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Landscape Heterogeneity and Disturbance

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11. Progressiveness Among Farmers as a Factor in Heterogeneity of Farmed Landscapes

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11.1 Farming and Landscape Heterogeneity

Human attitudes and actions, broadly interpreted, are fundamental factors in landscape ecology and the management of disturbance. The obvious reason is that humans have always had, and continue to have, a major impact on landscapes. Humans may be the source of disturbance (such as in the generation of air pollution; see Bormann, Chapter 3), but they may also create landscapes (see Chapters 7, 8, 9, and 10). Human action on the land is the result of attitudes derived from a complex of ideas, motivations, and experiences. If, as Risser (Chapter 1) suggests, humans are to be included within landscape ecology, then we must include within our studies the attitudes and motivations underlying human action in creating or responding to landscape disturbance. The role of farming in the rural agricultural landscape provides an example of this phenomenon.

Farming allows ideals and values to be directly translated into land management decisions. The farmer identifies with the agricultural landscape, and this landscape represents the farmer. A farmer's work is constantly on view, and the farmer's care of the land can be readily judged by his peers. Consequently, the agricultural landscape becomes a display of the farmer's knowledge, values, and work ethic.

Concern has been voiced that changes in farming practices have decreased heterogeneity in rural landscapes (Westmacott and Worthington 1974; Todd

1976) or caused, as J.B. Jackson describes it, "a coarseness of detail" (Zube and Zube 1977). The loss is not only of biological diversity but also of economic, social, and visual diversity. Carlson (1985) expresses this idea well:

> Not only have the fields become vast flat tracts of land exclusively devoted to a single crop, they have become devoid of many traditional features of the rural landscape. In the quest for large uniform farming surfaces, topographical irregularities such as gullies, washes, sloughs, rises, slopes and knolls have succumbed to land remodelling. At the same time features once essential to rural life such as woodlots, windbreaks, ponds, fences, country schools, rural churches, and outlying farm buildings are systematically being removed or destroyed.

In 1942, both farmers and the general public in Britain believed that good and prosperous farming would result in "good" landscape (Scott 1942). Mixed rotational farming had created a landscape which was interesting, visually satisfying, and biologically diverse. In the United States, Bromfield (1950) wrote of traditional farm landscapes which had become part of America's heritage, and he, too, attributed "good" landscape to "good" farming:

> The farmer may leave his stamp on the whole of the landscape seen from his window, and it can be as great and beautiful a creation as Michelangelo's David, for the farmer who takes over a desolate farm, ruined by some evil and ignorant predecessor, and turns it into a paradise of beauty and abundance is one of the greatest of artists.

At the turn of the century, the techniques associated with "good" farming were quite unlike those used today. In more recent years, government, agribusiness, and the land grant university systems of the United States have advocated new farming techniques. These innovations were recommended primarily to increase crop yields, and the holistic notion of "good" landscape was not a primary objective. The subsequent loss of farmed landscape heterogeneity is widely apparent.

The objective of this chapter is to examine some of the personal values of farmers and show how aspects of their value system can influence the landscape. We review three separate but similar studies. Farmers' attitudes toward the rural landscape were determined in Illinois (midwestern United States), lowland areas of England, and upland areas of England and Wales by interviewing farm operators and (in Illinois) asking them to judge pictures of rural landscapes. These interviews suggested that one factor in the rural value system was the concept of progressiveness. Within the context of landscape as a display of self, the farmer wishes to be seen as progressive. To maintain such an image, farmers frequently take actions which cannot be justified economically. Typically, a farmer might admire an agricultural landscape with which he was not familiar and describe the farmer who worked the land as progressive. Or, he might explain his decision to alter a historical feature of his own farm as consistent with his progressiveness.

In most interviews, progressiveness represented values that imply a positive disposition toward change that supports better farming. Defined in this way,

progressiveness may be strongly related to frequent disturbance of the rural landscape, altering the pattern of agricultural and nonagricultural elements. However, progressiveness may be positively or negatively related to heterogeneity depending on the progressive technique adopted. Farmers in our Illinois survey, for example, identified minimum tillage techniques with progressiveness. The particular farming techniques that farmers believe to be progressive, rather than progressiveness alone, may directly affect heterogeneity. Progressiveness is a dynamic concept, and the elements of farming practice that are considered progressive change through time and across cultures and, therefore, this concept may positively or negatively affect landscape properties.

11.2 Progressiveness and Innovation

We define progressiveness, a word used by both British and American farmers who were interviewed, as a positive disposition toward change that is believed to support "good" farming. This is generally consistent with the *Oxford English Dictionary* (OED) definition "growing, increasing, developing; usually in a good sense; advancing towards better conditions" (OED 1933). It may not be coincidental tht one of the most influential farming periodicals in the United States is *The Progressive Farmer*.

Clearly at issue is the farmers' definition of good farming. We suggest that at the turn of the century the definition accommodated and may even have included a qualitative and holistic sense of landscape; however, in more recent times, the persuasion of farmers has been toward a narrower and more short-term view.

The adoption of modern farming practices by farmers (termed the diffusion of innovation) has been a major topic of study for rural sociologists. In this literature, concepts similar to progressiveness have been found to predict the diffusion of innovation. For example, Pampel and Van Es (1977) found three factors that predicted the adoption of potentially profitable commercial practices: a psychological factor including receptivity to new ideas, a belief in farming as a way of life, and the promise of higher profitability.

At the same time, the literature underscores the importance of economic factors, including farm size, in the adoption of innovation. Buttel and Larson (1979) found a consistent positive association between farm size and energy intensity of crop production. They also found that small-scale farmers and those with a noneconomic orientation to farming were generally supportive of soil conservation (Buttel et al. 1981). However, they note that a supportive attitude does not necessarily result in the adoption of innovative practices. It has been suggested recently that although small farmers may have attitudes as progressive as larger farmers, they may not actually adopt innovative practices because of various institutional or environmental constraints (Hefferman and Green 1986). Progressiveness should be seen as one of a constellation of factors related to the adoption of agricultural innovation.

11.3 Progressiveness and Aesthetic Response

Farmers' perception of "good farming" is not a purely economic assessment, but is in part an aesthetic response. Farmers see a beauty in rural landscapes that is rooted in their understanding of the land's function, the fit between its economically productive use and its suitability. Landscapes suitable to be cropland, by virtue of their soil, slope, and locational characteristics, are beautiful when they fulfill their purpose well. In the Midwest, this is exemplified when rows are straight and even, when the field is large and flat and uninterrupted, and when good resource stewardship is apparently being practiced. The ugly landscape is one that is used in a way that contradicts its suitability. A crop being raised on wet, weedy bottomland is not beautiful despite its picturesque riverine setting. Similarly, eroding cultivated slopes are not beautiful, even in the foreground of panoramic views.

For viewers who do not understand agricultural production or landscape suitability as farmers typically do, these same scenes might be quite pleasant. In 1889, William James described a North Carolina farm as a scene of "unmitigated squalor." Yet, he recognized that when farmers looked at the rough clearings with stumps and girdled trees "which to me was a mere ugly picture . . . (it) was to them a symbol redolent with moral memories and sang a very paean of duty, struggle, and success" (Carlson 1985).

Thus, aesthetic response is not a whimsical, mysteriously personal experience, but a powerful product of environmental context and viewer understanding. The rural landscape is viewed differently by farmers and urban people, partly because of different levels of knowledge about the environment. Farmers enjoy seeing "good" farming, not only because it represents an economic return but because it has an aesthetic value as well. Reflecting on the fact that 9 of 10 people were working in agriculture when the United States was founded, John Stilgoe suggests "that much of our national heritage subtly emphasizes the good life of husbandry and the beauty and rightness of land shaped for farming" (Stilgoe 1982).

Socrates argued that all things were good and beautiful in relation to those purposes for which they are well adapted (Hipple 1957). In 18th Century Britain, David Hume expanded on the concept of "utilitarian beauty" as applied to farmed landscapes.[1] "Nothing renders a field more agreeable than its fertility, . . . " he wrote, "I know not but a plain, overgrown with furze or broom may be in itself as beautiful as a hill cover'd with vines or olive trees, tho' it would never appear so to one who is acquainted with the value of each" (Hipple 1957).

Farmers respond to rural landscapes with a very similar utilitarian sense of beauty. Just as utility changes with new technology and new information, farm-

[1]In the 18th Century, utilitarian beauty was not quite the same as functional beauty. Edmund Burke for instance discusses "fitness" and, although he derives pleasure from contemplating an object perfectly fitted for its task, he denies that it can be called beauty. "The snout of the hog is not lovely because it is adapted to its office" (Hipple 1957).

ers' aesthetic response to farmed landscapes is likely to change as new concepts of functional agriculture are accepted. Progressiveness, as revealed in farmers' land, becomes both cause and effect of this dynamic aesthetic response. Farmers like to see landscapes that look progressive, and, at the same time, progressive landscapes suggest new images of landscape beauty.

11.4 Progressiveness Among Farmers

11.4.1 Hypotheses

Our hypothesis is that the appearance of progressiveness, as revealed in the farmed landscape, is important to most farmers. Further, we hypothesize that actions which are thought to demonstrate progressiveness are taken, even in the full knowledge that they may not be profitable.

11.4.2 Illinois Study

Interviews were held with 17 Illinois farmers, selected to represent different types of operations (dairy, beef, hog, and grain). Some farmed directly adjacent to expanding urban areas, and some were well removed from urban expansion. Slides of 10 different countryside landscapes were shown to the farmers in their homes. These were color slides taken with a 50-mm lens. Each landscape was shown at four or five different times during the year to represent seasonal change. The farmers were asked open-ended questions about what they noticed and found attractive and unattractive about each view. Interviews typically lasted three hours.

The farmers interviewed consistently identified apparently progressive management with attractive landscapes. . Their comments suggest that when looking at agricultural landscapes, farmers want to see change. Their comments suggest that concepts that also influence farmers' perception of landscape attractiveness are: productivity, orderliness, and care. Specific landscape elements that were associated with these concepts were: mown lawns and roadsides, pruned trees, weed-free fields, straight rows of crops, new or newly painted buildings, and, interestingly, minimum tillage techniques.

Farmers have always "improved the land," adding to its value by clearing it of trees and stones and by building structures. The progressive farmer has traditionally fought back unruly nature to make his land productive. Responding to a slide of a nature study area (Fig. 11.1), one farmer made this typical remark: "I would like to get the pruning shears out. This is too much of a good thing. It has an old-fashioned look."

Farmers claim the land for orderly production. Commenting on the trees growing along a channelized stream (Fig. 11.2), another person said, "A farmer fights back that type of thing. That would be a forest but would never yield anything of value." Looking at a different landscape, another farmer said, "This is one of those places where the woods will take 5 feet from you every year if you let it."

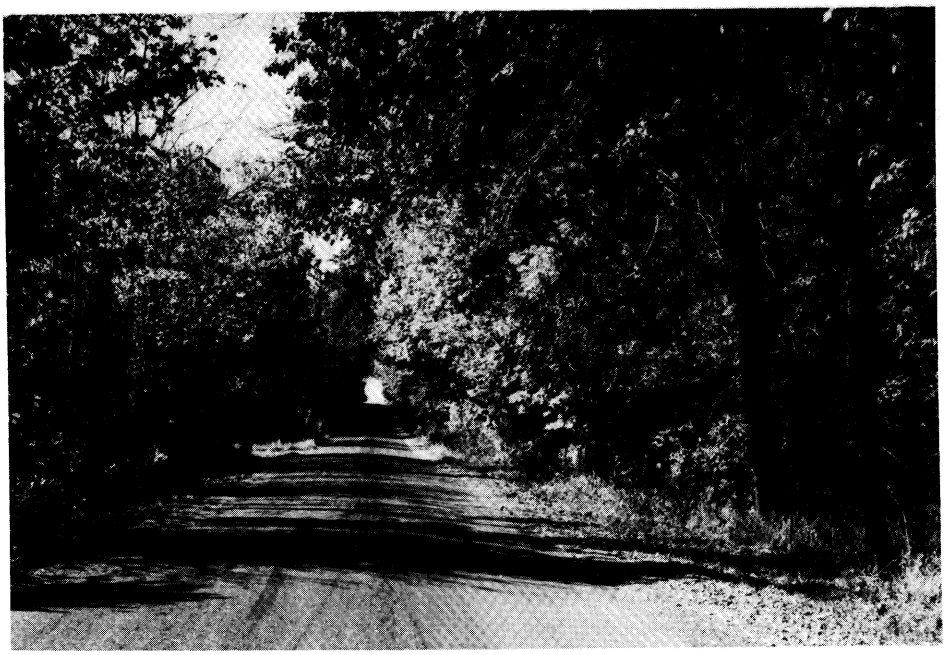

Figure 11.1. Nature study area.

Figure 11.2. Channelized stream.

Along with this idea of improvement comes an appreciation for neatness. Neatness begins to be valued outside of its direct economic implications. Unpainted buildings, old rusting machinery, unmown roadsides, unpruned ornamental trees, or weedy fallow fields may not reduce productivity; however, they are likely to give the impression that a farmer does not care and is not improving the land. Looking at a farm which she saw as very neat, one farmer commented on its opposite, "If the buildings are falling down, the roadside isn't taken care of."

More recently, farmers have shown their progressiveness by using "advanced" scientific technologies ranging from applied economics to chemical fertilizers. Progressiveness has come to be identified not only with ordering nature and creating a neat, clean landscape, but also with a willingness to innovate. Farmers' responses indicated that they equated newness and uniformity with functionalism (Fig. 11.3). "That old barn stands out. It looks out of place next to the other farm buildings. It's just not functional anymore." "This is very functional, all but one building has been replaced." "The barn doesn't fit with the rest. It should be painted, sided, or B-and-B'ed (burned and bulldozed)." The farmers were impressed with the neatness of the same farm, in general. "This is well-maintained. Probably owner operators." "The buildings are quite new and modern—useful." "No fences. No livestock. This fellow must be progressive."

The definition of the progressive ideal must be tempered with the expectation that farmers' notions of improvement and advancement will change with their knowledge. For instance, several farmers commented that they did not like the unkempt look of dead trees, which were present in the nature study area (Fig. 11.1). However, one said, "That's pretty, but there are some dead trees. I *used to* dislike dead trees. It depends on if its part of a natural process." As ecological processes become better understood, advanced farming techniques are likely to change. The interviewees often expressed admiration for good stewardship, and their concepts of stewardship appeared to vary with their knowledge. Seeing minimum tillage for soil conservation in a fall-plowed field (Fig. 11.4), one said, "Knowing that's chisel-plowed makes that look better."

11.4.3 England and Wales Studies

A study of farmers in lowland agricultural areas of England carried out in 1972 (Westmacott and Worthington 1974) showed their values to be remarkably similar to the Illinois farmers. The approach used in this study was to determine what physical changes had been made on farms in the last two or three decades and then to discuss with the farmers the reasons these changes had been made. In cases where farmers had not made changes which most of their neighbors had made, they were asked why not.

Field surveys, aerial photographs, and interviews were used. Eight or more contiguous farms in each of seven lowland areas, which were broadly representative of different farming systems and physiography, were surveyed. The

Figure 11.3. Older barn with new buildings.

Figure 11.4. Minimum tillage in fall-plowed field.

responses were therefore those of quite a small sample of farmers but were confirmed by other farmers and farm organizations during the course of the study.

The interview questionnaire did not contain any items specifically aimed to assess progressiveness. However, farmers used this term to describe why changes had been made on the farm. Differences between farmers' evaluations of "good" landscape and those of naturalists also became clear. Hedgerows, hedgerow trees, ponds, open drainage ditches, and other, usually defunct, components of the hetrogeneous, traditional mixed farm landscape were frequently removed even when the farmer could not justify the action on economic grounds. For instance, hedgerows were sometimes removed not to facilitate mechanization or to effect changes in grazing management but because they were derelict and viewed as a sign of backwardness. Several Fenland farmers expressed the opinion that trees were "untidy clutter" and spoiled the appearance of their crops. In other areas most saw hedgerow trees as causing nuisance or inconvenience. In fact, on large farms growing a single crop, such as wheat, hedgerows become obstructions to new large-scale machinery. In Huntingdonshire only 36.5% of the land was tillage crops in 1936 compared with 70% today, mostly in wheat. Between 1945 and 1983, 37 m per hectare of hedgerow has been removed; on a 500-acre farm, that is 3.7 miles of hedgerow.

Farmers were asked whether they thought that farming had been "responsible for the beauty of the countryside and whether society should accept whatever modern agriculture produces." Responses to this question emphasized that the belief that "good" farming produces "good" landscape was still alive in 1972. To most farmers however, "good" farming is progressive farming and in different farming systems, there are different signs of progressiveness. In the highly specialized cereal growing areas in the east, where economies of scale have the greatest potential financial benefit, wide open landscapes, clean and uniform crops, and stark and pristine farm buidings are signs of a progressive farm. Tramlines, tracks left in the growing crop by regularly using the same route for the boom sprayer, give the fields a mechanical precision in which the farmer takes great pride. Farmers in these areas are least tolerant of trees and defunct hedges. In contrast, in areas where mixed farming is still practiced by the majority of farmers, many of the features of mixed rotational farming are still functional and therefore their continued existence is not a sign of backwardness. In specialized livestock areas, the most important sign of progressiveness is the greenness of the grass. Short-term leys, usually rye-grass with heavy additions of lime and nitrogenous fertilizer, replace herb-rich meadows. The most progressive farmers will replace hedgerows with wire, dividing the farm into small paddocks.

A similar examination of changing landscapes in upland areas of England and Wales (Westmacott et al. 1977; Sinclair 1983) showed that farmers in hill country have quite different attitudes from their lowland counterparts. The method was similar to that used in the lowland research but a larger sample

was used, 10 to 15 farmers in each of 12 different areas. The data suggest that changes in farm management are perceived as a significant causal factor in landscape change. However, only 27% of the farmers interviewed thought that the changes *on their own farms* had produced a significant impact on the landscape. Of these, 89% thought that the changes they had made had "improved" the landscape. It is interesting however to note that these improvements were generally described as "tidying up" or "improving" the land, thereby improving the scenery. A large number of farmers pointed out how much greener their hills were now than previously. A farmer in Glascwm (central Wales), where moorland had been converted to grassland said proudly "reclamation has turned the scene green where there was nothing but grey" (Westmacott et al. 1977). The transformation gives rise to quite different sentiments from the naturalist.

Although few farmers saw their changes as having significant impact on the landscape, "an overwhelming 97% recognized that farming plays an important part in the appearance of the landscape" and more than one-quarter of those interviewed went further and stated that "farming was the countryside and vice versa" (Sinclair 1983). Clearly, tidiness and greenness were two visible characteristics of the farm that upland farmers believed were important to their "good farmer" image and, mistakenly, to their "good steward" image. But, in the uplands far fewer farmers pointed to examples of agricultural progressiveness as improving the landscape. Indeed, when asked what they found attractive about their area, more farmers cited the *variety* of scenery than any other characteristic. This variety is clearly more typical of rugged upland areas than of more intensively farmed lowland areas. Although lowland farmers were not asked the same question, uniformity of crop was frequently mentioned as enhancing the landscape. Agriculturally unproductive areas, , which add variety to the landscape, were seen as functional obstructions to farming and visual detractors.

In the upland areas, which have seen some of the most bitter confrontations between farming and conservation interests, a majority (69%) of farmers interviewed recognized that farmers "had a responsibility for more than food production." This was seen primarily in terms of stewardship—the idea the farmers had a "responsibility to look after the countryside . . . " (Sinclair, 1983). When asked whether they thought farmers in general should be prepared to modify their methods in the interests of conserving the landscape and wildlife, a majority (57%) still gave an unqualified yes. Even the most pessimistic interpretation of this and other questions suggests that nearly half the upland farmers were prepared to forego some profit for the sake of landscape conservation. In contrast, between six and eight years earlier, a majority of lowland farmers had stated that they would be unwilling to modify their farming practices unless compensation was to be paid (Westmacott et al. 1977). However, younger upland farmers, especially those with large holdings were more likely than older farmers to be unwilling to make any concessions to conservation in their farming practices.

11.5 Progressiveness and Landscape Heterogeneity

These studies suggest that progressiveness is a widely held value among farmers and that progressiveness affects farmland management decisions. However, progressiveness should not be understood as a disposition toward a particular technique or approach but rather a disposition for change that supports "good" farming. Farmers in cultures that are similar but not identical shared this ideal. To be a progressive farmer is to be a good farmer. To be a progressive farmer is to be ready to change.

Information about innovation as well as understanding of traditional techniques are essential before the farmer adopts any particular technique. If farmers have sufficient information about the origin and management of hedgerows (Forman and Baudry 1984), for instance, their progressiveness may motivate them to create and maintain hedgerows in the next 50 years just as it motivated them to remove hedgerows in the past 50.

Progressiveness is directly related to landscape disturbance; progressive farmers are likely to introduce new land management regimes. However, progressiveness is only indirectly related to landscape heterogeneity. The nature of the innovations adopted by progressive farmers in pursuit of "good" farming will determine whether heterogeneity decreases or increases with new land management regimes. Progressiveness is one of a number of conditions, including economic factors, which might motivate a farmer to adopt innovations. Future research must recognize the distinction between progressiveness as an ideal and actual progressive behavior.

Postwar changes in farmland management have progressed along a very limited dimension. Landscape change that follows from a more holistic concept of landscape productivity can also be framed as progressive. The progressive ideal changes with new information. Translating landscape ecology into everyday farming practices offers great potential for change.

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