have traditionally specialized. On the other hand, increased foreign investment in the United States and worldwide growth in trade might provide new economic opportunities for rural communities.

One continuing trend has been the shift away from the importance of agriculture, a development that is no longer limited to industrialized countries. While

⁶⁶Piore and Sabel, *op. cit.*, footnote 62.

⁶⁷A study of Southern States found, for example, that those nonmetropolitan counties that had a high, or growing, proportion of their labor force in the service sector were associated with higher levels of unemployment and lower levels of median family income. Louis E. Swanson, *op. cit.*, footnote 14.

⁶⁸As Don Dillman has pointed out: "Traditionally rural people and places are slower to adopt new technologies than are urban people. Survey data from Washington state suggest that this lag continues in the case of information technologies . . . For many people, learning to utilize information technologies will involve dramatic and perhaps traumatic change." Don A. Dillman, "Testimony Before Subcommittee on Rural Economy and Family Farming," Committee on Small Business, U.S. Senate, July 13, 1988.

⁶⁹As the Chief Executive Officer of one network management company noted: ". . . Here is where large companies and their fat contracts have two key advantages over a smaller user. Small companies are often stuck with buying vendor vanilla. Nothing can set them apart from the competition. Strategically, large companies, however, can do some tailoring, which can give them an edge. This is a distinct reversal of the concept that says smaller companies can be more innovative than big companies." Margie Semilof, "Communication Gap," *CommunicationsWeek*, June 13, 1988, p. C9.

⁷⁰Manfred Kochen, "Advanced Information Technology and Small Manufacturers," *Science*, April/May 1986, p. 26.

⁷¹It has been estimated, for example, that the annual expenditures of the top 100 communication users range from between \$1 billion at the top of the list to about \$20 million at the bottom, with the average expenditures falling between \$50 million and \$100 million. See Jim Foley, "Our First Look at the Top 100 Communication Users," *CommunicationsWeek*, Closeup, May 1, 1989, p. C3.

⁷²The increase in imports resulted in part from a 75-percent increase in the value of the U.S. dollar. This sizable revaluation of the dollar created an enormous incentive for U.S. consumers to purchase foreign goods, and a disincentive for foreigners to buy U.S. products.

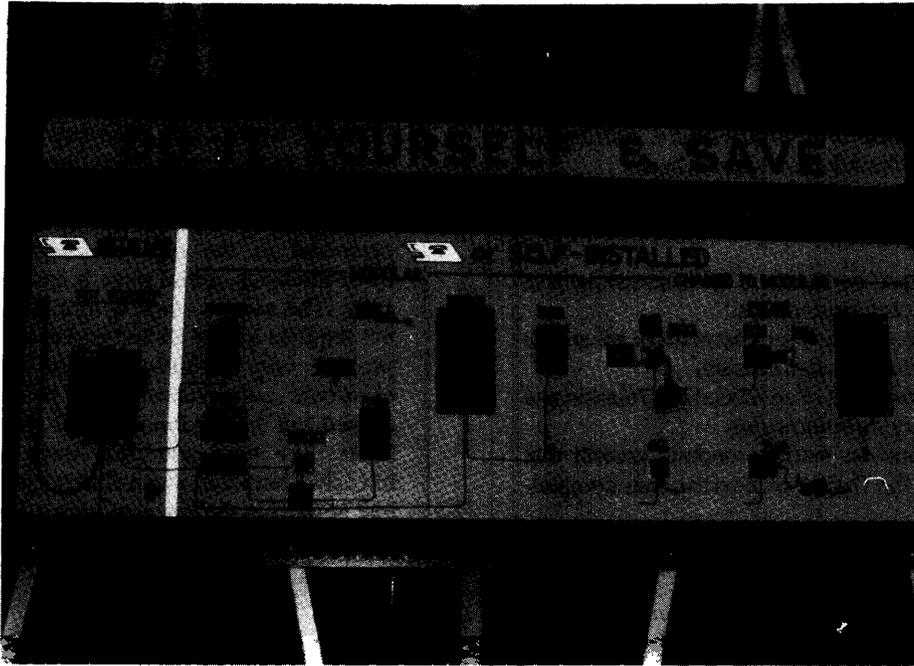


Photo credit: Mark G. Young

The customers of the South Central Rural Telephone Cooperative in Glasgow, KY, are greeted with this instructive sign on how to connect their own telephones.

agricultural output has increased in absolute terms, its share of total output continues to decline worldwide. In developed countries, the share of agriculture in gross domestic product fell from 5.5 percent in 1965 to less than half of that by 1986. Dramatic shifts in the importance of agriculture have also taken place in the developing countries, particularly those in Asia. Between 1965 and 1986, for example, the agricultural share of all developing countries taken together fell from 28.4 to 15 percent. The share of the developing countries in Asia dropped from 38.0 to 17.8 percent.

The decline in agriculture has freed up resources for other kinds of economic activity. In developing countries, there has been a shift to all other sectors.⁷³ Of particular concern for rural areas has been the outstanding rate of growth in manufacturing activities achieved by the developing economies of the Pacific, such as the Republic of Korea, Hong Kong, and Malaysia. Here, growth in manufacturing output

averaged over 10 percent between 1965 and 1986. This shift has been accompanied, moreover, by an improvement in their trade positions. By 1987, all of the developing countries, collectively, accumulated a positive trade balance totaling over \$53 billion. Rural areas in the United States, the developing countries' major competitors, appear to be the losers.

Other evidence supports this conclusion. According to the United States Department of Agriculture, rural areas in the United States lost 11,000 jobs between 1975 and 1982 due to imports. All in all, 201 rural counties experienced severe unemployment, having lost more than 10 percent of their manufacturing jobs. Some industries, and hence some regions, were more sensitive to imports than others. The sharpest decline was in the textile and apparel industries. These labor intensive, low-wage industries use simple production processes and require only modest labor skills so they are especially vulnerable to competition from less developed

⁷³Between 1965 to 1986, for example, the share of output originating in the industrial, construction and service sectors increased, respectively and in percentage terms from 23.3 to 30.6; from 16.9 to 20.7; and from 42.8 to 48.7. Larry Darby, contractor report prepared for the Office of Technology Assessment, Spring 1990.

Box 2-A—Forces Underlying The Global Economy

- **The growing** similarity of countries, with respect to tastes as well as to infrastructure, distribution channels, and marketing approaches.
 - The emergence of a global capital market as witnessed by large flows of funds between countries.
 - Declining tariff barriers and the establishment of regional trading agreements.
 - Shifting opportunities for competitive advantage due to technology restructuring.
 - The integrating role of advanced information and communication technologies.
- Slow and uneven world economic growth that has fanned the flames of international competitiveness.
- The emergence of new global competitors, principally from East Asia.

SOURCE: Michael E. Porter (ed.), *Competition in Global Industries* (Boston, MA: Harvard Business School Press, 1986), p. 405.

Box 2-B—New Forms of Global Competition

The operation of this new international division of labor can best be illustrated by the processes used (initially) by Japanese consumer electronics firms. The first stage of production, involving the conception, research and development of new products, requires highly trained and specialized technical personnel of the type residing in Japan. This labor-intensive, initial stage is carried out domestically. The second stage is more capital intensive, but requires highly skilled and specialized labor to produce very sophisticated and highly technical electronic components. This phase is typically carried out in flexible, special-purpose plants at home. The third and final stage is again labor intensive, but requires a different kind of labor from that utilized in the first two stages. It is basically an assembly process, designed to be simple, and requiring a disciplined, but not exceptionally skillful labor force.

SOURCE: For further discussion see, Nigel Grimwade, *International Trade* (London: Routledge, 1989).

counties. In contrast to rural areas, unemployment in urban areas did not increase due to imports.⁷⁴

This heightened competition is reinforced by the emergence of a global economy (see box 2-A). Patterns of international trade now primarily reflect patterns of international production. And specialization takes place on the basis of parts and special components, rather than on the exchange of finished products. Today, for example, Japan provides approximately 40 percent of U.S. component parts in electronics and automobiles.⁷⁵

In this global economy, the multinational corporation is becoming the norm. And, whereas in the past multinational corporations tried to exploit comparative advantage by producing or selling in a single country, today they seek more the advantage to be gained by integrating all their activities on a worldwide basis⁷⁶ (see box 2-B). In such an environment, production, just like capital, can be moved from place to place throughout the world.

If rural communities are to survive, they too must be globally oriented. The global economy could harm rural economies, if rural businesses (or businesses that might otherwise have located in rural areas) export jobs and capital to other parts of the world. On the other hand, if they create the right conditions—such as an educated workforce—rural communities might attract foreign businesses and capital to their communities. With access to a much larger and more diverse market, rural communities will also be able to produce on a small scale for niche markets (see box 2-C). To identify new markets and to sell worldwide, rural communities must have upgraded communication infrastructures.

A Growing Concern About the Environment, and the Environmental Tradeoffs in Economic Development

Environmental concerns about the potentially negative impacts of growth can be traced back to the early sixties. Since that time, the public has become

⁷⁴However, both the sectoral composition and regional location changed, with “low-tech” industries in the Northeast and Midwest losing employment, while “high-tech” industries in the South and West (and Vermont) offset those losses with increased employment. Metropolitan areas in California, Texas, and Florida gained over three-quarters of the new jobs. *Ibid.*

⁷⁵As Jack Behrman has pointed out, specialization has also taken place”. . . based on different product characteristics; mass consumption versus high fashion, or low quality versus high quality, or generic versus trademarked goods.” Jack N. Behrman, *Industrial Policies: International Restructuring and Transnationals* (Lexington, MA: Lexington Books, 1984), p. 72.

⁷⁶Michael E. Porter (ed.), *Competition in Global Industries* (Boston, MA: Harvard Business School Press, 1986), p. 405.

Box 2-C—Maine's Sea Urchin Industry

Sea urchin roe is a prized delicacy in Japan served on special occasions and holidays, and is found all over the world—Chile, Alaska, California, North Korea, South Korea, and the Soviet Union. Until recently the sea urchin off the coast of Maine was regarded by lobstermen as a pest that scavenged the bait from lobster pots. Within the last few years, though, sea urchin has been discovered as a valuable resource, and a new industry has been born in Maine. Now merchants, lobstermen, and divers along the coast are claiming a portion of an industry that has become estimated at \$100 million internationally.¹

As few as 6 years ago, there were only two divers harvesting sea urchins in the State, according to Lloyd Covens, one of those two pioneers. Six years later, after Mr. Covens convinced a few Japanese merchants to take a risk on Maine's product,² Maine has become an important source of uni, as the sea urchin's roe is called in Japan. Last year, 74 merchants harvested an estimated 8.7 million pounds, worth about \$3.5 million.³ This year, about 10 million pounds of sea urchin will be harvested, of which about half will be by Lloyd Covens' Portland-based company, Urchin Merchant. Urchin Merchant, which employs about 300 divers and fishermen, is the largest such firm in the area, with an estimated payroll of \$3 million.⁴

The rise of this industry is greatly facilitated by transportation and communications. Virtually all of it is shipped to Japan (the roe that is consumed in Japanese restaurants in America comes from California), and because the urchin's roe must be delivered while it is still alive, it requires fast and reliable communication and transportation. In addition, the market for uni is very volatile, fluctuating greatly in such events as the death of a statesman or a natural disaster. Merchants, therefore, must be in constant contact with their customers in Japan.

In order to keep Urchin Merchant competitive in the international market and ahead of his regional rivals, Mr. Covens keeps a computer database on each of the reefs off the Atlantic coast from Gloucester, MA, up into Canada. He explains that each reef's family of urchin is be ready for harvesting at different times. By keeping this information on a computer, he is able to direct his fishermen and divers to the optimal locations for harvesting, and thus ensure the highest quality of product for his customers.

A second factor which gives Covens an edge is that he uses his computer to gather weather data in order to track and predict the weather, which plays an important part in the harvesting of urchin. Success depends on the ability to accurately anticipate the amount and the timeframe for delivering the product. The roe must be delivered to Japan still alive and thus cannot be stored. (The roe is sent to be processed in Japan within hours after being removed from the ocean. After being processed, it will remain fresh for as long as a week.⁵) His ability to compute and analyze weather patterns gives him a distinct advantage over his smaller counterparts who do not have such capabilities.

The affect of this new source of commerce is a tremendous boon to Maine. Many lobster fishermen are out of work once the demand for lobster wanes during the winter months. Many collect unemployment compensation or are forced to take up other menial jobs in fisheries, according to Covens. The rise of the sea urchin industry, though, provides a well-paying alternative for the lobstermen in the area in which they are skilled—operating their boats and navigating the ocean. Maine's sea urchin season, which runs from October to April, compliments Japan's season, which generally lasts through the summer months.

The harvesting of the sea urchin also requires high-skilled divers who pick the urchins off reefs along the coast. Divers generally earn between \$600 to \$1,200 a week, and up to as much as \$2,500.⁶ Covens estimates that the industry supports as many as 1,000 divers. Marine supply stores and dive shops, which in the past closed down during the winter, also benefit from the robust and growing trade. Covens points out that whatever measure this industry has on the trade deficit—even if it is humble—is not nearly as important as the psychological effect of being able to employ hundreds of Maine residents in well-paying jobs.

¹Dena Kleiman, "Scorned at Home, Maine Sea Urchin Is a Star in Japan," *New York Times*, Oct. 3, 1990, p. C1.

²Personal correspondence with Lloyd Clovens, Jan. 3, 1991.

³John Laidler, "For Maine's Urchin Industry, a Sometimes Prickly Roe to Hoe," *The Washington Post*, Jan. 4, 1990, p. A3.

⁴Personal correspondence with Lloyd Clovens, Jan. 3, 1991.

⁵Dena Kleiman, "Scorned at Home, Maine Sea Urchin Is a Star in Japan," *New York Times*, Oct. 3, 1990, p. C1.

⁶*Ibid.*

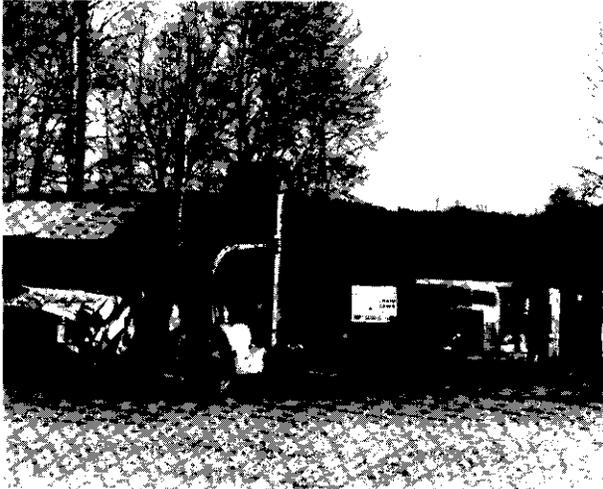


Photo credit: Mark G. Young

The small lumber mill in Cle Elum is a testament to the continued importance of forestry to Washington State's rural communities.

more sensitized to the environment, often providing strong support for environmental protection. Thus, today, environmental impact statements (EIS) are commonplace. Environmental issues will loom even larger in the future, because, as a society, we are becoming more dependent on technological solutions.

Rural areas find it particularly difficult to make choices regarding growth and the environment. Many rural economies are totally dependent on activities that have major environmental consequences, so environmental protection can cost them jobs. The protection of public lands has limited logging and mining; concerns about groundwater contamination, soil erosion, and food safety have constrained farm practices; and efforts to control emissions and waste disposal have restricted rural manufacturing (see box 2-D).

Because rural areas face so many problems, they find it difficult to attract newer industries that have fewer environmental impacts. Some communities have been able to take advantage of their scenic beauty to develop recreation areas and retirement communities. All too often, however, they are the

communities of last resort—at worst, a place to dump urban waste.⁷⁷ With high unemployment rates due to a depressed uranium industry, the town of Grants, New Mexico, for example, believes its best prospect for providing jobs is to become the prime location for privately owned prisons.⁷⁸

Communication and information technologies can provide rural communities a means to develop or attract rural businesses that are neither harmful to their environment nor to their local ways of life. Using these technologies to identify distant buyers and negotiate optimal prices, some rural communities have developed niche markets, based on their own local resources. Ganados del Valle, for example, is a weavers' cooperative operating out of Los Ojos, New Mexico. For years, seasonal unemployment rates were so high that many State officials were ready to "write it off." Inspired and energized by Maria Varela, a woman seeking to help develop the area, members of the community set up a successful sheep herding and weaving cooperative. Their goal was to build an economic base using the community's own natural resources. Pooling their flocks, the townspeople held phone auctions and sold their sheep at a top price. The women in the community produced garments in keeping with traditional Rio Grande weaving techniques.⁷⁹

Rural citizens often feel that outsiders are forcing them to make choices about development and the environment. Many times local sentiment favors development, while the State government, Federal Government, or the national environmental community seek to limit it (see box 2-E). Residents of northern Maine, for example, are eager to mine a rich copper lode in Ball Mountain, and resent that the State's Department of Environmental Protection is standing in their way. Some States are trying to reduce the job impact of environmental protection by supporting retraining and the diversification of rural economies (see box 2-F). One fruitful approach might be to link these programs to the deployment of information and communication technologies to rural areas.

⁷⁷Commenting on how to create safe nuclear facilities, Massachusetts gubernatorial candidate John Silber, suggested, for example, "Maine is a good location for a nuclear powerplant—where the damn thing could have an accident and not hurt anybody." As cited in *Newsweek*, Aug. 13, 1990, p. 15.

⁷⁸New Mexico is attractive to prison entrepreneurs because much of it is unzoned. Many private, correctional outfits have sought to locate there. "As Prisons Go Private The Neighbors Go to Court," *BusinessWeek*, June 11, 1990, p. 28.

⁷⁹Jon Christensen, "A Different Kind of Bean Field," *High Country News*, Oct. 24, 1988, p. 24. Ms. Varela was recognized for her work helping the communities of rural New Mexico as one of the 36 recipients of the annual John D. and Catherine T. MacArthur Foundation awards. Kathleen Teltsch, "MacArthur Grants Are Awarded to 36," *New York Times*, July 17, 1990, p. A18.

Box 2-D—Lake Cumberland, Kentucky

The proposed expansion of Union Underwear in Jamestown, KY, has sparked a controversy pitting environmentalists and recreationalists against local developers and residents who depend on the company's \$45 million annual payroll. The company proposes to construct a pipeline to divert treated wastewater—used in the process of dyeing fabric—from Lily Creek directly into Lake Cumberland. Although the project potentially poses environmental harm, the town of Jamestown and the State find themselves in a bind. If opposition becomes too great, Union has stated its intention to move part or all of its operation to North Carolina.

For its part, Union Underwear sees the pipeline as a solution to environmental concerns: rather than emptying the wastewater into the smaller, but more convenient Lily Creek, the company would construct a pipeline that would carry the wastewater into the larger body of water, Lake Cumberland, where the concentration of chloride—the salt used to bind color to the fabric used for Union's undergarments—would be 250 parts per million, well below the standards established to protect the Lake's aquatic life.

Conservationists and local fishers fear that despite the regulatory guidelines to limit the concentrations of salt, copper, lead, arsenic, and other metals in Lake Cumberland, the government can actually do very little to protect the environment once Union starts emptying the effluent. Environmentalists raise the issue of the cumulative effects of the effluent from Union Underwear, as well as the wastewater that reaches Lake Cumberland from Jamestown and 30 other municipalities. They contend that overtime, Lake Cumberland will face the same consequences as did the Great Lakes when they became industrial dumping grounds.

Union Underwear, its workers, and many in the community of Jamestown who depend on Union either directly or indirectly for their livelihoods, view the arguments of the environmentalists—who come mostly from outside the community to enjoy the natural beauty and recreational opportunities at the Lake—with suspicion and some resentment. They contend that Union's presence is critical to the economic survival of Jamestown.

SOURCE: Bob Hill, "The Cumberland Flap," *The Courier-Journal Magazine*, May 13, 1990, p. 4.

Box 2-E—Development v. the Environment

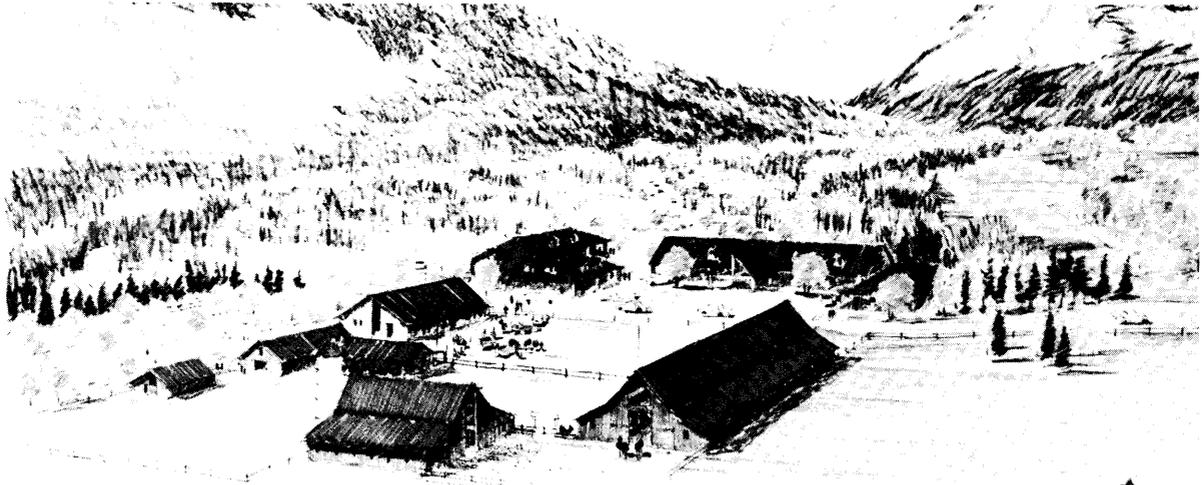
Many rural communities increasingly depend on tourism to produce much-needed local income. As the environmental movement gains momentum and legitimacy, however, conflicts over how such development will effect an area's environment—its resources, its people, and its history—are a growing impediment to such development.

The conflict over the environment versus the economy is particularly complicated in Washington, where the battle lines are already clearly, and often fiercely, drawn with regard to the issue of logging the State's rich forests. As another manifestation of this conflict, the development of the Early Winters Resort in the Methow Valley, on the other side of the Cascade Mountains from Seattle, has aroused considerable friction in the State for the past several years. The contested development includes plans for a four season destination resort facility complete with a ski mountain, ranches, residences, golf courses, and a village. It typifies the tension between developers along with those for whom development promises jobs, on the one hand, and environmentalists and those who caution that development threatens to scar the area's scenic splendor and rural quality and to interfere with traditional ways of life, on the other.

Tourist-based local development brings in new jobs and stimulates the local economy: Early Winters estimates that upon completion, the resort will generate 1,200 jobs in Okanogan County and add \$80 million a year to the local economy and \$100 million a year to the State's economy. Before the project is even complete, the resort will produce 200 to 300 full-time construction jobs a year, with a construction payroll of \$11 million.

Because tourist-based development depends on the beauty and recreational offerings of the region, it is in the interest of the developer to preserve the original character or charm. However, developers have often largely disregarded the ecological problems associated with development. Wary of the changes that development might bring and cautious about the environmental impacts of developing the Methow valley, citizen groups such as the Methow Valley Citizen's Council and the Friends of the Methow Wiley have held up the project with administrative proceedings. These groups contend that the development could harm the mule deer population, which is the largest in Washington State. Project opponents also fear that instream waterflows could be damaged by snowmaking activities, sewage treatment, and increased domestic water uses.

Rather than dismissing the environmentalists concerns, the Early Winter's development has undertaken extensive studies of the Valley's environment and investigated ways for the development to exist as part of the local beauty instead of exploiting the natural surroundings. For example, mule deer migration corridors and habitat areas will be designed into the baseland resort. Water systems will be designed to store the spring run-off from winter snows for irrigation and snowmaking purposes later in the year. Water used for sewage and indoor domestic uses will be treated and returned to the aquifer. In addition, construction plans have been designed so the trees and natural landscape will screen most buildings, roads, signs and other structures from view along Highway 20, which leads into the Wiley.



Compliments of: Early Winters Resort Associates

Artist's rendition of Wilson Ranch, a part of the proposed plan.

Box 2-F—Retraining Miners in Appalachia

The Business and Industry Technical Assistance Center (BITAC) was formed as part of Kentucky's Hazard Community College in 1986 to redress high unemployment in the eight-county region due to the loss of jobs in the coal industry. The Center's main mission is to teach displaced miners and disadvantaged workers the entrepreneurial skills to start their own businesses, according to its director, Charley Simpson.

Hazard is located in the heart of the Appalachian coal fields. Yet coal jobs, the mainstay of economic survival for generations of Eastern Kentuckians, have declined over 25 percent in 10 years. Real unemployment in some counties approaches 50 percent.¹

BITAC was conceived of by Hazard Community College's President, Dr. G. Edward Hughes, who has made economic development a priority of the college, along with Professor Richard Crowe, whose Small Business Information Center was BITAC'S predecessor. According to Dr. Hughes, "BITAC is an aggressive, active economic and community development arm of the College."² Its instructors-experienced local businessmen—help others find niches that are not being served in the community or that are only being served at great distances and start up and operate businesses to fill that demand in order to keep the dollars in the community.

The Center's success is well known. With a staff of 6, including the director, a business liaison, and 2 entrepreneurial instructors, the Center has helped to launch nearly 200 businesses since it was founded in 1986. It has won several awards in recognition of its positive impact on economic development in Appalachian Kentucky, including the American Association of Community and Junior Colleges' "Putting America Back to Work Award." BITAC has been singled out by the National Association of Counties and by the U.S. Department of Commerce's Economic Development Administration. The State legislature is considering creating similar programs in the other 14 community colleges and 6 regional State universities.

¹No Mission Is Impossible" *Community, Technical, and Junior College Journal*, vol. 60, No. 4, February/March 1990.

²Ibid.

SOURCES: Fran Jeffries, "Heralded Hazard Training Program hunches Mountain of Entrepreneurs," *The Courier Journal*, Louisville, KY, Mar. 19, 1990. Steve Baron, "Through BITAC, College Creating Business, Jobs," *Communi-K*, the University of Kentucky's Faculty-Staff Newspaper, vol. 22, No. 11, Nov. 13, 1989. "No Mission Is Impossible" *Community, Technical, and Junior College Journal*, vol. 60, No. 4, February/March 1990. Personal correspondence, Charley Simpson, BITAC Coordinator, Jan. 8, 1991.