Measuring Extension's Impact

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Extension constantly seeks practical methods for measuring and presenting its accomplishments. This study illustrates a new approach to appraising the contributions of an educational agency (the Kansas Agricultural Extension Service) on a single town. The researchers measured quantitatively what the AES contributed to the town environment during one year's time. They illustrate how agents made practical use of the resulting data, and suggest that this kind of analysis should also be useful for surveys made by other county-based agencies.

THIS ARTICLE illustrates a method of evaluating the contribution of a county-wide Extension program to one community within a county. The method should be useful for surveys made by county-based agencies, and the resulting data may provide Extension agents with a basis for increasing their program effectiveness.

The aim of the larger study, of which this is a part, is to describe, in a quantitative way, the environment which a community provides its inhabitants. This article reports the impact of the Kansas Agricultural Extension Service (AES) on a single town, Oskaloosa, from September 1963 through August 1964, and compares the data with that from an earlier survey of September 1954 through August 1955. Oskaloosa is a rural trading, school, and government center located near the middle of Jefferson County, which contains approximately 400 square miles and is inhabited by 11,200 persons. At some time during the year of the study, one of every seven town residents

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was directly involved in Extension Service activities within the borders of Oskaloosa. The AES also brought in many more nonresidents. What follows is a partial description of what the Extension Service adds to the environment within which town residents live their lives.

METHODS AND CONCEPTS

The first question is: How is the environment of behavior to be identified, measured, and described? The list of environmental facts relevant for behavior is endless. During the course of the larger study, we discovered a limited number of community parts which together encompass all the other facts about the town and hence constitute the environment of the town's inhabitants. These parts we call *behavior settings.*[1] A 4-H food sale is an example of a behavior setting. Within its space-time boundary, the behavior of individuals conforms to the pattern characteristic of the setting. The persons who maintain and control the setting make a deliberate effort to insure that this is so. At the food sale, customers do not sample the cake frostings (there is social pressure against it) nor sit on the tables (physical arrangements prevent it; the tables are covered with food). There are many objectively existing behavior settings that blanket the town; no behavior occurs outside of a behavior setting.

When the parts and processes of two or more settings are interchangeable, these settings belong to the same genotype. Two grocery stores, for example, could exchange stock, personnel, bookkeeping systems, and so forth, with little interruption in their operation. The number of behavior-setting genotypes in a town is a measure of the variety of the town's environment.

A description of behavior settings and genotypes is a description of the environment a town provides for the behavior of its inhabitants. Members of the Midwest Field Station staff visited and observed all behavior settings which occurred in Oskaloosa during each survey year. For each setting, a record was kept of the name and age of each person participating, each person controlling the setting, and a description of the spatial-temporal patterns of the setting. These direct observations were in addition to, and augmented, the normal records kept by the controlling agency (such as the

[1] Roger G. Barker and Herbert F. Wright, *Midwest and Its Children* (New York: Harper & Row, 1955); Roger G. Barker, "On the Nature of the Environment," *The Journal of Social Issues,* XIX (October, 1963), 17-38; Roger G. Barker and Paul V. Gump, *Big School, Small School* (Stanford, California: Stanford University Press, 1964); Roger G. Barker, "Explorations in Ecological Psychology," *American Psychologist,* XX (January, 1965), 1-14.

AES) regarding the dates, duration of meetings, attendance, program, and so forth. The observations of the research staff added detail; but primarily data such as reported here preserved and organized information possessed by the leaders of the various AES settings, using the concepts of behavior settings and genotypes and their descriptive characteristics.

Size and Variety of Environment

Oskaloosa had 830 persons in 1964, and 118 of them (14 per cent) inhabited town behavior settings controlled by the Agricultural Extension Service. These behavior settings were also populated by over 400 nonresidents. Total population of AES behavior settings during the year 1963-64 was over 500 persons. The town had 884 behavior settings during this survey year. Of these, 45 (5.1 per cent) were sponsored by AES.

The number of behavior-setting genotypes is a measure of the environmental variety a town presents to its inhabitants. It is analogous to indicating the diversity of a farm property by reporting that it has three kinds of fields (e.g., plow land, timber, and pasture) and also lakes and streams. Oskaloosa had 198 different behavior-setting genotypes in 1964 and of these, the 45 AES settings were represented in 21 (10.6 per cent). Eight of the town's genotypes (4 per cent) occurred only in connection with AES behavior settings. The size-dimensions of the AES behavior settings may be summarized and interpreted as follows:

1. There were 401 occurrences of AES behavior settings in Oskaloosa during the survey year, or 7.7 during an average week. Five of the 7.7 were occurrences of the Extension office, so during most weeks there were about three other AES settings in town.
2. AES behavior settings functioned for a total of 2366 hours during the survey year, or 45.5 hours per week. The Extension office was open 40 hours per week, leaving 5.5 hours as the mean weekly duration of other Extension settings.
3. One hundred eighteen town residents occupied the AES behavior settings for 7018 hours, or 59.4 hours per year per person on the average. When the office time of the three Extension employees is omitted (because most of their office time was not devoted to Oskaloosa activities), town residents who inhabited AES behavior settings spent 4013 hours in them, or about 34 hours per year per person, i.e., 40 minutes per week.

We can draw the following conclusions from the 1964 data. If

the program of the Agricultural Extension Service were eliminated from Oskaloosa:

- The town's size in terms of behavior settings would be reduced by 5 per cent.
- Its size, in terms of daily occurrences of behavior settings, their duration, and their person-hours of occupancy, would be reduced by less than 1 per cent.
- Oskaloosa's environmental variety would be reduced by 4 per cent.
- The number of settings in almost 11 per cent of its genotypes would be reduced.
- Eight genotypes (containing 17 settings) would be completely lost to the town.
- There would be almost eight fewer behavior setting occurrences per week, lasting 45.5 hours.
- Fourteen per cent of Oskaloosa's inhabitants not professionally connected with the AES would have about 34 hours per year each to spend in other behavior settings.
- Four hundred nonresidents would have about 5400 hours for AES activities in other towns, or for allocation to other activities.

Changes between 1954-55 and 1963-64

Changes in the size of Oskaloosa and in the contribution of the AES to the town over a nine-year period are reported in Table 1. These data show that the town increased on all dimensions by amounts varying from 1 per cent (hours of duration) to 53 per cent (number of behavior settings). If the office time of the staff is omitted for both years, when the change is assessed, the estimated person-hours for town residents in Oskaloosa AES behavior settings increased from 3426 hours in 1954-55 to 4013 hours in 1963-64 (16 per cent increase).

The data indicate that the Agricultural Extension Service in 1963-64 contributed about as much to the size of the town's environment as it did in 1954-55, but that relative to the town's size in 1963-64, it contributed fewer behavior settings and genotypes. The increase in person-hours of occupancy of the AES settings was not accompanied by an increase in number of settings and genotypes as it was in the town as a whole. Thus the AES was, in terms of the farm analogy, tilling the same number and variety of fields as it did in 1954-55, but tilling them somewhat more intensively. The town, however, was working a greater number of more varied fields for more person-hours of time, but spending less time in each field.

Environment Content

What does the Extension Service contribute to Oskaloosa as a place to live? Data show that, aside from the county AES office (which we shall not consider here because of its county-wide rather than local relevance), the chief contributions of the AES to Oskaloosa in 1963-64 were: (1) *business and discussion meetings* of committees and boards of the AES and related agricultural associations; (2) *cultural-educational-recreational meetings* of Extension homemaker units and 4-H clubs; and (3) *Extension classes* in agronomy, animal husbandry, cooking, club and class leadership, general home economics, floriculture, and sewing. These three categories accounted for about two-thirds of all AES behavior settings, about 90 per cent of their occurrences, and about 80 per cent of the person-hours all AES settings were occupied. Five settings involved displays and competitions of the results of educational undertakings (style revue, judging competition, crafts day, speaking contest) and should perhaps be included with the classes. There were three purely recreational behavior settings (theater party, ice cream social, and swimming party), one sale to raise funds by an AES activity (4-H food sale), and one community service setting (solicitation of funds for a children's charity).

In brief, in 1963-64 the AES provided environmental enclaves in

Table 1. Dimensions of Oskaloosa and of the Agricultural Extension Service, 1954-55 and 1963-64.

Dimensions	1954-55	1963-64	Per cent change 1954 to 1963
Oskaloosa			
Population of town	715	830	+16
Number of genotypes	171	198	+16
Number of settings	576	884	+53
Daily occurrences of settings	49,562	53,258	+ 7
Hours duration of settings	283,656	286,909	+ 1
Person-hours occupancy of settings by town residents	928,240	1,118,802	+21
AES			
Number of genotypes	20	21	+ 5
Number of settings	46	45	− 2
Daily occurrences of settings*	129	151	+17
Hours duration of settings*	310	326	+ 5
Person-hours occupancy of settings by town residents**	3,426	4,013	+16

* AES office omitted. ** AES staff office time omitted.

Oskaloosa for transacting the business of organizations devoted to advancing agriculture as a way of life and as a business, and for giving information and skills relevant to modern rural living and to farming business. Some of the settings were tempered, so to speak, with recreation; but recreation per se was minor by all measures; this was also true of community service.

Comparison of 1954-55 and 1963-64 data reveals that business meetings increased on all measures; for example, there were 26 occurrences of organization business meetings in the earlier survey year and 60 in 1963-64. Cultural-educational settings, on the other hand, decreased on most measures. It would appear that settings concerned with organizational problems of the AES and associated organizations increased, that settings with cultural-educational content held constant or decreased, and that purely recreational behavior settings became very minor in extent.

We also approached the question of *what* rather than *how much* the AES contributed to Oskaloosa, by rating behavior settings on 11 attributes called *action patterns*. For example, we asked to what degree a behavior setting fosters recreation. If the behavior occurring in a setting involves play and enjoyment primarily, the setting receives a high rating on the action pattern "recreation." A behavior setting may receive a high rating on more than one action pattern, e.g., a handicraft exhibition may be high in recreational and in aesthetic activities. Data in Table 2 show that the contribution of the AES to the town environment did not duplicate that provided by the town as a whole. Relative to the town, the AES overempha-

Table 2. Number of behavior settings with high ratings on action patterns expressed as per cents of values for all settings and for AES settings in Oskaloosa, 1963-64.

Behavior settings	Per cent of behavior settings	
	AES*	Oskaloosa**
Education (formal teaching in class)	44.4	16.3
Social (interpersonal interaction)	100.0	85.3
Personal appearance (dressmaking, grooming)	8.8	2.6
Nutrition (preparing and/or consuming food)	11.1	5.9
Government (direct government involvement)	8.8	7.8
Physical health (medical attention)	0.0	2.3
Aesthetics (artistic activities)	4.4	8.5
Business (exchanging goods and services for profit)	2.2	7.1
Professionalism (paid leaders)	24.4	33.6
Recreation (play, enjoyment)	6.6	23.4
Religion (worship)	0.0	15.5

*Per cent of 45. **Per cent of 884.

sized behavior settings where certain action patterns were prominent and it underemphasized settings where other action patterns were prominent.

According to this evidence, the AES enriched the environment of the town in 1963-64 with settings in which activities devoted to education, social interaction, personal appearance, nutrition, and government were prominent. Compared to the town as a whole, it added fewer settings in which activities devoted to religion, recreation, professionalism, aesthetics, and physical health were prominent. If the AES were removed from Oskaloosa, the loss to adult education would be particularly severe, for the AES was, aside from the churches, the only regular source of adult education settings.

Inhabitants of the Environment

The Agricultural Extension settings in Oskaloosa are open to all town residents, as members or visitors. It is justifiable, therefore, to ask to what degree subgroups of the town's population actually entered and inhabited these parts provided by the AES. We have asked if people who inhabited AES behavior settings had the same age distribution as did the population of the town, and if not, which ages were more and less represented in AES settings.

The data reported show that in both 1954-55 and 1963-64, children to the age of nine years constituted a smaller per cent of the population of AES settings than of the town population. In both years, children 9-12 years old contributed two and three times more than their fair share of AES inhabitants. In 1954-55, adolescents (12 to 18 years) made up more than their proportionate number of AES inhabitants by a factor of 3.7; in 1963-64, however, adolescents had become underoccupiers of AES behavior settings, comprising only 38 per cent of the expected number of inhabitants of Extension settings. In both years, adults (18 to 65 years) were present in Extension settings in the same proportion as in the town population, but persons 65 years or older underoccupied AES settings in 1954-55 at 24 per cent of the expected rate.

Some of the sources of changes in the age composition of the inhabitants of Extension settings are apparent. The decline in adolescent participation was due in part (1) to the removal of some 4-H activities from Oskaloosa to another town where the 4-H fairground was located, and (2) to a great increase in competing activities in the school (e.g., a greater number of more varied athletic and musical events) and in the community (e.g., bowling and golf).

It should be emphasized again that changes in participation in Extension settings in Oskaloosa do not mean that these were county-wide changes. In fact, there is some evidence, not included here, that the number of rural adolescents participating in AES activities in town did not decline; and that the transfer of 4-H settings from Oskaloosa to other towns in the county was accompanied by an increase in county-wide participation. In fact, 18 of the 30 all-county behavior settings at the 4-H fairgrounds in another town were attended by Oskaloosa adolescents. Nevertheless, the changes within the town are important for Oskaloosa as an environment within which the town's adolescents live.

It appears that the older people of Oskaloosa have filled an occupancy gap in AES behavior settings caused by the decline in adolescent attendance. Part of this greater participation by older people was due to the fact that the Extension Homemakers Units held their aging members without a corresponding increase in the membership of younger women. This lower recruitment appears to derive from the fact that more women were working outside their homes in 1963-64, and perhaps also from a lesser tolerance for young children in settings that are essentially for adults. If the latter is true, it may be part of a general, cultural urbanization of Oskaloosa over the period of the study.

SUMMARY

In 1963-64, the Agricultural Extension Service made a substantial contribution to the behavior environment of Oskaloosa. It provided 5 per cent of the behaviorally relevant parts of the town, and some of these parts (such as agronomy classes and club officer training classes) were provided only by the Extension Service. The parts of town that were established and maintained by AES were predominantly for education, especially adult education, and for carrying on the business of groups formed to advance rural life and farming. The Extension settings not only enlarged the behavior opportunities of the town's inhabitants, they also provided contacts with the outside world by bringing both lay and professional people into the town and by providing opportunities and channels of communication with settings within the county, state, and nation.

From 1954-55 to 1963-64: (1) AES settings maintained their attraction for town residents (hours of attendance increased in almost exact proportion to the increase in the town's population); (2) the total number and variety of Extension settings did not increase as they did in the town at large; (3) however, settings concerned

with the advancement of agricultural business and rural life increased, while those concerned with education and recreation decreased; (4) fewer town adolescents spent time in AES settings in 1963-64 than in 1954-55, and more people over 65 years of age spent time in AES settings.

This study illustrates a method which should be useful for surveys made by county-based agencies. This example of use of the method does have some limitations; it deals with only part of a county-wide system and so cannot give a complete picture of the impact of AES on Oskaloosa. It also measures quantity rather than quality of participation. From what has been reported, however, it is clear that the analysis of the AES via its behavior settings contributed to the understanding of the actual functioning of the agency in one town and county.

As an example of the usefulness of the data reported here, when this report was first prepared, the Jefferson County AES agents noted the underoccupancy of adolescents in AES settings. A special effort was then made, with the cooperation of the Oskaloosa school system, to provide two special settings of interest to adolescents and preteens: two 45-minute programs on Bicycle Safety for fifth- and sixth-grade students, and four 1-hour Grooming Classes for high-school girls. These two settings involved 145 separate pupils, both town and out-of-town, most of whom were not involved in any other 4-H activity. A third activity, the "4-H TV Action Program" for third- through eighth-grade pupils, was actively promoted throughout the county, obtaining voluntary enrollments of 53 percent of all eligible county residents, and 152 out of 233 (65 percent) eligible Oskaloosa school pupils, again both town and out-of-town. A behavior-setting analysis for the year 1966-67 would indicate that the underoccupancy of town adolescents in AES settings that occurred in 1963-64 was being remedied.

This report indicates that the AES program is a significant part of Oskaloosa and of Jefferson County, and that the data gave Extension agents a basis from which to evaluate their performance and thus increase their effectiveness.

THE HIGHEST FUNCTION of education is to help people understand the meaning of their lives, and become more sensitive to the meaning of other peoples' lives and relate to them more fully.

—EDGAR Z. FRIEDENBERG