

Institute for Research on Poverty
Discussion Paper no. 1064-95

**Agriculture and Poverty in the Kentucky Mountains:
Beech Creek and Clay County, 1850–1910**

Dwight B. Billings
Department of Sociology
University of Kentucky

Kathleen M. Blee
Department of Sociology
University of Kentucky

March 1995

The research reported here was supported in part by the Small Grants Program of the Institute for Research on Poverty, funded by the Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services.

Abstract

The poverty of Appalachia is not the product of modernization. Nor is it a unique phenomenon. An examination of the history of farming in Beech Creek, Kentucky, reveals that this community, which was prosperous in 1860, owed its fall into poverty to a number of factors that had impoverished other regions: the high rate of population growth among the families living in the area, the division and re-division of the limited land to accommodate the new generations of families, the need to use woodland for agriculture before reforestation succeeded in restoring the old soil to its original productivity, and slow economic growth resulting from the emphasis on subsistence rather than commercial agriculture. The same pattern had occurred in New England in the eighteenth century. What was unique in Appalachia was that subsistence farming lasted so long, owing to growing isolation from the rest of the country as the area was bypassed in the construction of modern means of transportation.

Agriculture and Poverty in the Kentucky Mountains: Beech Creek and Clay County, 1850–1910

Like so many other aspects of the region's preindustrial social life, farming in Appalachia has received but scant attention until very recently. Early, casual observers from Frederick Law Olmstead to Horace Kephart undoubtedly exaggerated the "rude and destructive" character of mountain farming.¹ Such stereotypes have been carried over into cultural interpretations that link Appalachian poverty to the presumed backwardness of mountain culture, including its agriculture, often without systematic ethnographic evidence.² Subsequent scholars, advancing the model of Appalachia as an internal colony, attributed the decline of the Appalachian farming economy to the intrusion of absentee land and mineral ownership and to the corporate domination of the region by multinational energy businesses. Thus Ronald Eller claimed that "the small, marginal farm usually associated with the stereotyped picture of Appalachia was in fact a product of modernization" and the Appalachian Land Ownership Task Force asserted that "with th[e] intrusion [of coal and timber interests] began the decline of mountain agriculture."³ Yet these scholars, too, failed to devote sufficient attention to the history, internal dynamics, and developmental consequences of Appalachian farming.

New studies, however, are beginning to focus more directly on Appalachian agriculture and its impact on the economic and social development of the region. Following up on the earlier work of L. C. Gray, Forrest McDonald and Grady McWhiney have shown the importance and economic viability of animal husbandry throughout the nineteenth-century South, including open-range herding in the upland, backcountry, and mountain regions.⁴ Horticultural practices in the southern mountains, too, have begun to be reappraised, appearing in a far more favorable light than as stereotyped in traditional accounts. Thus John Otto and his co-authors have shown that the "slash-and-burn" technique of "forest farming," commonly practiced throughout the Appalachian and Ozark highlands in the nineteenth and early twentieth centuries, was a viable and effective form of agriculture within certain ecological and demographic limits.⁵

If historical research is beginning to portray the region's farming as more viable than traditional accounts supposed, considerable controversy remains in regard to the relative balance between subsistence-oriented agricultural production and commercial farming in Appalachia.⁶ Recent studies have emphasized the importance of commercialism in the settlement and early development of east Tennessee, western Virginia, and southwestern Virginia.⁷ For example, John Inscoc has described the mountains of North Carolina as "a thriving, productive, and even [economically] progressive society" where slaveholding and commercial agriculture predominated during the antebellum period. He suggests that "only slowly and reluctantly have historians recognized that antebellum society in the southern Appalachians shared much in common with the rest of the South."⁸ On the other hand, studies of preindustrial life in the more isolated sections of eastern Kentucky and West Virginia, such as Altina Waller's analysis of the Tug River Valley, describe farming there as having been largely subsistence-oriented prior to 1900, a finding supported by an early USDA study that reported that 58.4 percent of all farms in the Allegheny-Cumberland plateaus were still noncommercial in 1935.⁹

Yet even in the Kentucky mountains the predominance of subsistence agriculture and the extent of market involvement have been debated. Thus Tyrel Moore claims that "clearly, the pioneer economy and isolation of the Appalachian frontier did not dominate eastern Kentucky throughout the period between 1800 and 1860." Emphasizing economic development including iron manufacturing along the Ohio River in northeastern Kentucky, he concludes that "Appalachian Kentucky, on the eve of the Civil War, was not unlike other areas of the country between northern New York and central Alabama that possessed similar kinds of economic resources."¹⁰ But Mary Beth Pudup, examining a later period in southeastern Kentucky, claims that the years from 1850 to 1880 "witnessed the progressive isolation of the area's economy from the paths of deepening [national] commercialization

and locally generated capitalist transformation, as economic production [in eastern Kentucky] became oriented toward simple household subsistence."¹¹

THE BEECH CREEK STUDY

In order to examine further the role of agriculture in the social and economic development of the Allegheny-Cumberland plateau region, we have based our approach on the prior ethnographic observations of James S. Brown and his colleagues in the Beech Creek neighborhoods of Clay County, a non-mining community in eastern Kentucky.¹² By analyzing data from manuscript censuses and tax rolls for the years 1850 to 1910 on the ancestors (and their neighbors) of families that Brown first studied in 1942, we have tried to examine the social origins of farming patterns Brown described in his classic study of rural Appalachian social life and to situate them in the context of that area's economic development and poverty.¹³

The people living along Beech Creek were already poor when Brown first entered the area on horseback to observe them fifty years ago. Their tiny farms averaged less than 10 acres in crops in 1942. Nine of the 29 farms (31 percent) that Brown studied exhaustively averaged fewer than 30 total acres of improved and unimproved land—a figure comparable to Clay County as a whole, where 34 percent of all farms were less than 30 acres and 50 percent were less than 50 acres. These 29 Beech Creek farms combined to only 273 acres in cultivation, 226 of these acres in corn. Productivity was low, averaging only 10 to 20 bushels of corn per acre. Although some good bottomlands remained, many portions "[had] been cultivated since the early days and [were] so exhausted by continual cropping and erosion [that by 1942 they were] rocky, unproductive, and thin."¹⁴ "Evidence of erosion [was] everywhere—slips, slides, gullies, rock-choked stream beds, washed banks and bare, scarred fields."¹⁵ Yet subsistence farming continued to play a central role in the lives of Beech Creek families.

"In 1942, the farm was still the chief source of income for the Beech Creek family."¹⁶

Brown's analyses of 30 family budgets revealed that the total value of farm products for all families was only \$12,405, more than two-thirds of which (\$8,660) was consumed at home. Less than one-third was sold for a combined total of only \$3,745 of income that was shared by all thirty families. This small amount of cash represented one-fourth of the families' entire cash income. The rest came from nonfarm employment in forestry, CCC and WPA jobs, government subsidies, and pensions. A small portion of income was derived from family members working "outside" in southern Ohio factories, indicating that extra-regional migration and employment were already becoming important factors in the life of Beech Creek.

Thus by the time of the second world war, Beech Creek farms were far from the islands of self-sufficiency that were once stereotypic of remote, nonindustrialized sections of the Cumberland Plateau.¹⁷ "The data on expenditures," according to Brown, revealed both "the decreasing self-sufficiency and the relative poverty of the Beech Creek farm family."¹⁸ Brown observed that earlier, "when lumbering came to the area and made more money available, [Beech Creekers] gave up such domestic crafts as weaving and shoemaking and bought clothing and shoes. Eventually they spent large portions of cash income for flour, sugar, lard, and meat, which they had formerly produced."¹⁹ By 1942 numerous Beech Creek families were forced to supplement even their home consumption of corn with additional purchases. The goals of this chapter are to ask how this situation came about by examining historical trends in Beech Creek's agriculture and, more generally, to suggest long-term developmental implications for tendencies internal to subsistence farming in the Allegheny-Cumberland plateaus.

EARLY SETTLEMENT AND DEVELOPMENT OF CLAY COUNTY

It would be a mistake simply to project Brown's description of Beech Creek's twentieth-century social isolation and economic marginality backward onto Clay County's past, since our research suggests that the county was more closely incorporated into interregional trade networks and less geographically isolated in the 1840s than were the Beech Creek neighborhoods when Brown first observed them 100 years later. During the frontier settlement of Kentucky, both population and commerce entered central Kentucky primarily through the Cumberland Gap and radiated outward from there, up toward the three headwaters or "forks" of the Kentucky River in the Cumberland mountains and down toward the river's mouth on the Ohio River. Space does not permit a full explication of this thesis, but we believe that to understand the early settlement and development of Clay County, one must deconstruct or "un-think" the modern concept of "Appalachia"—as well as the related the notion, popularized in nineteenth-century local-color writing, of there having been "Two Kentuckies"—in order to grasp Clay County's early place in the unified development of the social order that came into being all up and down the Kentucky River.²⁰

At the same time that central Kentucky, and especially the Blue Grass region, were growing in population and wealth at the center of the state's trade, which extended down the Mississippi to New Orleans and up the Atlantic Coast to mercantile centers in Baltimore and Philadelphia, Clay County was also beginning to experience significant growth as a consequence of making the state's first important manufactured product, salt—a crucial commodity in Kentucky's otherwise predominantly agricultural economy.²¹ Many non-slaveowning, yeomen farmers pushed into the Kentucky hills when the price of land rose and its availability declined in central Kentucky but so too did the representatives of wealthy slaveowning families, who built Clay County's salt industry along Goose Creek, a tributary of the Southfork of the Kentucky River.

James White, a Virginian whose estate was valued at \$2 million when he died in 1838, began to purchase land and manufacture salt in Clay County in cooperation with his brother Hugh White (and Hugh's sons), who moved to Clay County during the first decade of the nineteenth century. By 1860, the White family controlled approximately 20,000 acres of land in Clay and other mountain counties.²² James Garrard, the second governor of Kentucky, patented more than 45,000 acres of land in Kentucky before and after Kentucky became a state. Although most of his lands were in the Blue Grass region, Garrard also bought thousands of acres in southeastern Kentucky and sent his son Daniel to Clay County to establish salt wells and furnaces there early in the century. Daniel Garrard and his sons owned 15,000 acres in southeastern Kentucky before the Civil War. The Whites and Garrards, along with a few other families, thus established economic and political dynasties in Clay County based on slave labor, salt manufacturing, commerce, and large-scale farming that persisted throughout the antebellum and early postbellum periods and, in some cases, even into the modern era.

Early life in Clay County thus revolved around two very different systems of production, the subsistence-oriented system of forest farming, based predominantly on family labor, which was practiced by the vast majority of the population, and a smaller, slave-based manufacturing and mercantile economy controlled by a few wealthy families. The county's fifty-eight slaveowners, representing only 7 percent of household heads, owned 10 percent of the total population (515 slaves), but slaveownership did not touch directly the lives of most farm households in Clay County. The result of this dual system was a highly stratified community.²³ The ten wealthiest individuals in Clay County in 1860—all of them slaveowners—averaged personal estates worth \$45,890 in a county where the mean estate was worth only \$859, or fifty-three times less. In fact, the wealthiest individual, salt manufacturer Francis Clark, was two hundred times richer than the mean, with an estate worth \$175,000 in 1860.

By 1817, Clay County salt had become one of Kentucky's leading exports, reaching as far west as the Missouri Valley, south to Tennessee, and east to Virginia. The industry reached its peak of production between 1835 and 1845 when as much as 250,000 barrels of salt were produced annually from eight to fifteen salt works.²⁴ Salt sales benefited manufacturers but also created opportunities for local farmers to supplement their incomes by engaging in well drilling, barrel making, boat building and navigation, and coal digging.²⁵ State expenditures for highway construction and river improvements, although targeted at the salt industry, also benefited local farmers, as did the mercantile activities of salt manufacturers, who stimulated local trade by exchanging salt, nonlocal manufactured products, and money for farm commodities.²⁶ Salt manufacturers operated self-sufficient farms with slave labor, but their large landholdings created opportunities for tenant farmers and farm laborers as well. Overland roads built for the salt trade linked Clay County farmers to southern markets via the Wilderness Road (some twenty miles away), and local court litigation reveals that as early as 1807 drovers from the Blue Grass were adding livestock to their herds from Clay County as they passed nearby on their way through the Cumberland Gap.²⁷

At the peak of the salt industry's influence, entrepreneurs from Clay County outlined a bold scheme to the Kentucky legislature that proposed a \$10 million interstate canal, lock, and dam system that eventually would have linked the Goose Creek saltworks to the Atlantic coast.²⁸ But the Panic of 1837 and the national depression of 1839–41—along with opposition from central Kentucky railroad interests—relegated this plan to a footnote in Kentucky history. Soon thereafter, the Clay County salt industry began to decline as salt manufacturing elsewhere, in regions with better locational advantages, prospered. Furthermore by 1850, after earlier extensions of the National Road and improvements in navigation and safety on the Ohio River had been made, the "Wilderness Road...lost practically all significance as a transmontane route and was of mere local importance."²⁹ Whereas

mountain roads had been "not much inferior to those of central Kentucky" prior to 1830, the macadamization of roads in central Kentucky from 1830 to 1850 created "a magnificent system of highways" in the Bluegrass region.³⁰ According to Verhoeff, "it was during this period that the rugged mountain region, left henceforth to shift for itself in the matter of highways, became isolated to such a marked degree."³¹

Elsewhere we will discuss how deepening isolation impacted the lives of slaves and slaveowners in Clay County. The vast majority of African Americans left Clay County during the late nineteenth century. Former slaveowners engaged in internecine struggles at the turn of the century (known popularly as "family feuds" and locally as "wars") to control Clay County's political and economic life. In their roles as landowners, merchants and local boosters, lawyers, and corporate partners, they served as the indigenous agents of outside capital in the modern exploitation of local labor, land, timber, and coal resources.³² In the remainder of this chapter, however, we will examine trends in the quality of life among the majority of Clay County residents, who were engaged in agricultural subsistence and independent commodity production.

CLAY COUNTY AGRICULTURE IN 1860

Tables 1 and 2 report farm sizes and values, corn production, and livestock inventories for Clay County in 1860 (along with comparable values for Beech Creek farms) for three categories of farm operators: owners, tenants, and slaveowners.³³ (The Beech Creek community included no slaveowners.) The designation of slaveowners is straightforward in the census manuscripts, but the determination of owners and tenants, and their relationship to a third category (farm laborers) is problematic, as are the social dynamics of tenancy in the mountains. At best, tenancy levels are estimates.³⁴

TABLE 1

Farm Size and Values in Clay County, 1860

	Owner/Operators			Tenants			Slaveowners			Beech Creek Farms		
	Mean per Farm	Number of Farms	Percentage of Farms	Mean per Farm	Number of Farms	Percentage of Farms	Mean per Farm	Number of Farms	Percentage of Farms	Mean per Farm	Number of Farms	Percentage of Farms
Improved acres	52	92	100%	35	28	97%	109	37	100%	60	59	100%
Unimproved acres	424	92	100	463	11	40	1,041	34	92	679	46	78
Cash value of farm	\$935	91	99	--	--	--	\$4,419	32	86	\$1,437	47	80
Cash value of livestock	\$410	91	99	\$210	29	100	\$880	37	100	\$373	59	100
Cash value of machinery	\$38	92	100	\$19	29	100	\$83	36	97	\$38	59	100
Cash value of home manufacturing	\$28	82	89	\$18	16	55	\$54	26	70	\$26	45	76

Source: Eighth Census, 1860: Agriculture (manuscripts).

TABLE 2

Farm Production in Clay County, 1860

	Owner/Operators			Tenants			Slaveowners			Beech Creek Farms		
	Mean per Farm	Number of Farms	Percentage of Farms	Mean per Farm	Number of Farms	Percentage of Farms	Mean per Farm	Number of Farms	Percentage of Farms	Mean per Farm	Number of Farms	Percentage of Farms
Bushels of corn	406	92	100%	420	29	100%	831	35	95%	450	59	100%
Cash value of slaughtered animals	\$91	90	98	\$62	29	100	\$270	36	97	\$98	58	98
Number of cows	3.6	92	100	2.9	29	100	7	37	100	3.8	56	95
Number of cattle	6	80	87	3.3	21	72	16	30	81	5.1	48	81
Number of oxen	2.7	55	60	2.3	12	41	5	29	78	3.9	38	64
Number of sheep	15.3	77	84	8.8	11	38	26	25	68	14.1	31	53
Number of hogs	23	83	90	16	27	93	27	35	95	21.2	56	95
Cash value of garden products	\$145	7	8	--	--	--	\$67	4	11	--	--	--

Source: Eighth Census, 1860: Agriculture (manuscripts).

Using techniques suggested by Bode and Ginter,³⁵ we estimate that no less than 22 percent and perhaps as many as 41 percent of the 230 farmers who headed their own households in our Clay County population sample were tenants in 1860. Higher estimates, according to Bode and Ginter, are less certain, yet more likely to be correct. Our higher estimate includes 44 "farmers without farms" as well as the 22 "farm laborers" in our sample who headed their own households in 1860. (Most farm laborers, however, were not tenants but rather members of farm households related by kinship to the household head; 80 percent of these were sons of the household head.) Since the analysis that follows, however, is necessarily restricted to farm families and individuals listed in the census of agriculture, Tables 1 and 2 compare the farms operated by owners (75 percent) with tenant farms, defined as those operated by individuals with no property and/or missing values for improved acres and cash value of farms (25 percent).

Contrary to stereotypes about Appalachian farms, Table 1 shows that most farms in Clay County, even those operated by tenants, were extremely large in comparison with other regions. Owner-operated farms in 1860 averaged 476 total acres in the county at a time when farms in the northern United States, averaged only 129 acres (Table 3). Farms operated by slaveowners were even larger, averaging 1,150 acres—almost ten times the size of average northern farms (though small in comparison with large southern slaveholding operations). But because land in the mountains of Kentucky was comparatively cheap, the cash value of Clay County farms in 1860 was low. Owner-operated farms averaged only one-fourth of the value of farms in the North's eastern subregion and even the large farms owned by slaveholders—these, presumably, occupying some of the best bottomlands in the county—were less than 25 percent more valuable than average farms in the east one-tenth their size. In fact, the largest farms in Kentucky were those of the Kentucky mountains. Farm sizes increased and the value of farms decreased as one traveled east from the Blue Grass

TABLE 3

Average Sample Farm Characteristics for Northern U.S. Farms with Three or More Improved Acres, 1860

State/Region	A. Farm Statistics				B. Livestock Inventories							Value of Livestock Slaughtered (\$)
	Farm Value (\$)	Value of Implements (\$)	Improved Acreage	Unimproved Acreage	Horses	Oxen	Milk Cows	Cattle	Sheep	Hogs	Value of Livestock (\$)	
Eastern subregion ^a	3,581	125	79	39	2.4	0.8	4.9	4.2	15.8	4.7	493	86
Western subregion ^b	2,367	90	65	72	3.1	0.8	3.0	4.9	9.2	15.7	420	77
North	2,819	103	70	59	2.9	0.8	3.7	4.6	11.6	11.6	447	80

State/Region	C. Output of Principal Crops and Products (rounded to whole numbers)									
	Wheat (bu)	Corn (bu)	Oats (bu)	Wool (lb)	Irish Potatoes (bu)	Butter (lb)	Cheese (lb)	Home Manufactures (\$)		
Eastern subregion ^a	38	139	169	57	82	421	221	4		
Western subregion ^b	105	520	58	26	37	166	22	9		
North	80	378	99	37	54	261	96	7		

Source: Jeremy Atack and Fred Batemen, *To Own Their Own Soil*, pp. 111-112.

^aIncludes Connecticut, New Hampshire, New Jersey, New York, Pennsylvania, and Vermont.

^bIncludes Illinois, Indiana, Iowa, Kansas, Michigan, Ohio, and Wisconsin.

region across the rugged Cumberland Mountains, reflecting both the patterns of large landholdings and low level of commercialization in Appalachia.³⁶

Consistent with the model of slash-and-burn forest farming described by Otto,³⁷ Clay County farmers, including slaveowners, improved only small portions—roughly 10 percent—of their farmlands, allowing "old ground" to return to forest or to be used for pasture and leaving much of their total acreage unimproved. On the 121 owner-operated and tenant farms in our 1860 agricultural sample, improved lands averaged only forty-eight acres, ranging from only three acres (the minimum for inclusion in the census) to one large farm operation with 300 improved acres. Almost half of all farmers in Clay County (48 percent) cultivated 30 acres or less in 1860, despite owning large amounts of unimproved hillside forest land, while the largest farms—the top 10 percent—cultivated 100 or more acres. Owner-operated farms cultivated, on average, only 52 acres—an area roughly three-fourths that of farms in the North (Table 3).

Because enumerators did not report the cash values and unimproved acreages of tenant farms (see Table 1), it is impossible to know exactly what resources tenants had at their disposal, but their farms, too, were large. The ones with known values averaged 498 total acres. Nonetheless, tenants cultivated even smaller acreages than farm owners, averaging plots of only 35 acres. This size difference, in part, probably reflected life-cycle differences between tenants and owners. Some tenants rented farmlands in addition to pursuing other occupations—our sample included a cooper, a blacksmith, a coal digger, a constable, a gunsmith, and a salt maker—but most were young farmers. Tenants, averaging 33 years old, were an average of six years younger than farm owners and they were more likely to head simple (nuclear) families. Forty-one percent of the farm owners in our sample headed extended and multiple family units or had others living in their households, but only 27.5 percent of the tenant farmers headed such households. Consequently, tenant farmers commanded less labor resources from family members and others in their households than did owners to clear

lands and cultivate crops, and their younger ages permitted them less time to have accumulated other farm resources such as livestock and machinery.

Other than the fact that Beech Creek farms were small in 1942—necessitating at least periodic off-farm employment to supplement income—it is unlikely that farm activities in 1860 differed greatly from the daily and seasonal work rhythms and the age and sex division of labor that Brown described so well for the Beech Creek farms he observed in 1942. Farmers in Clay County, as well as in Beech Creek, pursued forms of general (or diversified) subsistence-oriented farming in 1860 that stressed meeting the needs of their households first before bartering or selling whatever surplus in crops and animal products were left over.

Comparison of Clay County farm production (Tables 1 and 2) with data from northern farms the same year (Table 3) reveals the surprising finding that these Appalachian farms—including farms in the Beech Creek neighborhoods—were on average at least as productive as their northern counterparts and even surpassed them in important farm products such as corn.³⁸ Clay County farm owners, on average, produced 340 percent more corn on their farms than did farmers in the northeast and only 22 percent less than Midwest farmers, the nation's leading grain producers. Their livestock inventories included roughly the same number of cows, cattle, and sheep but considerably more hogs and more oxen (important for the heavy work of clearing and hauling in a rugged environment) than Northern farms. Owner-operated farms in Clay County and all farms in Beech Creek averaged higher returns (in cash or kind) for slaughtered animals than did farms in either the Northeast or the Midwest. Although corn was by far the most important field crop in Appalachia, the comparison of Beech Creek farm values for 1860 (see Table 6) with Northern farms suggests that farmers' production of other crops in Clay County was also reasonably competitive with other regions. Beech Creek farmers produced more wheat than northeastern farmers and more wool than Midwestern farmers. They produced considerably less oats than both subregions of the North but the Appalachian practice of

allowing livestock, especially hogs and cattle, unrestricted range to feed on forest masts is likely to have compensated for this deficiency.

The relative self-sufficiency of mountain farms, and their ability to reproduce themselves without heavy reliance on store-bought commodities, is indicated by the high per-farm values of home manufacturing reported in Table 4. Rolla Tryon, an authority on household manufacturing, concluded that "as a factor in the economic life and prosperity of the country as a whole," home manufacturing "was practically nil at the end of the sixth decade of the nineteenth century".³⁹ Northeastern farms manufactured on average only \$4.00 worth of goods at home in 1860 and Midwest farms produced only a little more, valued at \$9.00. (See Table 3.) In sharp contrast, however, Clay County farm owners produced considerably more homemade goods that year, valued at \$28.00. Farms benefiting from slave labor manufactured still more goods, valued at almost eight times the Northern average (\$54 worth). Tenant farmers had less labor time to devote to home manufacturing—only 55 percent made goods at home, perhaps increasing their dependence on merchants or landlords—but those that could afford the time to do so also produced considerably more goods (\$18) than Northern farmers.

Beech Creek farmers manufactured \$26 worth of products at home in 1860. By the time that Brown interviewed Beech Creekers in 1942, home manufacturing had diminished, but some of the oldest people there could still recall how important home manufacturing had once been to their way of life.

Farm life at the time of the Civil War [was] still well remembered by one old man still living on Beech Creek [in 1942], Preston [Johnson]. His father...owned most of the creek, and the [Elisha Johnsons] were considered "good livers." They lived in a log house with three or four rooms and a "lean-to" kitchen. Most of their furniture and kitchen utensils were homemade...Wheat and corn, grown exclusively for use at home, were ground in the early days at a mill down-river...Beef cattle and sheep were slaughtered for home use...They bought salt from wells not too far away and produced their own sugar from groves of maple trees ("sugar orchards," they were called). Wild honey was not uncommon, and most families had beegums on the hill behind the house. Sorghum molasses were made in the fall. Sheep were numerous; their wool was spun into thread and woven into cloth for winter clothes. Some people raised cotton, but flax seems to have been commoner, and women took pride in the linen they wove. (The oldest woman on the creek remembered the whole process of linen-

making and recalled with nostalgia how stiff and hard new linen was and how soft and white it became with long, hard use.) [Elisha Johnson] tanned hides and made shoes for his family (and his youngest son, Preston, remembered the last shoes he had made, probably in the 1880s). About the only things the [Johnsons] had to buy were needles and coffee...⁴⁰

Home manufacturing persisted throughout the nineteenth century and contributed to the craft revivals that spread across the Appalachian region in the 1920s.⁴¹

While the data in Tables 1 and 2 do not take into account, as below, the size of farm families that had to be supported in the region, they nonetheless suggest the viability of agriculture in this section of the Kentucky mountains at the midpoint of the nineteenth century. Even to other Kentuckians at the time, however—probably because these were subsistence rather than commodity-producing units—the productivity of mountain farms was largely overlooked. Thus in 1854, when the Kentucky Agricultural Society was organized for the improvement of farming in the commonwealth, the mountains of eastern Kentucky were excluded from its three farm districts and, later in the century, the University of Kentucky Agricultural Experiment Station largely ignored the problems of mountain farmers by devoting exclusive aid and research to commercial farm interests in the central and western sections of the state.⁴² Geographical isolation, ignorance about mountain farming, and the prevalence of subsistence practices, rather than economic insufficiency, contributed to erroneous impressions about eastern Kentucky farming during the middle of the nineteenth century that would contribute to twentieth-century stereotypes about Appalachia.

Before turning to a discussion of long-term agricultural trends, however, it is important to note that although the majority of farm owners in 1860—and perhaps many tenants as well—were, in the language of contemporary Beech Creekers, "good liver," there were additionally a small number of comparatively well-to-do farmers in the county. Tables 1 and 2 show that slaveowners operated relatively large farm enterprises worth nearly five times the cash value of other owner-operated farms in the county and owned livestock inventories worth twice as much. They grew twice as much corn and slaughtered animals worth three times as much as other farm owners.

The largest slaveowners in Clay County—those also involved in salt manufacturing and other commercial ventures—were quite wealthy. Besides the \$20,000 capital invested in his salt manufacturing business, Daniel Garrard and his son, Theophilus, together owned about 12,500 acres of farmland worth \$28,000 on which they produced more than 1,600 bushels of corn and slaughtered animals worth \$850 in 1860. The salt manufacturers Alexander, Daugherty, and James White, Sr. owned farms totaling about 5,000 acres and valued at almost \$45,000, on which they grew more than 4,000 bushels of corn and raised livestock valued at more than \$9,000 in 1860. Furthermore, the fact that one elderly salt manufacturer, Francis Clark, owned lands worth \$120,000 in 1860 but, according to the farm census, operated only a 1,000 acre farm with very limited production suggests that at least some, and perhaps a good amount, of the value of farm products raised by tenant farmers may have gone to such large landowners as well.

TRENDS IN BEECH CREEK AGRICULTURE, 1850 TO 1880

The comparison of Beech Creek and Clay County farms in 1860 (Tables 1 and 2) suggests that trends on Beech Creek farms can be taken as representative of county-wide trends even though, on average, Beech Creek farms—including tenant operations—were slightly larger, more valuable, and more productive in 1860 than owner-operated farms in the rest of the county.⁴³ If the picture of Clay County and Beech Creek farming in 1860 was one of relatively high agricultural production in comparison with farm operations in the Northern United States, the story of farming there over the next two decades is one of dramatic and rapid agricultural decline. Whereas farms in the North—especially but not only in the Midwest—increased the value, productivity, and efficiency of their operations through improvements in transportation, mechanization, specialization, and the use of chemical fertilizers,⁴⁴ Beech Creek—and, by extension of our findings, Clay County—farms decreased dramatically in size and productivity throughout the remainder of the nineteenth century.

Tables 4, 5, and 6 document dramatic declines in the size and value of farms, livestock inventories, and crop production in Beech Creek from 1860 to 1880. By almost all measures, 1860 was a peak year of agricultural abundance. Between 1850 and 1860, the average farm in Beech Creek had more than doubled in size from a total of 328 improved and unimproved acres to 739 total acres in 1860. The value of farms increased by 240 percent from \$596 in 1850 (as expressed in 1860 dollars) to \$1,437 in 1860 (Table 4). Although the average number of animals on each farm actually fell somewhat between 1850 and 1860, the values of livestock holdings and slaughtered animals rose considerably (Table 5). Crop production, too, reached peak levels (Table 6). Corn, the most important crop in the mountains, increased by 25 percent. The production of oats fell but more farms grew wheat in 1860 than in 1850, and the number of farms making butter, and their quantities, had skyrocketed by 1860.

During the next two decades, however, these improvements vanished as livestock holdings, production levels, and farm values fell precipitously. Most farm variables fell to levels even lower than those of 1850. By 1880 Beech Creek farms averaged only 208 acres and were only 28 percent as large and 31 percent as valuable as farms had been in 1860. Livestock inventories—valued at only 29 percent of 1860 holdings—declined for all animals except sheep with hog production, falling most dramatically from 21 hogs per farm in 1860 to only 13 in 1880. (For livestock inventories, see Table 5.) Even more dramatic than the decline in the numbers of animals was the increase in the proportion of farms that no longer owned certain species of livestock. Hogs, for instance, were nearly universal on farms in 1860 (95 percent) but only half of the farmers in Beech Creek (51 percent) owned hogs by 1880. Oxen were present on 64 percent of the farms in 1860 but only 21 percent of the farmers owned them two decades later. Farm products derived from livestock fell proportionately. Milk

TABLE 4

Beech Creek Farm Values, 1850-1880

	1850			1860			1870			1880		
	Mean Value per Farm	Number of Farms	Percentage of All Farms	Mean Value per Farm	Number of Farms	Percentage of All Farms	Mean Value per Farm	Number of Farms	Percentage of All Farms	Mean Value per Farm	Number of Farms	Percentage of All Farms
Mean Improved Acres	41	41	79%	60	59	100%	39	106	80%	24.9 ^a	60	71%
Mean Unimproved Acres	287	30	58	679	46	78	221	110	83	14.6 ^b	48	56
Cash Value of Farm	\$527 (\$596)	41	79	\$1,437	47	80	\$782 (\$524)	111	84	\$582 ^d (\$442)	61	72
Value of Home Manufacturing	\$26 (\$29)	45	87	\$26	45	76	\$31 (\$21)	115	87	n.a.	--	--
Value of Machinery	\$17 (\$19)	49	94	\$39	59	100	\$23 (\$15)	130	98	\$23 (\$17)	81	95

Source: U.S. Census of Agriculture, 1850, 1860, 1870, 1880 (manuscripts for Clay County).

Note: Dollar values in parentheses are standardized to 1860 dollar values.

^aAcres in tillage, 1880.

^bAcres in pasture, 1880.

^cAcres in woodland, 1880.

^dOwners only in 1880.

^eAll farmers in 1880.

TABLE 5

Beech Creek Livestock Inventories, 1850-1880

	1850			1860			1870			1880		
	Mean per Farm	Number of Farms	Percentage of Farms	Mean per Farm	Number of Farms	Percentage of Farms	Mean per Farm	Number of Farms	Percentage of Farms	Mean per Farm	Number of Farms	Percentage of Farms
Hogs	26.2	51	98%	21.1	56	95%	9.8	114	86%	12.8	44	51%
Milk cows	2.9	52	100	3.8	56	95	2.3	125	95	1.9	73	85
Cattle	9.7	41	79	5.1	48	81	3.8	80	61	3.1	58	67
Oxen	2.8	16	31	3.8	38	64	2.9	48	37	2.3	18	21
Sheep	17.6	40	77	14.1	31	53	12.0	99	75	14.3	46	53
Horses	2	48	92	2.1	49	83	1.5	87	66	1.4	47	55
Value of livestock	\$192 (\$217)	51	100	\$374 ---	59	100	\$257 (\$172)	131	99	\$142 (\$108)	84	98
Value of slaughtered animals	\$60 (\$68)	48	92	\$98 ---	58	98	\$88 (\$59)	123	93	\$107 ^a (\$ 81)	84	98

Source: U.S. Census of Agriculture, 1850, 1860, 1870, 1880 (manuscript records).

Dollar values in parentheses are standardized to 1860 dollar values.

^aEstimated by the formula $((\text{Livestock value} \times .3) / 10.04) \times 0.76) / 7.6$ where .3 is the average ratio of the value of slaughtered animals to value of livestock for 1850 to 1870 and 0.04 is average price per pound.

TABLE 6

Output of Principal Crops and Products in Beech Creek, 1850-1880

	1850			1860			1870			1880		
	Mean per Farm	Number of Farms	Percentage of Farms	Mean per Farm	Number of Farms	Percentage of Farms	Mean per Farm	Number of Farms	Percentage of Farms	Mean per Farm	Number of Farms	Percentage of Farms
Corn (bu.)	362	51	98%	450	59	100%	234	129	98%	247	76	88%
Wheat (bu.)	35	8	15	60	31	53	36	51	39	39	37	43
Oats (bu.)	111	23	44	34	12	20	48	40	30	37	26	30
Irish Potatoes (bu.)	20	27	52	27	25	42	18	103	78	13	8	9
Beans (bu.)	9	37	71	7	57	97	8	106	80	--	--	--
Butter (lbs.)	28	6	12	373	53	90	72	100	76	78	71	83
Wool (lbs.)	21	37	71	26	28	47	22	95	72	20	45	52%

Source: U.S. Census of Agriculture, 1850, 1860, 1870, 1880 (manuscript records).

cows, for instance, declined by 50 percent and butter production fell far below the 1860 level (Table 6). Because sheep holdings were held constant, the average production of wool did not drop as dramatically as butter, yet fewer farms produced wool in 1880 than in 1870. Crop production, too, fell more or less in proportion to the decrease in farm sizes while the smaller size of farms forced a reallocation of acreage allotments among crop mixes. The number of farmers growing wheat and potatoes declined but oat production increased by a modest amount (perhaps necessitated by the impact of timbering on livestock grazing). Most important, corn production averaged only 247 bushels per farm in 1880, an amount only 55 percent of the 1860 corn crop, which had averaged 450 bushels.

Because the manuscripts of the 1890 census were destroyed by fire, the manuscript record for U.S. farms ends in 1880. This is especially unfortunate for the study of Appalachian agriculture, since mountain farms were obviously undergoing considerable changes during the last decades of the nineteenth century. Clay County tax rolls for 1892, however, extend a partial view of Beech Creek farms another dozen years beyond 1880. But because inclusion in the county tax rolls was based on less stringent criteria than inclusion in the federal census of agriculture—in 1860, for instance, we could locate 70 Beech Creek farmers in the tax rolls but only 59 in the census that year—caution must be exercised in comparing data from tax lists with census data from earlier years. Also, the absence of 1890 census manuscript data prevents us from assessing the reliability of 1892 tax reports. These reservations aside, however, the data on agricultural holdings reported for purposes of county tax assessments suggest further, modest declines in farm production, especially livestock, from 1880 to 1892.

Comparison of Table 7 with Tables 5 and 6 suggests that average corn production in Beech Creek held steady between 1880 and 1892, but the number of cattle (milk cows, oxen, and other cattle) and hogs per farm fell along with the proportion of farmers owning each. Only 41 percent of

TABLE 7

Corn Production and Livestock in Beech Creek, 1860 and 1892^a

Year Estate	Number of Taxpayers	Corn		Horses		Mules		Cattle ^b		Hogs		Total Personal and Real				
		Bushels per Farm	Percentage of Farms	Value per Farm	Number per Farm	Percentage of Farms	Value per Farm	Number per Farm	Percentage of Farms	Value per Farm	Number per Farm					
1860	70	504	71%	\$116	1.8	70%	\$91	1.5	11%	\$97	8.8	77%	--	9.5	59%	\$1,183 (n=60)
(%=86%)																
1892 \$427	56	246	71	69	1.3	39	93	1.3	21	70	5.8	46	12	5	41	(n=41)
(%=73%)																

Source: Clay County tax rolls.

^aThe dollar values for 1892 are expressed in 1860 dollars.

^bCattle in 1892 is cattle plus bulls.

the farmers listed in the tax rolls, for instance, owned hogs in 1892 (down from the 1880 census level of 51 percent). The average number of horses per farm remained relatively steady (at 1.3) but the proportion of farmers owning horses declined from 55 percent in 1880 to 39 percent in 1892. A portion of such decreases may reflect the fact that marginal farmers excluded from the agricultural censuses were included on the county tax lists, but the comparison of data from 1860 and 1892 tax lists confirms the unmistakable conclusion that Beech Creek farmers in 1892 were significantly poorer than those of a generation earlier. On all variables except ownership of mules, the monetary values (in constant dollars), the amounts produced, and—except for corn growing—the proportion of farmers reporting production fell dramatically between these years. Most significantly of all—as a reflection of the declining prosperity of agriculture—Beech Creek farmers in 1892 were far less wealthy than their ancestors of the previous generation, their estates valued at only 36 percent (in standardized dollars) of those of the earlier era.

TRENDS IN SURPLUS PRODUCTION

Thus far we have examined aggregate trends in animal and crop production but the data indicating these trends have not been standardized to take into account the changing nutritional needs of Beech Creek farm households nor the variable feed requirements of their livestock. We have demonstrated elsewhere that the average size of Beech Creek households declined during the years under investigation.⁴⁵ This factor, along with the decreasing size of farms and their diminished livestock inventories, implies that, over time, Beech Creek farmers may have needed to grow less food and feed. The changing mix of crop allocations, too, suggests the importance of standardization, but since Beech Creek farms did not primarily produce agricultural commodities, the value of products sold does not capture variations in output. Consequently, we have utilized well-documented

techniques developed by economic historians to measure the output of nineteenth-century farms in order to assess changes in the productivity of Beech Creek farms.⁴⁶

Table 8 reports surplus agricultural production in Clay County for the year 1860. It shows surprisingly high levels of production on even the smallest farm units. Even those below the median of 35 improved acres averaged 150 bushels of produce above and beyond the subsistence and reproduction requirements of their households and farms. Only 21 percent of these small units failed to meet their own needs. Larger farms did even better, those above the median producing 508 bushels of surplus and those cultivating more than 100 acres producing 684 bushels. Perhaps not surprisingly, since tenant farm families were smaller and had fewer members to feed than households headed by farm owners, farms operated by owners and tenants were almost identically productive, although it should be noted that a few of the largest farms in our sample—including one with 300 acres of improved lands—were operated by nonowners, implying that some "tenants" were actually professional farm managers.

In addition to the sample farms, Table 8 reports data on all farms in the county that were operated with slave labor. These too were able to produce large food surpluses that went well beyond the consumption requirements of their own households as well as that of their slaves. The largest of these, with improved acreages greater than 100 acres, averaged 1,512 surplus bushels. The existence of large surpluses on such farms confirms the existence of potentially marketable quantities of foodstuffs in Clay County during the late antebellum period just as the production of modest surpluses on smaller units confirms the latter's self-sufficiency. Additionally, the production of surpluses on the farms of the largest slaveholders suggests that these operations produced ample food for slaves employed in off-farm enterprises such as salt-making. Thus, for example, the salt manufacturers Daugherty White, Alexander White, and James White, Sr. produced 8,697 surplus bushels of food beyond the consumption needs of their combined 80 slaves, and Daniel and

TABLE 8

Surplus Agricultural Production in Clay County, 1860

Number of Improved Acres	A. Size of Farm Unit			B. Land Tenure			Slaveowners				
	Mean Surplus per Farm	Percentage of Farms Producing Surplus	Number of Farms	Tenure	Mean Surplus per Farm	Percentage of Farms Producing Surplus	Number of Farms	Slaveowners	Mean Surplus per Farm	Percentage of Farms Producing Surplus	Number of Farms
Below or equal median of 35 acres	150 bu.	79%	63	Owners	314 bu.	87%	92	Large ^a	1,512 bu.	94%	18
Above median of 35 acres	508 bu.	95	56	Tenants	334 bu.	85	27	Small ^b All	501 bu. 1,087 bu.	85 90	13 31
Above 100 acres	684 bu.	100	8								
All farms	318 bu.	87	119								

Source: Eighth Census of Agriculture, 1860 (manuscript records).

^aLarge slaveowners operated farms with greater than 100 improved acres.

^bSmall slaveowners operated farms with less than 100 improved acres.

Theophilus Garrard produced a surplus of 4,093 bushels of food in excess of the amount they needed to feed the 21 slaves they owned.

In comparison with other farm regions, Clay County farms were surprisingly productive. Atack and Bateman report average farm surpluses of 359 and 175 bushels, respectively, for owner-occupied farms in the Midwest and the Northeast in 1860.⁴⁷ Assuming that hogs were fed entirely on forest masts, both tenants and farm owners in Clay County produced, on average, roughly comparable levels of surplus to those of farm owners in either subregion of the northern United States at the time of the Civil War. Clay County slaveowners produced three times as much surplus as Midwest farm owners and six times as much as Northeastern farm owners.

Table 9 reports trends in surplus production among Beech Creek farmers from 1850 to 1880. All categories of farmers, tenants as well as large and small owners, improved production significantly between 1850 and 1860 but saw these improvements reversed by 1880, when surpluses fell to levels well below those of 1850. Surpluses on owner-operated farms fell 66 percent from 1860 to 1880, and all farmers experienced declines that averaged almost 300 bushels (73 percent). Tenant farmers were more severely affected. Their surplus production fell by almost 95 percent to an average of only 17 bushels, suggesting that oral history recollections of particularly hard times among this group in the twentieth century are probably quite accurate.⁴⁸ Table 10 shows that the number of farms experiencing food deficits rose from only 9 percent in 1860 to 36 percent in 1880. As argued above, the most realistic way to model Appalachian farm practices is to assume that farmers did not give their hogs significant quantities of feed throughout the year. Nevertheless, the fact that simply adding hog feed to farm requirements in 1880 (not shown) would have lowered the average surplus for all farms to only 35 bushels and created food deficits for 48 percent of Beech Creek's farmers suggests how economically vulnerable Beech Creek farms were becoming by 1880.⁴⁹

TABLE 9**Surplus Production in Beech Creek, 1850 to 1880**

	1850	1860	1870	1880
Tenant farmers	51 bu. (n=29)	331 bu. (n=16)	108 bu. (n=32)	17 bu. (n=23)
Farm owners	327 bu. (n=23)	414 bu. (n=37)	247 bu. (n=100)	139 bu. (n=61)
Small owners	158 bu. (n=12)	223 bu. (n=20)	102 bu. (n=52)	85 bu. (n=24)
Large owners	512 bu. (n=11)	639 bu. (n=17)	404 bu. (n=48)	174 bu. (n=37)
All farmers	173 bu. (n=52)	389 bu. (n=53)	213 bu. (n=132)	106 bu. (n=84)

Source: U.S. Census of Agriculture, 1850, 1860, 1870, 1880 (manuscript records).

TABLE 10**Beech Creek Farms Not Producing Agricultural Surpluses**

	1850	1860	1870	1880
Percentage of farms	36.5%	9%	20%	36%
Number of farms	19	5	26	30
Total number of farms	52	53	132	84

Source: U.S. Census of Agriculture, 1850, 1860, 1870, 1880 (manuscript records).

REASONS FOR THE DECLINE OF SURPLUS PRODUCTION

A number of possible factors may explain the decline in Beech Creek farming between 1860 and 1880. Even though Clay County was not a major battleground, some reductions in livestock holdings may have been caused by conflict that occurred there during the Civil War. The South as a whole experienced vast declines in its livestock supply because of the destruction of animals during the war. Eight former slave states, for example, produced nearly three million fewer hogs in 1880 than 1860 because of wartime losses.⁵⁰ Minor battles and raids in Clay County undoubtedly caused some hardship, including the murder of one resident of Beech Creek by Confederate cavalry. In addition to the destruction of salt-making facilities by federal troops, confederate troops are known to have captured 150 head of cattle during a raid on Goose Creek, and the guerrilla forces of John Hunt Morgan are said to have "stole[n], robbed, and burned nearly everything [owned by] the people of Red Bird Creek, Goose Creek and South Fork."⁵¹

Declining soil fertility, too, may have reduced farm output, but this is difficult to determine, since the agricultural censuses did not report acreage allotments by crop before 1880. Beech Creek's soil was almost certainly less fertile in 1942, when Brown observed the community, than it had been in 1860. But an analysis of county-level aggregate census data shows that per acre yields of corn did not fall between 1880 and 1910, suggesting that the worst impacts of soil erosion in Clay County probably occurred during the twentieth century rather than during the period immediately after the Civil War.

A more likely explanation for the decline of Beech Creek farming in the nineteenth century is the changing balance of land and population. The Appalachian population experienced one of the highest reproduction rates in the United States during the period covered by our investigation.⁵² The effect of rapid population growth on limited land resources—in this case due largely to the

reproduction of only a handful of families—can be illustrated by its impact on farming along the rugged creek-bed portion of Beech Creek, one of the three neighborhoods that made up the whole Beech Creek community.

Beech Creek itself, e.g., the creek from which the Beech Creek community derives its name, runs a distance of only five miles from its headwaters to its mouth at the Kentucky River. The creek flows through hilly terrain on which valley bottoms are rare, amounting to less than 10 percent of the basin's total land area. "From the air the Beech Creek basin looks like a great gully with many subsidiary ditches branching off in vine-like fashion."⁵³ Unlike the broad valleys that run alongside a few sections of the Kentucky River in Clay County, the Beech Creek basin is not an area in which a large population can sustain itself through the practice of subsistence farming.

In 1810, only one household lived on the creek itself, Daniel Johnson's family with six members. According to Brown, 26 people lived along the creek in 1850, all of them located near the mouth of the stream. By 1880, 49 people in seven households lived along the creek from its mouth almost to its headwaters in the rugged hills high above the river. Population on the creek increased further from 86 in 1900 to 164 in 1920, after which it remained almost stationary until 1942 because of the outmigration of 95 people.⁵⁴

Such population growth directly influenced the quality of Beech Creek agriculture through its impact on farm size. The custom of equitable partible inheritance meant that mountain farms had to be divided and re-divided to accommodate new generations of farm families. Thus it seems likely that by 1880, Beech Creekers were already beginning to approach a point of diminishing returns as they subdivided their farms to provide a means of livelihood for their children and grandchildren.

An intergenerational analysis of two original Beech Creek farm families, the Andrews and the Johnsons,⁵⁵ confirms the diminishing prospects that Beech Creek farmers faced from 1850 to 1892 as a consequence of the declining scale of their farm operations. Adoniram Andrews (1734-1838) came

to the Kentucky mountains from New England after serving in the Continental army during the American Revolution and fighting in the Battle of King's Mountain in North Carolina. He traveled through the Cumberland Gap to the Beech Creek section of Clay County, where he established a farm on the Southfork of the Kentucky River and built a sawmill on the river. He was elected to serve on the first grand jury that was formed in Clay County in 1805. "Squirrelman" Job Andrews, believed to be his brother, settled nearby. Soon afterwards, Daniel Johnson patented 100 acres on the river at the mouth of Beech Creek in 1816, not far from the more extensive landholdings of Adoniram Andrews. In 1826, his brother, Richard Johnson, purchased 50 of his acres and also began to raise a family. Andrews' descendants, along with those of a few other settlers, soon populated the Laurel neighborhood of Beech Creek along the Kentucky River while descendants of the Johnsons populated adjacent tributaries of the river in the Beech Creek basin. Much of the history of the Beech Creek community revolved around the activities of these two families and members of both still live in or near Beech Creek today.

The changing patterns of landownership and farm production among the Andrews and Johnson families in Beech Creek between 1850 and 1880 is evident in a comparison of five fathers with their same-age sons thirty years later, which reveals that the sons were unable to accumulate as much land, or grow as much food, as their fathers had done before them at a comparable age, simply because they had to share their fathers' estates with other siblings (data not shown). Thus in 1850, at age 51, Adoniram Andrews III—the wealthiest farmer in Beech Creek—owned 5,603 acres. Thirty years later, his son Daniel, age 48, owned 600 acres. Elisha Johnson owned 1,400 acres in 1860 when he was 47, but his son Alex owned only 400 acres at age 51 in 1892. Abel Johnson owned 700 acres at age 48 in 1860, but his son Samuel owned only 100 acres when he was the same age in 1892. Job Andrews owned 350 acres in 1860 when he was 35, but his son, Morris, age 33, owned only 50 acres in 1892.

William Johnson owned 500 acres in 1870 at age 55, but his 51-year-old son, Squire—faring better than many of his generation, given the extent of his father’s possessions—owned 350 acres in 1892.

Additional analysis of farm outputs for 18 fathers and their adult children in Beech Creek from 1850 to 1892 (not shown) reveals that in no case did members of the younger generation of farmers—the third generation in Beech Creek after its initial settlement—produce surpluses in the 1880s as great as those produced by their fathers at the peak of their productivity in the earlier period from 1850 to 1860.⁵⁶ Although this generation was not poor, the diminished levels of its landholding, wealth, and farm production point to the social origins of the poverty of subsequent generations.

Family size, the quantity of initial land holdings, and the acquisition of additional acres influenced how well the fathers of each generation could position their sons and daughters for the next generation of farm life in Beech Creek. Both the effects of life cycle and family formation on farming outcomes, as well as the long-term impacts of farm subdivision, can be shown by a detailed examination of the Elisha Johnson family, a family that for several years dominated the Beech Creek basin area. Indeed, the experience of this single family summarizes the whole journey from prosperity to poverty that marks the history of Beech Creek from 1860 to 1942.

Elisha Johnson, whose home manufacturing was described above, was the son of one of the original settlers of Beech Creek. According to Brown, he married in 1836 and had eight children including Preston Johnson, with whom Brown lived in 1942 while he carried out his first fieldwork. In 1850, at age 37, Elisha operated a farm of 250 acres (30 improved) that included \$200 worth of livestock. He slaughtered \$35 worth of meat that year, grew 500 bushels of corn, and managed to produce a good surplus of food (equivalent to 254 bushels) beyond the immediate needs of his family. During the next decade, he managed to buy many additional tracts of land from neighbors and relatives, enabling him both to increase his farm production and to prepare for his children’s future.

By 1860 his household had increased in size but so too had his farming operation, which would soon comprise virtually the entire basin area of Beech Creek from its mouth to its headwaters. He still only cultivated about 35 acres but owned more than 1,400 acres in 1860. His livestock inventory had increased considerably to include three horses, five cows, six oxen, six cattle, four sheep, and twenty hogs, worth nearly \$600. He slaughtered \$120 worth of animals that year and produced a surplus that was the equivalent of 430 bushels of food.

By 1870, Elisha still produced a sizeable food surplus (334 bushels), but he farmed only 300 acres, having begun to distribute his property among his sons and daughters who were establishing their own farms and families on portions of his lands, though he still retained legal title to their farms. Some sons and daughters left Beech Creek, but a married daughter and two sons, Alex and John, were listed in the agricultural census in 1880. Elisha, age 67, produced a good surplus (186 bushels) in 1880, as did his daughter, Mary Polly, and his son Alex. Another son, John, also operated a farm that was reported in the census, but he was unable to produce a surplus on his smaller holding, producing only enough food for his family and livestock.⁵⁷

According to Brown, when Elisha Johnson died, sometime after 1880, his widow, a second wife, retained 280 acres as a "widow's dower," which was subsequently divided into seven tracts, each containing about 40 acres, at the time of her death. Several of Elisha's children passed on land to their children but the eldest, John, had conflicts with his siblings and sold his property to nonkin, thus opening up lands within the creek basin to nonkin for the first time since the days of original settlement.⁵⁸

By 1942, Elisha Johnson's lands—which according to Brown's estimate may have totaled as much as 2,200 acres at their peak—had been subdivided into 24 tracts owned by 21 different owners. "At that time, 21 families lived on parts of the original farm, on which only one family was living in 1860. Three of these families lived on what was the widow's dower; one lived on the part Preston

was given; seven lived on what was John's; two on Eliza's; three on Alex's; and four on James' farm."⁵⁹

Only one of Elisha's children, Preston, was still alive when Brown first observed Beech Creek.

Brown wrote:

The youngest son of Elisha Johnson (Preston) was still living in 1942. Unlike his brother Alex, Preston never had a civil war pension, and unlike his brother James, who had only two children, Preston had a family of 16 children. To support this big family, Preston sold parts of his original farm. By far the biggest block, some 350 acres, was sold to Calvin Andrews, a Laurel neighborhood man who bought it for the timber. Two small tracts—one of 35 acres and the other of 15 acres—he sold to his daughter Sarah Johnson Williams and to his son-in-law Ernest West. The farmhouse itself, which Preston built [around 1880] and the 75 acres surrounding it, were deeded to his daughter Ellen J. West [in 1932] in return for her assuming care for her old parents as long as they lived. In 1942, Preston himself owned only one steep, forested tract of some 66 acres.⁶⁰

Thus by 1942, 156 people in 32 impoverished households lived in an area (the Beech Creek basin) where only 26 people in three households had lived 90 years earlier in relative plenty.

The same high rate of population growth that eventually destroyed the balance of people, land, and resources in Beech Creek had its impact throughout the rest of Clay County. For each decade from 1850 to 1900 the county's population grew by 22 to 25 percent, primarily through natural increase. Only the decade between 1900 and 1910 registered a slower rate of growth (with an increase of 16 percent), when many young people had begun to leave the county to search for opportunities elsewhere.⁶¹ Such population growth resulted in reduced farm sizes and more intensive land-use practices.

In 1880 1,414 Clay County families farmed a total of 239,896 improved and unimproved acres for an average of 170 acres per farm, but by 1910 more than twice as many families (2,916) farmed only slightly more space (244,214 acres) on farms that averaged only 86 acres. Per capita farm acreage declined in the county from 38 acres in 1860 to less than 14 acres in 1910.

The consequences of enormous population growth and farm subdivision were undoubtedly worsened by the inherent limitations of forest farming. Forest farming was an effective adaptation that substituted land for labor and capital but its continued success "required an abundance of woodlands for new fields and range."⁶² Time and space both worked against the long-term success of successive generations of mountain farmers.

In regard to space, it has been estimated that "omnivorous hogs required less range land than cattle...[but] even a small herd of cattle required hundreds of acres of unfenced range in order to find sufficient native forage."⁶³ Farm subdivision reduced the space available for livestock foraging by forcing farmers to use their increasingly scarce lands ever more intensely. Thus the proportion of each farm that was improved in Clay County rose steadily from 12 percent in 1860 to 42.4 percent in 1910, bringing more and more woodland into cultivation. The commercial timber industry further accelerated forest clearances during the logging boom that occurred between 1890 and 1925.⁶⁴ These changes were registered in declining livestock inventories. The average Clay County farm had 13.4 hogs and 5.1 cattle (of all types) in 1880 and but only 5.8 hogs and 3.9 cattle in 1910. (As Table 5 reported above, the average Beech Creek farmer had 21 hogs and 12.7 cattle fifty years earlier in 1860.)

Time requirements, too, worked against later generations of Appalachian farmers. The practice of "forest fallowing" required long amounts of time, usually a generation or more, for reforestation to restore old soil to its original productivity. "After an old field was reforested, it could be cleared and farmed anew. But if the field was again cultivated before reforestation and restoration of nutrients in the forest growth were completed, then declining yields, soil exhaustion, and soil erosion resulted."⁶⁵ When farms began to shrink in Clay County as a consequence of intergenerational subdivision and as less "new grounds" became available, farmers became pressured both to cultivate steeper and poorer-quality acreages and to shorten the length of time their lands remained out of production. Thus an

informant, Hubert Collins, recalling Beech Creek farming during his youth in the 1930s, told our interviewer that his parents and their neighbors would typically "let their old grounds lay out...a couple or three years." When asked if the landscape he recalled as a boy looked different from today's, he replied, "Wouldn't be no trees. Everything'd be in corn."

The long-term limitations of forest farming in Appalachia were apparent even to contemporary observers during the nineteenth century. In 1873, J. B. Killebrew noted that "the people in no portion of the state [of Tennessee] live so well or have their tables so bountifully furnished" as the farmers of the Cumberland Mountains of east Tennessee, yet he foresaw what would soon become the Achilles heel of mountain farming when he pointed out that already by the 1870s "in the matter of the subdivision of farms, east Tennessee ha[d] gone quite as far as seems desirable."⁶⁶ Sixty years later, Tennessee farmers, like their counterparts in the hills of Kentucky, were impoverished.⁶⁷

The consequences of slow economic growth, population increase, land shortage, and soil depletion in Appalachia were obvious to twentieth-century ethnographers. In Beech Creek, scarce bottomland remained in the control of a few families, but "by the time the grandchildren of the original landowners were grown, the area was so thickly populated relative to the agricultural potential of the land that families had moved up hollows and coves until the entire length of Beech Creek and its tributary valleys was inhabited."⁶⁸ In the Tennessee community of Little Smoky Ridge, likewise, "successive divisions of property and loss of soil fertility" had made cultivable land "scarce even by local standards." Family tracts of 100 to 600 acres had been reduced by inheritance to small plots of only 15 to 40 acres in the 1950s.⁶⁹

Ethnographers were wrong, however, to attribute this structural limitation to a flaw in Appalachian culture. Pearsall, for instance, contributed to the erroneous assumption of Appalachian exceptionalism when she wrote that mountain farmers "were committed to the destructive extensive methods of their forbears, and they could be successful only so long as the supply of new land was

unlimited. The result is the cultural blind alley in which they find themselves."⁷⁰ But mountain farmers were no more led down a blind alley than were their predecessors in other American farm regions before them. What occurred in Appalachia in the late nineteenth century was simply the repetition of events that had already happened in older regions such as New England during the late eighteenth century, when "mounting [population] pressure on the land supply" had led to "sharply diminished landholdings and a greater cultivation of marginal lands."⁷¹ The only things that were exceptional in Appalachia were the timing of the demographic upheaval—since the lack of modern means of transportation and extensive market linkages permitted the relatively late survival of subsistence agriculture in the mountains—and the fact that trained social scientists were on hand to observe first hand and to record the outcome of processes that had occurred earlier and been forgotten elsewhere.

In early New England, as later in Appalachia, "family lands were divided again and again to accommodate the increasing numbers of young men."⁷² Charles Grant, for instance, reports that the "economic opportunity" that had once been "exceptionally bright" for the first generation that peopled the town of Kent, Connecticut, from 1740 to 1770 became "darkened...by the pressure of population...against a limited supply of land" by the time of its third generation.⁷³ The region-wide result was a mass exodus of population from New England between 1790 and 1830. It was during this period that Adoniram Andrews left New Hampshire to settle in the Kentucky mountains and it was his great-grandchildren's generation in Beech Creek—the third generation after settlement—whose way of life was becoming "darkened" by the increasing scarcity of land.

New Englanders adapted to the crisis of their agricultural society by sending many of their sons and daughters into the new factories that had begun to dot their rural landscape, but many more people moved to new lands on the western frontier, including Kentucky, where they were able to continue farming as their ancestors had done before them with little cultural discontinuity. East

Kentuckians, too, moved into the mines and mills that sprang up in Appalachia almost overnight as railroads—necessarily built by outsiders since the local Appalachian economy by itself could not generate the millions of dollars in investments that transportation improvements required—opened up the region to capitalist industrialization early in the twentieth century. Even more of them moved to new urban and industrial frontiers in the cities of the Midwest, where they were forced, or able, to adapt to an altogether new way of life. As the follow-up studies of Beech Creek in the 1960s demonstrated,⁷⁴ the success of that cultural adjustment is as striking a story as that of the poverty in the hills that had forced their departure.

Endnotes

¹Horace Kephart, Our Southern Highlanders (Knoxville, Tenn. [1913] 1976), p. 37. For a discussion of the stereotyping of Appalachian agriculture, see Jack Temple Kirby, Rural Worlds Lost (Baton Rouge, La., 1987), especially pp. 80-111.

²For an example of such attributions made without the systematic investigation of farm practices, see Marion Pearsall, Little Smoky Ridge (Birmingham, Ala., 1959).

³Ronald Eller, Miners, Millhands, and Mountaineers: Industrialization of the Appalachian South, 1880-1930 (Knoxville, Tenn. 1982), p.6; Appalachian Land Ownership Task Force, Who Owns Appalachia? (Lexington, Ky., 1983), p. 81. Also see Dan Pierce, "The Low-Income Farmer: A Reassessment," Social Work in Appalachia 3 (1971): 8.

⁴See F. McDonald and G. McWhiney, "The Antebellum Southern Herdsman," Journal of Southern History 41 (No. 2, 1975): 147–166. On the impact of the closing of the range see J. C. King, "The Closing of the Southern Range: An Exploratory Study," Journal of Southern History 48 (No. 1, 1982): 53–70; and on early livestock droves in Appalachia see P. Salstrom, "The Agricultural Origins of Economic Dependency, 1840-1880," in R. D. Mitchell, ed., Appalachian Frontiers (Lexington, Ky., 1991).

⁵J. S. Otto, "The Decline of Forest Farming in Southern Appalachia," Journal of Forest History (January 1983), pp. 18-26; J. S. Otto, "The Migration of the Southern Plain Folk: An Interdisciplinary Synthesis," Journal of Southern History 51 (No. 2, 1985): 183–200. J. S. Otto and N. E. Anderson, "Slash-and-Burn Cultivation in the Highlands South: A Problem in Comparative Agricultural History," Comparative Studies in Society and History (1982), pp. 131-147. For evidence that forest farming was recently practiced in some parts of Appalachia, see J. F. Hart, "Land Rotation in Appalachia," Geographical Review 67 (April 1977): 148–166.

⁶These debates follow years of research and controversy about the relative importance of market embeddedness and moral economy in early New England. For an overview of these issues, see A. Kulikoff, "The Transition to Capitalism in Rural America," The William and Mary Quarterly 46 (No. 1, 1989): 120–144. S. Hahn, in The Roots of Southern Populism: Yeomen Farmers and the Transformation of the Georgia Upcountry, 1850-1890 (New York, 1983), has stressed the importance of subsistence production in the southern upcountry during the antebellum period; for an early comparison between subsistence farming in preindustrial Appalachia and New England, see D. Billings, K. Blee, and S. Swanson, "Culture, Family, and Community in Preindustrial Appalachia," Appalachian Journal 13 (No. 2, 1986): 154-170.

⁷See D. Dunn, Cades Cove: The Life and Death of a Southern Appalachian Community, 1818-1937 (Knoxville, Tenn., 1988); J. C. Inscoe, Mountain Masters: Slavery, and the Sectional Crisis in Western North Carolina (Knoxville, Tenn., 1989); R. D. Mitchell, Commercialism and Frontier: Perspectives on the Early Shenandoah Valley (Charlottesville, Va., 1977), and R. Mann, "Landlord and Tenants in an Appalachian Community: Burkes Garden, Virginia in the 1850s," (Social Science History Association paper, 1987). For an important and provocative effort to locate the interplay of Appalachian subsistence production and commercialization in spatial and temporal dimensions, see P. Salstrom, "Agricultural Origins."

⁸Inscoe, Mountain Masters, pp. 12, 11.

⁹A. Waller, Feud: Hatfields, McCoys, and Social Change in Appalachia, 1860-1900 (Chapel Hill, N.C., 1988); United States Department of Agriculture, Economic and Social Problems and Conditions of the Southern Appalachians (Washington, D.C., 1935). Also see M. B. Pudup, "Social Class and Economic Development in Southeastern Kentucky," in R. D. Mitchell, ed., Appalachian Frontiers, pp. 235–260.

¹⁰T. Moore, "Economic Development in Appalachian Kentucky, 1800-1860," in Mitchell, ed., Appalachian Frontiers, pp. 232, 234.

¹¹M. B. Pudup, "The Limits of Subsistence: Agriculture and Industry in Central Appalachia," Agricultural History 64 (No. 1, 1990): 74.

¹²Brown's ethnographic observations of farming, family patterns and community stratification in 1942 are reported in J. S. Brown, Beech Creek: The Social Organization of an Isolated Kentucky Mountain Neighborhood (Berea, Ky., [1950] 1988). Also, J. S. Brown, "The Conjugal Family and Extended Family Group," American Sociological Review 17 (1952): 297-305; and "The Family Group in a Kentucky Mountain Farming Community," Kentucky Agricultural Experiment Station Bulletin 588 (1952). Outmigrants from Beech Creek and their urban relocation were studied in H. Schwarzweller, J. Brown, and J. Mangalam, Mountain Families in Transition (University Park, Pa., 1971) and they were resurveyed in V. McCoy, "Solidarity and Integration of Migrant Family Groups," University of Cincinnati Ph.D. dissertation (1986).

¹³For a discussion of methodological problems involved in asking new questions about past ethnographic studies and utilizing their findings to answer questions not originally asked by their authors, see K. Blee and D. Billings, "Reconstructing Daily Life in the Past: A Hermeneutical Approach to Ethnographic Data," Sociological Quarterly 27 (1986): 443-462.

¹⁴Brown, Beech Creek, p. 28.

¹⁵Brown, Beech Creek, p. 28.

¹⁶Brown, Beech Creek, p. 30.

¹⁷See M. McDonald and J. Muldowny, T.V.A. and the Dispossessed (Knoxville, Tenn., 1982), for a reconstruction of typical farming, family, and community patterns in eastern Tennessee's Cumberland Plateau in the 1920s, which closely parallels Brown's description of Beech Creek in the 1940s.

¹⁸Brown, Beech Creek, p. 31.

¹⁹Brown, Beech Creek, p. 33.

²⁰The misleading notion that the Appalachian and Blue Grass regions of Kentucky developed independently from one another from the days of their earliest settlement, resulting in two separate Kentuckies, was advanced by local-color writers such as James Lane Allen, "Through the Cumberland Gap on Horseback," reprinted in The Blue-Grass Region of Kentucky and Other Kentucky Articles (New York, 1899) and John Fox, Jr, Blue Grass and Rhododendron (New York, 1901). For a history of the settlement and development of the Kentucky River, see T. Clark, The Kentucky (Lexington, Ky., 1992, bicentennial edition).

²¹See E. Parr, "Kentucky's Overland Trade with the Ante-bellum South," Filson Club History Quarterly 2 (January 1928): 71–81; E. Perkins, "The Consumer Frontier: Household Consumption in Early Kentucky," Journal of American History 78 (September 1991): 486-510; R. Wade, The Urban Frontier: Pioneer Life in Early Pittsburgh, Cincinnati, Lexington, Louisville, and St. Louis (Chicago, 1964); T. Clark, "Salt, A Factor in the Settlement of Kentucky," Filson Club History Quarterly 12 (January 1939): 42-52; J. F. Smith, "The Salt-Making Industry of Clay County, Kentucky," Filson Club History Quarterly 1 (April 1927): 134-141; M. Verhoef, The Kentucky River Navigation (Louisville, Ky., 1917).

²²Data on the landholdings of the White and Garrard families reported here are compiled from W. Jillson, The Kentucky Land Grants (Baltimore, 1971) and county tax rolls.

²³Data on social stratification are from D. Billings and K. Blee, "Appalachian Inequality in the Nineteenth Century: The Case of Beech Creek, Kentucky," Journal of the Appalachian Studies Association 4 (1992): 113–123.

²⁴Verhoeff, The Kentucky River, p. 154.

²⁵Evidence for local opportunities created by salt-making is contained in numerous cases of litigation brought before the antebellum Clay County Circuit Court, which will be presented elsewhere.

²⁶See the merchant's day book of salt-maker B. F. White for the years 1844 to 1854 (Kentucky State Library and Archives) and the earlier ledger of Hugh and James White for the Goose Creek Salt Works in 1806-07 (Filson Historical Society).

²⁷See Case of Andrew Craig vs. Conley Findley and Company (1808), Records of the Clay County Circuit Court (Kentucky State Library and Archives).

²⁸Verhoeff, Kentucky River, pp. 103–107.

²⁹M. Verhoeff, The Kentucky Mountains: Transportation and Commerce, 1750 to 1911 (Louisville, Ky., 1911), p. 126.

³⁰Verhoeff, Kentucky Mountains, pp. 169.

³¹Verhoeff, Kentucky Mountains, p. 170.

³²K. Blee and D. Billings, Appalachian Feuding: A Longitudinal Case Study of Violent Disputing. (Final Report to Fund for Research on Dispute Resolution, 1992).

³³Data on Clay County is based on a population sample of every fourth household listed in the 1860 manuscript census of population in Clay County (approximately 250 households). We matched as many as possible of these households with individuals listed as operating farms in the 1860 manuscript census of agriculture (n=121) and we matched individuals identified in the 1860 manuscript schedules of slaveholding with farm operators in the agricultural census (n=37). Agricultural data for farmers in Beech Creek from 1850 to 1880 were assembled separately. For information on how we located "Beech Creekers" in manuscript census records, see D. Billings and K. Blee, "Family Strategies in a Subsistence Economy: Beech Creek, Kentucky, 1850-1942," Sociological Perspectives 33 (No. 1, 1990): 63–88.

³⁴Case studies report antebellum tenancy levels ranging from as high as 55 percent in one eastern

Tennessee county (Dunn, Cades Cove) to as low as 3.6 percent in a southeastern Kentucky county (Pudup, "Limits of Subsistence") while the author of a region-wide study of manuscript farm census records concludes that 25 percent of all farmers in Appalachia were landless in 1860 (W. Dunaway, "Southern Appalachia's People without History: The Role of Unfree Laborers in the Region's Antebellum Economy," Paper presented to Social Science History Association, 1989). Researchers also dispute how to interpret the social relations of farm tenancy in Appalachia. Pudup, in "Limits," suggests that tenant status largely reflected age, gender, and family status rather than social class, but Dunaway, in "People without History," p. 4, argues that tenants "comprised a sizeable sector of the farm population and provided a coerced labor supply for the region's agricultural production." Since Brown found that between 50 percent and 75 percent of all the possible relationships within the three Beech Creek neighborhoods in the 1940s were kin relationships to some degree, it is likely that tenancy within Beech Creek was shaped more by family than by social class relations, but it is also true, as county court records reveal, that elite landowners in Clay County rented lands to tenant farmers. In the latter situation, social class relations were predominant. For an oral history account of the harshness of such arrangements in Clay County and elsewhere in eastern Kentucky, see Jim Garland, Welcome the Traveler Home (Lexington, Ky., 1983), pp. 27, 31; and L. Schackelford and B. Weinberg, Our Appalachia: An Oral History (Lexington, Ky., 1977), p. 197.

³⁵F. Bode and D. Ginter, Farm Tenancy and the Agricultural Census in Antebellum Georgia (Athens, Ga., 1986).

³⁶T. Arcury, "Agricultural Change in the Mountain South at the Turn of the Century," Center for Developmental Change Report #8, University of Kentucky, 1989.

³⁷See note 5 above.

³⁸Northern rather than southern farms provide the most appropriate comparison for Clay County and Beech Creek farms, since both groups of farmers (including Clay County's slaveowning farmers)

practiced general (diversified) farming rather than the production of staple crops such as cotton, tobacco, and—in other parts of Kentucky—hemp that characterized much of southern agriculture.

Data on northern farms is from J. Attack and F. Bateman, To Own Their Own Soil: Agriculture in the Antebellum North (Ames, Iowa, 1987).

³⁹Quoted in Attack and Bateman, Their Own Soil, p. 205.

⁴⁰Brown, Beech Creek, p. 6.

⁴¹See D. Whisnant, All That Is Native and Fine: The Politics of Culture in an American Region (Chapel Hill, N.C., 1983), pp. 105-179. Also, S. Shapiro, Appalachia on Our Mind (Chapel Hill, N.C., 1978), pp. 213-243.

⁴²S. Maggard, "From Farmers to Miners: The Decline of Agriculture in Eastern Kentucky," in L. Busch, ed., Science and Agricultural Development (Totowa, N.J., 1981).

⁴³Farmers in the Beech Creek neighborhoods were, however, somewhat wealthier than the county-wide average; 26 percent owned estates valued at more than \$2,000 but only 11 percent of Clay County farmers owned farms that valuable in 1860, suggesting that far from being an economically marginal section of Clay County as it is today or when Brown first studied it, Beech Creek was a typical, even thriving, rural farm community in 1860.

⁴⁴See R. Hunt, "Northern Agriculture after the Civil War, 1865-1900," and D. Winters, "The Economics of Midwestern Agriculture, 1865-1900," both in L. Ferleger, ed., Agriculture and National Development (Ames, Iowa, 1990).

⁴⁵Elsewhere we have reported that household declined in size from a mean of 6.87 members in 1850 to 5.18 members in 1910. See D. Billings and K. Blee, "Family Strategies in a Subsistence Economy: Beech Creek, Kentucky, 1850-1942."

⁴⁶Our analysis utilizes methods reported in J. Attack and F. Bateman, "Self-Sufficiency and the Marketable Surplus in the Rural North, 1860," Agricultural History 58 (July 1984): 296–313; and in J.

Atack and F. Bateman, Their Own Soil. The equations are based on calculations of the nutritional needs of each farm household, adjusting for age and gender of its members, as well as feed requirements of livestock and variable proportions of crops assumed to have been held back for the next year's seed. Caloric needs as well as crop and livestock production are translated into "corn equivalent units." A surplus is defined as any production of corn equivalent units (in bushels) over and beyond the consumption (and seed) requirements of the farm and its livestock. We modified the Atack and Bateman equations in one important respect, however, by not including the feed requirement for hogs in our calculations, since the feeding of hogs on forest masts is assumed to have been universal among mountain farmers, an option not available in many areas of the North.

⁴⁷Atack and Bateman, Their Own Soil, p. 220.

⁴⁸In his published autobiography, labor organizer and folk singer Jim Garland (Traveler, p. 31) recalls that during his boyhood in Clay County around the turn of the century, "My mother said that during the years my father sharecropped, the family literally became naked. When someone had to go to the store, all the family's garments were pooled so this one person would have enough to wear."

⁴⁹Adding hog feeding to the 1860 equations would have increased the proportion of farmers failing to produce surpluses from 9 percent to 30 percent for that year.

⁵⁰See McDonald and McWhiney, "Southern Herdsman."

⁵¹K. Morgan and K. Morgan, History of Clay County, Kentucky (Manchester, Ky., 1976, Bicentennial Edition), p. 168.

⁵²We estimate that with children under age 10 constituting 37 percent of the 1860 population in Clay County, natural increase there was remarkably high even by Third World standards today. As late as 1930, only 10 of 190 Appalachian counties are estimated to have had higher general fertility rates than did Clay County according to G. DeJong, Appalachian Fertility Decline (Lexington, Ky., 1968).

⁵³Schwarzweiler, Brown, and Mangalam, Mountain Families p. 4.

⁵⁴Brown, Beech Creek, pp. 12 and 229.

⁵⁵The family names are pseudonyms used by Brown in Beech Creek.

⁵⁶Full data is presented in D. Billings and K. Blee, Causes and Consequences of Persistent Rural Poverty: A Longitudinal Case Study of an Appalachian Community (Final Report to the Ford Foundation and the Rural Economic Policy Program of the Aspen Institute, 1991).

⁵⁷Elsewhere, we have shown that cooperation among households within the larger "family groups" first described by Brown was crucial for the survival of units not producing sufficient quantities of food. See D. Billings and K. Blee, "Family Strategies."

⁵⁸Brown, Beech Creek, p. 266.

⁵⁹Brown, Beech Creek, p. 267, italics added.

⁶⁰Brown, Beech Creek, p. 268.

⁶¹See D. Billings and K. Blee, "Persistent Rural Poverty," for demographic evidence on nineteenth-century outmigration.

⁶²Otto, "Migration of Southern Plain Folk," p. 195.

⁶³Otto, "Migration," p. 196.

⁶⁴On the extent, timing, and impact of timbering in Appalachian Kentucky see Eller, Miners, Millhands, and Mountaineers, pp. 28-127.

⁶⁵Otto, "Decline of Forest Farming," p. 24.

⁶⁶Quoted in McDonald and Muldowny, T.V.A., p. 121.

⁶⁷According to McDonald and Muldowny, T.V.A., many farmers in the Norris Basin of eastern Tennessee were impoverished by 1930, when their farms averaged only 23.7 in crops and gross farm incomes (including in-kind home consumption) averaged less than \$100.00 per capita.

⁶⁸Schwarzweiler, Brown, and Mangalam, Mountain Families, p. 3.

⁶⁹Pearsall, Little Smoky Ridge, p. 48.

⁷⁰Pearsall, Little Smoky Ridge, p. 49, italics added.

⁷¹K. Lockridge, "Land, Population, and the Evolution of New England Society, 1630-1790," Past and Present 39 (April 1968): 69.

⁷²Lockridge, "Land, Population, and Evolution," p. 69.

⁷³Quoted in Lockridge, "Land," p. 69.

⁷⁴The best study of urban migration and adjustment of rural Appalachians remains Schwarzweller, Brown, and Mangalam, Mountain Families. For other reports on Appalachians' urban experience, see W. Philliber, Appalachian Migrants in Urban America (New York, 1981); W. Philliber, C. McCoy, and H. Dillingham, eds., The Invisible Minority: Urban Appalachians (Lexington, Ky., 1981); and P. Obermiller and W. Philliber, eds., Too Few Tomorrows: Urban Appalachians in the 1980s (Boone, N.C., 1987).