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PRODUCTION ORGANIZATION IMPLICATIONS OF AGRICULTURAL INDUSTRIALIZATION

Odell L. Walker*

An implicit theme of industrialization in agriculture has run throughout much of the literature in agricultural economics since 1950. Maybe we have been lulled by the future tense used in the literature. Industrialization is here and much of the process has taken place without an update on patterns of thought or assessment of implications for present or future agricultural business environment. Possibly, those of us in agricultural economics research, teaching or extension at land grant colleges have undergone much less impact and reorientation than those we serve, and, theoretically, lead in thought.

An attempt is made herein (1) to identify models, variables and conditions associated with industrialization, (2) to examine some agricultural implications in organization of production, and (3) to deal with people undergoing industrialization.

INDUSTRIALIZATION

Whether industrialization, urbanization or economic development is the subject, authors are essentially in agreement that we are talking about: ". . . a process resulting in a progressive release from the shackles imposed by natural factors of production. . ." [4, p. 25]. The industrialized economy is based on man rather than natural resource endowments and limitations.

Breimyer, following contributions by Joan Robinson, identifies two basic models [4, p. 24]. The first model is the earliest stage of development. Land and labor are the only existing factors of production and the qualities and quantities of these factors control production and the welfare of man. This primary economic state involves very simple economic activity. The second model is a fully developed economy, the industrial state. The fully developed economy is essentially capital using and produces all factors of production, including labor and management in just the specializations needed. These two models, as polar points, are useful in our conceptualization of the process and implications of the industrialization process.

Tweeten, Daly, Heady, and Breimyer [14, 6, 9, 4] document necessary empirical observations to establish the progress of U.S. agriculture toward the "industrial state." Most significant observations include the increased proportion of purchased inputs compared to conventional inputs (Table 2) and change in scale of business of the farm firm (Tables 1 and 3). Increases in use of industrial products such as fertilizer, insecticides and herbicides lead the list. However, machinery and feed, seed and livestock purchases have increased substantially. Imminent reduction of total farm employment to the approximate level of national unemployment [11] dramatizes the decline in relative importance of labor in agricultural production.

Booth provides an incisive summary of the farming industry change in the first seven years of the sixties [3, p. 428].

"The facts are simple and even startling to one who last looked at them five years ago. By 1967, as Table 1 shows, the one million successful American farms produced all but 15 percent of the output and wound up with a total family income averaging $14,000. Both the intermediate group (sales less than $2,500) were averaging nearly $7,000 per farm family from all sources. It is very clear that these two groups, comprising over 2 million farms, are no longer primarily engaged in farming. In seven years, the intermediate group switched its income dependence from farm to nonfarm income and the non-commercial did more than twice as well as before in nonfarm income. . .It should be noted that in the whole of farming, nonfarm sources of income are just as important as farm sources."

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TABLE 1. RECENT CHANGES IN THE DISTRIBUTION BY SALES CLASS OF FARMS, AND INCOME, UNITED STATES, 1960-67

Sales class	Proportion of item in sales class						Income per farm family					
	Farms		Sales[a]		Income[b]		Farm[c]		Off-farm		Total	
	1960	1967	1960	1967	1960	1967	1960	1967	1960	1967	1960	1967
	Percent						thousand dollars					
Over $10,000	21	31	72	85	58	14	8.1	10.6	1.5	3.2	9.6	13.8
$2,500 to $10,000	32	26	22	12	29	16	2.7	2.9	1.7	3.9	4.4	6.8
Less than $2,500	47	43	6	3	13	10	0.9	1.0	2.7	5.7	3.6	6.7
	millions		billion dollars									
Totals	4.0	3.1	35	46	12	14	3.0	4.5	2.1	4.5	5.1	9.0

Source: Booth [3]; USDA [6, p. 72].

[a]Cash receipts, including net CCC loans.

[b]Total net farm income, including inventory change.

[c]Includes value of housing, home consumption, and government payments.

TABLE 2. INDEX NUMBERS OF TOTAL FARM OUTPUT AND INPUT, AND INPUTS BY MAJOR SUBGROUPS, UNITED STATES, SELECTED YEARS, 1910-68[a].

Year	Total Output	Productivity	Total Inputs			Farm Labor	Farm Real Estate	Mechanical Power and Machinery	Fertilizer and Liming Materials	Feed, Seed, and Livestock Purchased[d]
			All	Non-Purchased[b]	Purchased[c]					
					(1957-59 = 100)					
1910	51	62	82	162	44	212	88	20	12	16
1920	59	63	93	174	55	226	92	32	16	23
1930	61	63	97	170	62	216	91	40	21	26
1940	70	72	97	142	72	192	92	42	28	45
1950	86	85	101	119	91	142	97	86	68	72
1960	106	105	101	95	105	92	101	104	111	109
1968[e]	120	108	111	75	131	66	106	117	215	141

Source: Tweeten [15].

[a]Data from USDA [16] (June, 1969, p. 16, and earlier issues).

[b]Includes operator and unpaid family labor, and operator-owned real estate and other capital inputs.

[c]Includes all inputs other than non-purchased inputs.

[d]Nonfarm portion of feed, seed, and livestock purchases.

[e]Preliminary.

TABLE 3. FARM SIZES AND TENURE FOR SELECTED SOUTHERN STATES, 1950 and 1964

	Oklahoma		Mississippi		South Carolina		Tennessee	
	1950	1964	1950	1964	1950	1964	1950	1964
Total Population (000)	2,233	2,461	2,179	2,298	2,117	2,523	3,292	3,800
Total Farm Population (000)	533	259[a]	1,097	543[a]	701	351[a]	1,016	587[a]
Number of Farms (000)	142	89	251	109	139	56	231	133
Size of Farms:								
Av. Acres	252.4	406.6	82.8	162.6	97.3	144.0	80.3	114.4
Capitol Value (land and buildings)	$13,010	$49,212	$4,448	$24,322	$5,614	$24,948	$6,123	$20,509
Number of Farms by Economic Class[b]								
I	1,772	1,684	1,037	3,694	520	1,486	623	1,287
II	8,251	4,514	2,029	3,047	1,500	1,990	2,806	2,835
III	16,923	9,664	4,096	4,486	3,869	3,815	7,777	6,552
IV	22,875	12,822	15,855	8,468	16,637	7,597	22,402	13,804
V	24,386	13,263	51,991	16,336	29,998	8,659	48,521	23,365
VI	18,601	11,611	81,688	24,732	31,707	10,336	56,103	28,509
Other	49,360	35,168	94,590	47,378	59,964	22,365	93,292	29,598
Tenure: percent								
Full owner	44.8	50.6	41.0	59.2	42.5	53.4	58.1	64.0
Part owner	23.4	32.6	7.0	17.0	11.8	22.1	12.5	19.6
Tenant	31.4	16.4	51.6	23.5	24.3	24.0	29.3	16.1
Managers	.3	.4	.3	.5	.3	.5	.1	.3

Table 3 (Continued)

Source: U. S. Agricultural Census.

[a]1960 Farm population.

[b]Economic classes defined by value of farm products sold:

I - $40,000 or more
II - $20,000 to $39,999
III - $10,000 to $19,999
IV - $5,000 to $9,999
V - $2,500 to $4,999
VI - $50 to $2,499 if operator was under 65 and did not work off farm 100 or more days.
Other - a. Part-time - value of products sold $50 to $2,499 and operator under 65 but worked 100 or more days off farm.
b. Part-retirement - value of products sold $50 to $2,499 but operator 65 or over. Income from non-farm sources usually greater.
c. Abnormal - All institutional farms (schools, hospitals, etc.) and Indian reservations.

The point of Booth's terse summary of the farm sector of the economy is that "it" has already happened, not that problems don't exist for farmers, rural people and rural businessmen. "There is no longer much left of what we used to call 'the farm problem.' If public support in research and development, price stability, crop insurance, production loans, and cooperative marketing were continued and improved, the commercial sector of farming would fend very well for itself" [3, p. 429].

Data in Table 3 highlight changes in scale of farm businesses in selected southern states between 1950 and the 1964 agriculture census. The data are included to emphasize that the South has been part of the development described by Booth. The decreases in numbers of farms and increases in acres and capital used per farm parallel the national scene.

Approximate halving of the farm population in the first decade of the period covered by Table 3 has not required comparable decreases in the states' populations. In fact, healthy increases are shown for the four states by 1964. Bryant reports for Mississippi, in particular, and Beale for the U.S., in general, that many rural counties and small towns (2,500 to 25,000) are growing rather than declining in population [5, 1]. Their economic viability is a concern to which we must give great attention.

The process of industrialization offers the hope of emphasizing the human and capital resource. In traditional agriculture and in one product or one industry cities, people always have been nervous about the effects of any kind of economic, natural or social change. With diverse and specialized uses for labor and managerial skills, appropriate attention to preparation of people through education and an industrialized point of view on the part of people, labor may no longer be forced to carry the burden of resource use changes arising from imbalanced agricultural capacity and demand for agricultural products.

ECONOMIES OF AGRICULTURE

Breimyer's division of Agriculture into three separate economies provides useful organization for evaluating industrialization of agriculture [4]. The first economy, production of (crop) products through use of the unique properties of soil, is traditional agriculture with livestock excluded; it is the main part of traditional southern agriculture. The second economy, according to Breimyer, is livestock production, and the third is marketing. A fourth economy, not included by Breimyer, might be input supply. Characteristics of the three economies help formulate expectations for agriculture. There has been much progress in making crop production less dependent on nature, resource endowment and luck. Greater proportions of capital inputs, rather than land or labor, are used in crop production as development progresses. However, economies of size frequently can be obtained only with increases in land and other resources. Opportunities to produce and conditions of production are affected by land and natural conditions but the degree of influence may be decreased with each technical advance.

Experiences with cotton production in the South provide a good illustration of difficulties a traditional production system can have in competition with modern industry. The industry that produces manmade fibers is one of the most innovative and productive. In addition, southern cotton competes with cotton grown on highly industrialized farms in irrigated portions of the West and Southwest.

A decreasing price is projected for manmade fibers because of the declining cost nature of the industry [17]. With a projected price of about 25 cents per pound for manmade fiber, S-42 researchers estimated that 4.7 million bales of cotton (24% of all fibers) would be consumed at a cotton price of 35 cents per pound. At 20 cents per pound, about 11 million bales (58% of all fibers) would be consumed. Estimates from S-42 indicate the South would produce about 27.8 and 7.6 million bales for prices of 35 and 20 cents per pound, respectively [17]. Cotton production in 1962 was about 10.2 million bales. A miraculous industrial development in cotton production in the South would be needed to reverse declining cotton production and consumption. Traditional fiber production has been modernized, but it still depends on land. The manmade fiber industry depends on imagination of man.

The S-42 study provided estimates of land use shifts and farm size adjustments necessitated by decreases in cotton prices and allotments [18]. Part of the results are presented in Table 4. The shifts in product mix suggest a drastic change for southern agriculture. Changes in acres necessary to allow a $5,000 return are not as large as one would expect, except in the Mississippi Delta, Oklahoma Rolling Plains, and Texas High Plains. However, the S-42 Model assumed prices of products other than cotton constant at 1963 levels (e.g., $2/bu. wheat and corn at $1.10/bu.). Prices of feed grains have declined since that time, primarily because of lower price supports. Also, introduction of capital intensive livestock programs could substitute for land. As a result, land becomes an inadequate measure of size.

General indications, from S-42, of a basic shift in southern agriculture to a more capital intensive form are borne out by farm sales data. Table 5 shows the relationship of livestock to crop product sales in 13 southern states. In 1954, livestock exceeded crop sales in only two southern states. By 1968, livestock

TABLE 4. LAND RESOURCES AND CROP MIXES REQUIRED TO EARN A $5,000 RETURN TO OPERATOR LABOR AND MANAGEMENT ON SELECTED RESOURCE SITUATIONS IN THE SOUTH

	Economic and Allotment Situations							
	Cotton at $.30/lb. 1963 Allotment				Cotton at $.20/lb. 1963 Allotment			
Resource Situation	Open Land	Cotton	Feed Grain & Soybeans	Hay, Pasture & Forest (ac.)	Open Land	Cotton	Feed Grain & Soybeans	Hay, Pasture & Forest (ac.)
Georgia Piedmont	194	24	52	170	293	35	79	260
S. Carolina Piedmont	588	66	252	304	887	--	520	420
Tenn. Brown Bottomland	119	29	46	44	163	--	98	65
N. Carolina Piedmont	137	13	118	2	156	--	148	3
Miss. Delta Sandy Farms	127	39	68	19	1078	328	728	21
Okla. Low Rolling Clay	1763	164	721	493	3213	3213	1680	884
Tex. High Plains Irrigated Hardlands	238	56	160	22	701	--	834	66

Source: [18].

TABLE 5. LIVESTOCK SALES AS A PERCENTAGE OF CROP SALES

State	1954	1964	1966	1968
		Percent		
Alabama	88	127	257	249
Arkansas	45	56	81	92
Florida	33	28	41	38
Georgia	88	119	171	150
Kentucky	83	74	123	117
Louisiana	44	51	74	58
North Carolina	32	42	58	79
Mississippi	38	59	115	105
Oklahoma	120	149	203	216
South Carlina	37	38	54	74
Texas	64	80	106	113
Virginia	124	97	130	126
Tennessee	92	83	135	149
13 State Average	61	69	102	102
U. S. Average	121	116	136	135

Source: [16].

sales were predominate in eight states. Only one state had livestock sales at less than half of crop sales in 1968, in contrast to six in 1954. As a whole, the importance of livestock as a source of revenue has increased faster in the South than in the U.S.

The Cattle Feeding Industry

Except for supplementary livestock enterprises salvaging forages and forage consuming animals in range areas, production is as free of the limits placed by the land resource as the automobile industry. It has the attributes of a modern industry. Agricultural economists in the South are particularly familiar with developments in poultry meat production. The new look in cattle feeding in Texas and Oklahoma will not be too surprising, except for the scale of business involved.

During the latter 1960's, industrialization of cattle feeding in Texas and Oklahoma reached the point that 90 percent of all cattle were fed in 1,000 head or greater lots and 40 percent were fed in 10,000 head or greater lots. Incorporated feed lots accounted for 45 percent of the cattle fed in the Southern Plains during 1966-67 [8, p. 8]. Although, feeder cattle and feed come primarily from the Southern Plains, the operators of large feedlots reach as far as necessary to obtain inputs for their "manufacturing process."

Modern beef cattle fattening plants are substantially different from traditional land and labor agriculture. A 10,000 or more head lot requires about one half million dollars of investment and a specialized labor force, including an operator or manager, yard foreman, assistant yard foreman, mill foreman, mill men, feeders, cowboys, office manager, secretary, clerk, mechanics, carpenters, and truck drivers. Punch card machine operators, nutritionists, marketing specialists and other highly skilled specialists are included sometimes. Over 95 percent of total costs are made up of variable costs in the largest lots [7].

Economic justification or explanation for shifts of the feed lot industry to industrial type plants is provided by economies of size. The study by Dietrich indicated decreasing long run average costs beyond 30,000 head capacity. With comparable levels of utilization, advantages of .01 cent to .026 cents per pound gain in 5,000 and 35,000 head lots compared to a 1000 head lot capacity, are reported in Dietrich's study. These economic advantages, along with availability of a custom feeding feature and continued technological advances, give a strong basis for predicting the course of industrialization of one part of the South's agriculture.

Evidence of departure from a traditional agriculture is provided by the custom feeding operations in the Southern Plains. During 1966-67, nearly 60 percent of the cattle in the Southern Plains feedlots were finished on a custom basis. The larger feedlots, 10,000 head or more, fed the highest proportion of custom cattle. Custom cattle are owned by packers, ranchers, cattle buyers and dealers, doctors, lawyers and other speculators from a wide range of primary vocations.

Commercial banks provide financing (0 to 30 percent margins) and feedlots provide full services so that the cattle owner need never touch the cattle. Typical feed lot charges include $44 - $46 per ton basic feed charge, a markup of $6.50 - $7.50 per ton on feed fed to cover feed handling, grinding and labor costs, and an assessment of $1.50 to $3.00 per head for vaccination, medication, branding, dehorning and dipping. In addition to these charges, the cattle owner must pay feeder purchase and marketing costs, hauling, and interest, and absorb death loss.

In summary, traditional agriculture, characterized by crop production, has decreasing but ultimate dependence on land and vagaries of nature. Industrial production environments are a reality for fibers and emerging for many foods and food components. Capital intensification and labor extensification are symptoms of industrialization already present. Economies of very large scale production have appeared in meat production. Even in crop production most of the production is by a few very large firms. Developments on the horizon include more corporate organization in agricultural production, increased emphasis on bargaining in the marketing process, and a decline in farm income support programs. Because most farm programs have been tied to land, land's importance is likely to decline in favor of other inputs and management. The premium will be on a manager who can use sophisticated production systems available to gain greater control of supply and operate in markets characterized by industry bargaining.

Part-time Farming - A Contradiction?

After a flurry of interest in part-time farmers in the 1950's by agricultural economists, prime attention was turned to the commercial farmer. The strong implication was that the commercial farm was to get bigger and that smaller farms were on the way out. In fact, smaller farms have persisted in substantial numbers. Is it possible to make a very strong case that part-time farmers and ranchers are more than a declining part of an industrialized agriculture?

Projections of many part-time farmers seem contradictory, or at least suspicious. The admission that industrialization will occur in agriculture is an admission that large scale business will dominate. Two-thirds of all the U.S. population now choose to live in

town. Why would part-time, small farm business operators remain in the country? Part-time farmers may live in the city except for weekends or some seasons of the year. Their's are not necessarily small businesses when the total capital associated with their production activities (farm and non-farm) is considered. They could be thought of as horizontally integrated firms. They perform a function of owning scattered land resources of operating assorted land resources of absentee owners, relatives and retirees. The waiting for ripening of the land for higher uses of recreation, residence or industry is partly performed by part-time operators. Many enjoy the living or work arrangements. Some even make money. We can expect that several use part-time farming or ranching as a way in or out of commercial agriculture.

Census and farm survey data indicate a high percentage of off-farm work, even in agricultural areas considered "strictly commercial, big time farming." For example, since 1954, census data indicate that the percentage of farmers receiving non-farm income has increased in North Central Oklahoma, a major wheat producing region. Most work more than 30 days per year off the farm. A field survey, in 1964, showed that part-time farmers operated total acreages about one-fifth smaller than full-time farmers. Apparently income targets of farmers are met by such arrangements. It might be assumed that the farmer is also meeting location, work and living condition preferences.

Livestock farms in much of eastern Oklahoma were surveyed in the summer of 1969 in connection with S-67, Economics of Livestock Production in the South. A current look at the extent of part-time farming is provided by the survey as summarized in Table 6. A schedule was taken from farms in the segment that had 10 cows and/or 50 acres.

Sixty-two percent worked off-farm. The age and off-farm work relationship is about as expected. Younger people work off-farm more. However, greater incidence of full-time farmers in older age groups does not mean they eventually grew into farming. They may have fewer off-farm opportunities. Only 18 of the 85 part-time farmers described their job as laborer. Skilled crafts were predominate. These were professional people, store managers, and federal and county employees in the sample. Many will argue that the predominance of off-farm employment, shown in Table 6, is simply a step in eventual adjustment to a full-time off-farm work status. The growth and persistence of part-time farming suggest it is not a quickly passing phenomenon.

A study in eastern Oklahoma estimated combinations of off-farm work and livestock farm acreage necessary to meet assumed income targets [13]. A farmer could earn income from labor, management and owned resources (net equity). The operator does not receive a separate opportunity cost return on owned capital, land and management. No value is assigned to the possibility of a change in asset value in any of the cases in Table 7.

Ordinary economic reasoning would suggest that livestock farms comparable to or larger than combination 3 and 7 will prevail in the future. Some difference in southern agriculture and small cities will occur if part-time farming prevails. Although total production of part-time farmers would tend to be less relative to commercial agriculture's contribution, the marginal effect of the part-time in responding to prices and other changes in the agricultural environment may be very important. For example, if the part-time farmer is slow to respond to a price change because of the income cushion enjoyed by the part-time farmer, price cycle amplitudes could be increased. A higher rural population would be assured by part-time farming although many do and will live in small cities.

Lower levels of technology can be absorbed in part-time farming. A 10 percent lower yield increases the necessary farm size from 393 to 427 acres for a farmer working full-time off-farm and earning $5,000 and increases the capital requirement by about $11,000. The lower yield could be explained by lower level of technology or a lower quality of managerial or labor attention by the part-time operator.

Though it is difficult to explain why, part-time farming appears to belong in our expectations for Southern Agriculture. The central city concept of industrial development appears to be the soundest available. The megalopolis of the South will contain a great deal of open ground between the central city and smaller cities. Commercial and part-time farmers will be in between.

RURAL PEOPLE IN INDUSTRIALIZATION

What are the effects of industrialization from a people view? Moore [10, p. 21] portrays an end to sleepy contentment or apathy. Industrialization becomes a doctrine - deliberate change action is good. Customs are willingly sacrificed for the sake of real or invisioned benefits. The traditional life based on concepts of predestination or deterministic origin are replaced by a rational, "can-do" attitude. The rational orientation is important to creation and acceptance of change and to modification of human values.

Although workers in an industrialized system tend to move away from ownership of tools of production, the importance of human productive capacity is increased. New forms of human endeavor cause shifts in the traditional social and economic structure. The institutions associated with marketing become more impersonal to individuals, but probably more closely

TABLE 6. CHARACTERISTICS OF FULL- AND PART-TIME LIVESTOCK FARMERS IN EASTERN OKLAHOMA, SUMMER 1969

	Total Farmers	Av. Age	Age Distribution				Av. Farm Size (Acres)	Av. Salary ($)	Av. Days Worked (Days)
			>65	50-65	40-50	<40			
			Percent across Part and Full-Time						
Full-Time	52	59	75	47	21	13	500	-	-
Part-Time	85	49	25	53	79	87	252	$5756	236
			Percent of Total Farmers						
Total	137	53	14	46	26	14	346	-	-

TABLE 7. LAND RESOURCE, EQUITY AND OFF-FARM WORK REQUIRED TO EARN SPECIFIED RETURNS TO OWNED RESOURCES IN EASTERN OKLAHOMA

Total Income	Combination	Acres	Equity $	Part-Time Work Arrangement	
				Amount	Salary
$5000	1	527	72,271	half-time	$1500
$5000	2	393	52,780	full-time	$3000
$3000	3	682	93,495	none	
$5000	4	1038	65,321	half-time	$1500
$3000	5	291	39,905	half-time	$1500
$3000	6	124	16,983	full-time	$3000
$3000	7	459	62,906	none	
$3000	8	508	33,205	half-time	$1500

Source: [13].

monitored by groups in society. Similarly, while individual behavior is highly varied in an industrial-urban setting, the aggregate society is relatively efficient, smooth working, and cohesive. According to Moore [10, p. 34], the complex is held together by at least some common "cognitive orientation," acceptance of a normative order and consensus of ultimate values.

Agriculturalists' effectiveness in an industrial-urban setting depend on ability to understand, accept and exploit strengths of the industrialization process. A tendency exists to maintain old institutions, concepts and alliances in the face of contradictions of technological, economic and social reality. However, many commercial farm firms have proved to be better adjusters to product market conditions and to new inputs and conditions of supply than rural and small city people have to new social and economic conditions. Of course, the manager of a responsive firm and an unresponsive consumer-citizen may be the same person.

Bonnen [2] says, "commercial agriculture must begin to conceive of itself as a reasonably conventional member of the broader industrial community of which it really is part today." Booth [3, p. 435] suggests that progress in thought would occur if we would "consider farming as an industry and rural America as a residence with only adventitious connections." Leaders in such developments must include institutions and organizations associated with agriculture. The college of agriculture, the agricultural scientists, the agricultural businessman, and the USDA would need to associate themselves more closely to their true self-interest - the broad university environment, the basic scientific discipline, modern industry and the federal bureaucratic community.

The agricultural economist needs to develop a more realistic understanding of society and business inside and outside of agriculture. Such understanding could lead to new models concerning agricultural production and marketing. Many of us betray archaic mental models of farming in teaching and research. Test yourself by thinking about a farm. If you first thought of a neat farmstead, featuring a well kept farm home, evidence of a mental trap is close at hand. Were you thinking of the central headquarters of a modern farm business? The headquarters may well be located in town.

What image is held of the farmer? A likely model is of a mild and honest price taker in product and factor markets. He says "sir" to the wise old country banker who charitably loans him money at 10 percent per annum. Modern embellishment, to the mind's eye, may include a farmer arriving at an educational meeting in a new pickup. His ability to offer some worthwhile comments on beef futures and selected corporate stocks would be unexpected.

Many agricultural economists have led in development of analytical models and mathematical tools used in industry. The tendency has been to develop examples for applications in agricultural production, then the idea has typically been dropped, as though agricultural production units were not really ready for such advances. I think agricultural economics departments have been negligent in failing to move industrial ideas and analytical tools into the classroom. The priority of problems with which rural people, businessmen and citizens, must cope changes with industrialization. Hopefully, research and teaching will be responsive to these new priorities. New dimensions of problems, in conservation and environmental pollution, require understanding and solutions. Urban sprawl brings urban problems to the country on a large scale as the cells of the megalopolis grow. Rural people are required to do more than tolerate the urban environment as it encroaches on them or they succumb to it. The city is where most people live, by choice. Economic advantage to the consumer and firm is in the city. The problems that require great resources for solutions are mostly non-agricultural problems.

In talking about agricultural economists and rural people, Shaffer [12] says that "just as the work roles of others in the economy must change as the political economy evolves, so it is with our own." Shaffer is concerned that we develop institutional innovations in rural communities to keep pace with technology. My suggestion is that, as a starting place, we must grant that change (permanent change) has taken place.

REFERENCES

1. Beale, Calvin L., "Demographic and Social Considerations for U.S. Rural Economic Policy" *Amer. J. of Agr. Econ.*, Vol. 51:2, pp. 410-427, 1969.

2. Bonnen, James T. "The Crises in the Traditional Roles of Agricultural Institutions." *Agricultural Policy in an Affluent Society*, pp. 48-62, New York: W. W. Norton & Company, Inc., 1969.

3. Booth, E.J.R., "The Economic Dimensions of Rural Poverty," *Amer. J. of Agr. Econ.*, 51, pp. 428-443, 1969.

4. Breimyer, Harold F., "The Three Economies of Agriculture," *Agricultural Policy in an Affluent Society*. pp. 22-47, New York: W. W. Norton & Company, Inc., 1969.

5. Bryant, Ellen S., "Mississippi's People: Today and Tomorrow," Proceedings from *Legal Institute of Agricultural and Resource Development Conference on "Mississippi Agriculture in Transition,"* pp. 91-115, Oxford, Mississippi, 1968.

6. Daly, Rex F., "Agricultural Growth, Structural Change, and Resource Organization." *Food Goals, Future Structural Changes, and Agricultural Policy: A National Basebook*, pp.45-69, Ames Iowa: Iowa State University Press, 1969.

7. Dietrich, R.A., *Costs and Economies of Size in Texas-Oklahoma Cattle Feedlot Operations*, B-1083, Texas A&M University, College Station, Texas, 1969.

8. Dietrich, R.A., *The Texas-Oklahoma Cattle Feeding Industry, Structure and Operational Characteristics*, B-1079, Texas A&M University, College Station, Texas, 1968.

9. Heady, Earl O., "Farm Change and its Implications for Delta States and Mississippi Agriculture." Proceedings from *Legal Institute of Agricultural and Resource Development Conference on "Mississippi Agriculture in Transition,"* pp. 8-37, Oxford, Mississippi, 1968.

10. Moore, Wilbert E., *The Impact of Industry*, Modernization of Traditional Societies Series, Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1965.

11. Ruttan, Vernon W., "Economic Development, Political Power, and Agricultural Policy, *Agricultural Policy in an Affluent Society*, pp. 1-21, New York: W.W. Norton & Company, Inc., 1969.

12. Shaffer, James Duncan, "On Institutional Obsolesence and Innovation-Background for Professional Dialogue on Public Policy," *Amer. J. of Agr. Econ.*, 51: pp. 245-267, 1969.

13. Strickland, P. Leo, O. L. Walker, and W. A. Halbrook, *Income Potentials from Beef Cattle Farming, Eastern Prairies of Oklahoma*, Oklahoma State Univ. Agr. Exp. Sta. Bul. B-655, 1968.

14. Tweeten, Luther G., *Economic Factors Affecting Farm Policy in the 1970's*, Memo, Dept. of Agri. Econ., Oklahoma State University, 1969.

15. Tweeten, Luther G., " Emerging Goals and Values for Rural People in an Urban-Industrial Society," *Food Goals, Future Structural Changes, and Agricultural Policy: A National Basebook*, pp. 163-194, Ames, Iowa: Iowa State University Press, 1969.

16. U.S. Department of Agriculture, *Farm Income: State Estimates*, 1948-68; Supplement to July 1969 Farm Income Situation, FIS 214, August 1969.

17. _____, *Cotton: Supply, Demand and Farm Resource Use*, Southern Coop. Ser. Bul. 110, Arkansas Agricultural Experiment Station, Nov. 1966.

18. _____, *Resource Requirements for $5,000 Operator's Income in Selected Cotton-Producing Areas of the South*, Southern Coop. Ser. Bul. 140, S.C. Agr. Exp. Sta., 1968.