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AGRICULTURAL EXTENSION FOR SMALL FARMERS

by

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Ben Stavis*

September, 1979

Can better agricultural extension programs help reduce world poverty? This paper answers with a very qualified yes. Agricultural extension programs are attractive to alleviate poverty because they can help increase food production, which is needed by the poor; they can increase rural income by improving productivity of smaller farmers; they can (but not always do) expand demand for farm labor and thereby benefit landless laborers; they can be useful in a general improvement of rural living conditions; and they can, in theory, be targeted on the needs of specific groups in specific areas.

At the same time the benefits of extension programs are broader than directly alleviating poverty. They can provide agricultural products for urban needs and for export to raise foreign trade; they can increase profits and power for rural elites, and assure stable employment for bureaucrats; they also can generate well defined projects for foreign donors. Extension offers to make these changes without violence and without requiring extensive

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asset redistribution. For all these reasons, extension systems are politically attractive, and will continue to receive broad support, even if they do not do not deliver on all these promises.

This optimistic view of extension is based on a body of literature which presumes that all (or at least most) of the innovations suggested to a farmer are in his interest, and that the obstacles to diffusion of these innovations are in the farmer's ignorance or psychology or in the mode of communication.[1] From this presumption comes the hope that improving the mode of communication can strongly influence the rate of adoption.

While this paper acknowledges the importance of the communication process per se, it places more emphasis on the structural context through which the innovations are selected and communicated. This means that the paper emphasizes the mechanisms of control over the extension system, and treats as an empirical issue the question of whose interests are actually served by a proposed innovation. It is hoped that by calling attention to the wide range of economic, political, sociological and technical factors which influence the functioning and results of an extension program, this paper will prove relevant in efforts to develop or modify extension programs to better serve small farmers and rural poor.

The first section of this paper examines some definitional problems with the concept of extension and reviews some of the historical background. The second part explores methodological problems in making clear-cut assessments of extension activities. The third section indicates why extension programs do not always help the rural poor. The fourth section

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[1] Everett Rogers, with F. Floyd Shoemaker, Communication of Innovations (New York: The Free Press, 1971); J. Paul Leagans, "Extension Education and Modernization," in J. Paul Leagans and Charles P. Loomis, eds., Behavioral Change in Agriculture (Ithaca: Cornell University Press, 1971), pp. 101-147; A.T. Mosher, An Introduction to Agricultural Extension. (New York: Agricultural Development Council, 1978).

explores ways of designing extension to meet more directly the needs of small farmers. Administrative systems which place some powers at the central level and others at the local level, which give power to groupings of farmers, and which assure more feedback from farmers to researchers seem better. The fifth section highlights the role of group organization in facilitating extension programs. A concluding section summarizes the argument and suggests pilot projects to give the generalizations more concrete form adapted to specific conditions.

A. Definitions and Background of Extension Activities

A wide range of extension programs have emerged. Some of the more common will be listed here, simply to indicate the type of programs that will be analyzed late in the paper.

1. Conventional Extension. A conventional extension program includes personal on-farm visits by extension agents to (usually larger progressive) farmers. These farmers may adopt suggested techniques and provide demonstration farms; or the agents themselves may cultivate demonstration plots.

2. Training and Visit Extension. Extension agents may receive regular fortnightly training, and then come to villages on a regular schedule to give groups of "contact farmers" specific recommendations on cultural practices.

3. Model Farmer. Village groups can elect representatives (a "model farmer") to attend weekly or fortnightly training programs at some administrative center. The model farmer is then obligated (in theory) to report back to the group what he learned at the training program.

4. Farmer Training Programs. Training programs can be developed for various time periods. During the dry slack season it might be for a few weeks or more. At busier times, training would be limited to a few days. In other cases, farmer training centers can provide training throughout a whole agricultural year to farmers who reside at campus-like centers.

5. Mass Communication. Radio programs can offer farmer information. Demonstration can be conducted at market places, fairs, etc.

6. Models. Innovative progressive individuals and villages can be identified and used as models. Their successes can be highlighted in media

and in large meetings, and others can be transported to examine their fields and villages. This approach highlights farmer-to-farmer exchange.

7. Market Processes of Extension. Farmers often obtain some inputs for agricultural innovations (seeds, fertilizer, tools, chemicals, etc.) through regular commercial networks, including stores or merchants at periodic markets. With the inputs can come information on how to use them. Various programs can improve the capacity of this system to diffuse material and information.

8. Para-statal Corporation. A para-statal corporation can supply inputs (and usually credit to buy them) through a separate bureaucracy. Farmers may be required to sell all production of certain crops to the corporation, to assure repayment of inputs and to provide state procurement of desired commodities. Field agents responsible to the corporation can give instructions to farmers.

9. Farmer Controlled Organization. Voluntary associations controlled and financed by farmers have played a valuable role in many countries in identifying innovations and inputs that fill specific farmers needs. Training can be through local meetings of members of the organization.

10. Management Education. Literacy training and basic mathematics education can be stressed to increase a farmer's access to information, and to improve his ability to gauge the value of any innovation. This type of education could be incorporated in normal primary education or in shorter training programs.

This list is not comprehensive or systematic. Various types of programs can be adopted simultaneously and will complement each other. The point here simply is that there is a wide range of potential formats for farmers (and their wives) to obtain knowledge about new agricultural techniques.

The word "extension" is useful because it brings to mind organized activities of conveying (extending) technical information to farmers and others. At the same time, however, the word "extension" also conveys some erroneous implications and obscures some important distinctions.[1] The word extension unfortunately implies that generating knowledge (research) is a very different activity from communicating information. In fact, as will be discussed below, the communication function is integrally related to knowledge creation, as it shapes both the generation and evaluation of hypotheses. Thinking of integrated "learning systems," in which scientists and farmers help each other to learn, is more useful than thinking of separate "research" and "extension" systems.

The word "extension" also implies that the messages to be communicated are selected by one set of actors, and are then conveyed to another set of people. The audience is primarily a passive recipient, whose main option is to accept or reject the message. In fact, however, there

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[1] A detailed semantic analysis of the term extension is available in Paulo Freire, "Extension or Communicating" in Education for Critical Consciousness (New York: Seaberg Press, 1973), pp. 93-97.

can be different types of interactions between the audience (farmer) and the deliverer of the message (extension system). If an agricultural policy is designed to benefit the urban populations, the extension system would select and deliver information, inputs, credit, and market controls to increase production and assure extraction of commodity grain (to assure food supply to urban populations) and cash crops for export (to provide foreign exchange for urban consumption and investment). These needs can frequently be met by the small portion of larger, progressive farmers. The rest of the rural population is irrelevant, except to the extent it is needed to provide labor on plantations, in mines, in urban factories, etc. This approach can be called the "colonial extension system."[1]

A second type of interaction occurs when the system is designed to change the rural values and social structure in a manner determined by forces outside the rural setting. Government leaders may want peasants to modernize, to give up superstitions, to change their patterns of consumption and investments, to change their conditions of health and sanitation, to change the pattern of intergroup relations. The urban leaders may feel such changes will benefit the rural people in the long run, and this may be true; but the ultimate values spring from urban cultures. In a sense this is like a "cultural invasion" of the rural areas by a foreign value system.[2] Such an approach to extension can be called a "rural stimulation system."[3]

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[1]Akhter Hameed Khan, Ten Decades of Rural Development--Lessons from India (East Lansing: Michigan State University, Department of Agricultural Economics, 1978).

[2]Paulo Freire, Education for Critical Consciousness, pp. 111-127.

[3]George Axinn, "Agricultural Research Extension Services and Field Stations," in International Encyclopedia of Higher Education (San Francisco: Jossey-Bass, 1978), p. 243.

A third form of interaction is that the communication system would be designed and organized by farmers themselves to provide the technical information and services for specific problems they encounter. Such a system can be called a "rural development acquisition system."[1]

These different types of communications systems can be seen in the historical evolution of different extension systems.[2] When extension systems were organized in the United States, Japan, Scandinavia, Holland, and elsewhere before the turn of the century, there was little scientific agriculture to extend. Instead, the extension systems were principally communication networks among local groups of farmers, systematizing the identification of superior techniques of advanced farmers and sharing them with other farmers. In the U.S., sometimes businessmen played an active leadership role of these local groups, because they anticipated that agricultural development would expand local markets for farm inputs. These systems were largely controlled and funded by the farmers themselves; extension agents submitted their work plans to farmers' committees for approval. Sometimes agents would not come to a village until a local group had been created.

Although this system was controlled by farmers, government support was crucial. Legislation was needed to give farmers' organizations a legal personality. Government support was also necessary in the training of staff for these extension systems. Staff for this type of system in the U.S. almost invariably came from local farm families; but they were trained at the government supported land grant college system. In this way was generated a cadre of college graduates who were literate, educated, and technically proficient, while at the same time fully familiar with farm activities and essen-

[1] George Axinn, "Agricultural Research Extension Services and Field Stations," in International Encyclopedia of Higher Education (San Francisco: Jossey-Ball, 1978), p. 243.

[2] A comparison of thirteen extension systems is available in George Axinn and Sudhakar Thorat, Modernizing World Agriculture: A Comparative Study of Agricultural Extension Education Systems (New York: Praeger, 1972)

tially of the same culture as their eventual clients. They had to pretensions of superiority over the farmers.[1]

Governments also supported scientific research. As agricultural science advanced, the character of these extension systems also changed. More communications flowed from scientists to farmers. Highly specialized extension personnel was needed to carry these communications. However, this new flow of information was injected to a system which already had farmer participation and control.

In other regions of the world, extension services were created as part of the rural programs of colonial administrators. In the British, French, and Dutch colonies of Africa and Asia, extension programs were designed to provide supplies of desired commodities--indigo, tea, coffee, rubber, cocoa, peanuts, sugar, etc. To fit this need, many research and extension systems were oriented toward a single specific commodity. In many cases these organizations continued after independence to maximize foreign exchange earnings. The British-American Tobacco Company which functioned in China and other places, the Kenya Tea Authority, the Jute Ministry in Bangladesh, the Rubber Research Institute in Malaysia and the crop-specific "operation" or societies for cotton, peanuts, cocoa, coffee, etc. in the Sahelian countries of Africa are all examples of this tendency. These types of parastatal agencies normally have some applied research to determine a suitable "package" to grow the commodity. The extension agencies then distribute the required inputs (seeds, fertilizer, insecticide) and credit to buy them, offer highly detailed field management instructions, and then purchase from the farmers the produce, carefully graded for quality, at a price which normally is fairly low.

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[1] K. Robert Kerr and Robert Crom, "Putting Innovative Technology to Work in Agriculture," Mimeo, Ames, Iowa, May 1979.

These types of extension systems require intensive services. In the Kenya Tea Development Authority, an extension agent serves only 120 farmers; in a tobacco scheme in Tanzania, an agent served 300 to 800 farmers.[1] Mobility is important to deliver services, so agents need to be equipped with motor cycles or bicycles.

These extension systems frequently encourage monocropping of their particular commodity. From the farmer's point of view, this may cause problems because generally the farmer has a very complex, mixed farming system, in which he grows several different cereals, some vegetables, some cash crops, and livestock. The multiplicity of activities reduces risk; moreover each commodity frequently produces byproducts which are inputs into other rural activities. For example, cereal straw is animal fodder; sorghum stalks are building materials; animal manure is fertilizer; legumes build the soil and climb up maize stalks. Unless there are vast changes in the market system, farmers frequently cannot specialize in the particular commodity in which the colonial extension agency is interested.

Colonial extension systems normally require a staff that is literate and fairly highly educated to handle the complex record-keeping inherent in input supplies, credit, marketing, etc. This requirement normally excludes local farmers, who have no access to education, from becoming regular staff in such an organization. Thus the staff will normally be drawn from the urban population, even though these people have only a limited understanding of the rural economy and society. However, local farmers might be employed as laborers or as communicators to give out specific information.

Colonial authorities were also concerned about general rural development to alleviate recurrent famines, which threatened the legitimacy

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[1] Uma Lele, The Design of Rural Development: Lessons from Africa (Baltimore: Johns Hopkins, 1975), p. 67.

and political stability of the colonial system. Thus they showed some interest in land tenure reforms, credit programs and in infrastructure projects which would stabilize production and facilitate transport both of cash crops and famine relief supplies.

Where there were numerous colonial settlers (Kenya, Algeria), the extension services involved some farmer participation. Generally, however, they were closely integrated with the colonial imperatives of taxation and military/administrative control, and these requirements left little room for decentralization or participation. Rather, the extension services in the colonies tended to stress downward communication of information selected to fit the needs and perceptions of colonial administrators and to fit foreign markets.

In the Japanese colonies of Taiwan and Korea, the situation was generally similar, with a wide range of policies to encourage export crops (rice, sugar). However, greater efforts were made to establish farmer participation in local farmer associations, similar to what existed in Japan.

After World War Two, as colonies became independent and as the United States became active in international assistance, there were some changes in agricultural and rural policies, including extension. Countries saw their rural needs more broadly. Not only did they want to produce cash crops; they also wanted broadly based rural development, which would include cultural, social, political, and economic changes. Hence, extension work was transformed to "community development" or "animation rural," both of which presumed widespread community participation. The village was imagined to be a harmonious, integrated community, which could develop holistically. Differences and conflicts between landowners, tenants,

laborers, etc. were downplayed. Some people, such as Wolf Ladejinsky, believed that land tenure reforms in developing countries were necessary to assure equitable and peaceful development, but his ideas were incorporated in only a few peculiar situations (post-war Japan and Taiwan) and did not always work out (Vietnam in the 1950's).[1]

In both theory and practice, these different models of extension cannot be separated from each other and must interact. For the urban sector to get food and cash crops there must be some general social and cultural change and farmer participation. Conversely, for farmers to solve their problems, they need some increases in production and some access to urban scientific and industrial products, culture, and markets. Finally, within the rural sector, there usually are many different groups and interests (following class, caste, or ethnic differences), so there may be complex pressures for change within the rural sector, which can be reinforced by urban linkages. It is usually not the case that a "rural development acquisition system" will be effective or equitable without some external controls, guidelines and support from government.

Given the multiplicity of goals and the interactions that are required, it is common that several different extension systems will be set up in one country--one for food, one for jute, one in a specific region, one to deal with a particular donor's project, etc. Chile in

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[1]Louis Walinsky, ed., Agrarian Reform as Unfinished Business, The Selected Papers of Wolf Ladejinsky (New York: Oxford University Press, 1977).

the 1960's had over a dozen separate extension agencies, and the coordination problems were substantial.[1]

U.S. international programs in extension were based on a partial adaptation of a model of organization which had emerged in the U.S., namely the tripartite system of agricultural research, education and extension, all based on the land-grant college. Many observers in the early post-war years, naively confident of the advances which had already been made in agricultural science research, felt that agricultural extension was the main bottleneck. In 1952 the Director of the U.S. Office of Foreign Agriculture Relations stressed the role of extension:

> In these programs of agricultural technical assistance, the main lines of endeavor are in the three fields of research, resident education, and extension--a triumvirate long established in this country but virtually unknown in many parts of the world. Of these, extension, as we know it, is usually the missing link.[2]

A critical aspect of the U.S. model of extension--namely control over extension by county level farmers' organizations--was not integrated into international assistance for extension programs. The reasons are undoubtedly complex. Perhaps the people involved in international work did not fully understand the significance of local farmer organizations and control in the U.S. and elsewhere; perhaps rulers of recipient countries did not want local farmer organizations for political reasons. Whatever the reason, this trun-

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[1]Marion Brown, "Agricultural 'Extension' in Chile: A Study of Institutional Transplantation," Journal of Developing Areas 4 (January 1970).

[2]John J. Haggerty, "The United States Farmer and the World Around Him," Journal of Farm Economics 34:5 (December 1952), p. 601.

cated version of the U.S. system which was exported abroad was no longer the U.S. system. It was substantially congruent with the pre-war colonial extension systems of British, French, and Dutch administrators in Asia and Africa in its philosophical and structural base.[1]

For the past thirty years, agricultural extension programs have been important components in agricultural development work on most continents. Major programs have been undertaken in Latin America,[2] Asia,[3] and selected African countries. In 1974, various countries were spending about $1.3 billion annually for agricultural extension (not including research or education) to support roughly 320,000 extension workers.[4] (It should be noted that extension work is defined differently in different countries, and some of these "extension workers" include regular field staff of ministries of

[1]Akhter Hameed Khan, Ten Decades of Rural Development.

[2]Excellent reviews of agricultural development and extension work in Latin America are Arthur Mosher, Technical Co-operation in Latin-American Agriculture, and E.B. Rice, Extension in The Andes (Cambridge: MIT Press, 1974).

[3]A succinct statement of agricultural extension work in the South Asian context is Akhter Hameed Khan, Ten Decades of Rural Development.

[4]James Boyce and Robert Evenson, Agricultural Research and Extension Programs (N.Y.: Agricultural Development Council, 1975), pp. 5, 32-36.

agriculture, and are not limited to people communicating technical information.) About 30 percent ($89 million) of ongoing US AID projects goes for agricultural extension activities incorporated in larger projects.[1]

This is a sensible time to review some of the experiences in agricultural extension. After several decades of development efforts, developing countries and development assistance agencies are now far more aware of the difficulty and necessity both to increase food and agricultural production and to assure equity in distribution of benefits. Substantial experience has been accumulated in agricultural extension. The challenge now is to design extension systems which are not extrapolations of the needs and experiences of developed countries or of the interests of bureaucracies and urban residents of developing countries, but which reflect the needs, aspirations and concrete conditions of the developing countries and in particular their rural poor.

B. Methodological Problems in Evaluating Extension Programs

Over the past decades, there has been substantial development in world agriculture. Crops and technology have changed, production has grown, rural relationships have become commercialized. Poverty, however, remains and may be increasing. What is the role of agricultural extension activities in these changes? Do they deliver on their promises to improve production and welfare? This

[1] Delbert Myren, "Agricultural Extension: AID Experience, Present Involvement and Some Unresolved Issues," AID mimeo, 1976.

turns out to be a very difficult question.[1] Rural development requires a complex combination of suitable conditions--seeds, fertilizer, pest control, water management, roads, transportation, markets, price incentives, credit, security, fair tenure conditions, consumer goods, local organizations, effective administration, access to a fair judicial system, a set of values and social relations that encourage change, and technical knowledge.[2]

Extension services can easily improve the knowledge factor, but it is rare that this by itself (or any other single factor by itself) can make a dramatic increase in welfare, much less production. Moreover, the payoff of extension is closely related to the specific qualities of the technology that is being popularized. Energetically extending technologies which are no better than traditional ones is not beneficial and is not only a waste of money but can be detrimental because efforts at modernization will be discredited. Likewise extending high yield varieties does little good if fertilizer and pesticides (and credit to buy them) are unavailable, or if timely irrigation cannot be provided. Nor will many farmers benefit

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[1] Excellent surveys of the issues involved in evaluating extension programs are available in Robert Chambers, Two Frontiers in Rural Management: Agricultural Extension and Managing the Exploitation of Communal Natural Resources (Sussex: Institute of Development Studies, 1975), pp. 2-4; and E.B. Rice, Extension in the Andes, esp. pp. 161-166.

[2] Excellent statements concerning the wide range of factors which are necessary to "get agriculture moving" can be found in the writings of Arthur Mosher, Technical Cooperation; Getting Agriculture Moving (New York: Praeger, 1966); and Creating a Progressive Rural Structure (New York: Agricultural Development Council, 1969).

if land tenure relations and/or credit and marketing patterns are highly exploitative, as was apparent in the KADU project of Ethiopia.[1]

Even if modern inputs are available and farmers are convinced (or assisted) by extension agents to adopt them, adoption may not make economic sense. A careful analysis of India's Intensive Agriculture Districts Program (IADP) in the early 1960's shows that it was effective in raising farmers' production because they used new inputs. However, the actual factor productivity (i.e., efficiency in using resources) of the farmers was unchanged. To increase factor productivity, the authors of this study believe investments in research systems normally have a higher payoff than investments in extension systems.[2]

In gauging whether or not the new technology is superior, attention must be paid to the question of risk avoidance. Highly productive agricultural technologies often are riskier. They need the right amount and timing of rainfall/irrigation, and are more vulnerable to insects and diseases. Because of the high cost of inputs, their profitability is more dependent on market prices and access, which may fluctuate. For subsistence peasants on the edge of survival, risks of these types are extremely serious. A large drop in production may force sale of all assets, acceptance of virtual slavery to obtain food, dissolution of the family, and eventual starvation. Thus the marginal peasant is quite rational when he rejects risky technology. The definition of technical superiority should include this question of risk avoidance.

[1] John Cohen, "Effects of Green Revolution Strategies on Tenants and Small-scale Landowners in the Chilalo Region of Ethiopia," The Journal of Developing Areas 9 (April 1975), p. 335-358.

[2] Rakesh Mohan and Robert Evenson, "The Intensive Agricultural Districts Programme in India: A New Evaluation," Journal of Development Studies 11:3 (April 1975), pp. 148-150.

In cases where the new technology clearly is novel and sensible and when complementary inputs are available, extension can have a stunning impact. This seems particularly true with hybrid seeds. In one region of Kenya, hybrid maize was popularized in the mid-1960's. In 1965, 5,000 demonstration plots were set up, and 28 percent of the farmers visited one. Over 35 percent of farmers first heard about hybrid maize from extension agents. (Almost 45 percent heard from friends or neighbors.)[1] Extension programs have had success with hybrid maize in the U.S.,[2] and more recently with hybrid rice in China.[3]

Evaluation of extension programs is complicated by the fact that extension agents are not the only source of knowledge for farmers, and frequently they are only a marginal source. Farmers get information from friends and relatives, from skilled local farmers, from merchants and salesmen, etc. This information network, which might be called a "spontaneous extension system,"[4] is often very efficient in some social environments. Historically the diffusion of new crops around the world--including maize and potatoes from the Western Hemisphere to Europe and Asia, early maturing varieties of rice in Asia, numerous cash crops (sugar, indigo, opium, etc.)--has been quite rapid, and has not required formal extension services.[5] Early

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[1]John Gerhart, "The Diffusion of Hybrid Maize in Western Kenya," (Mexico. D.F.:CIMMYT, 1975), p. 9.

[2]Zvi Griliches, "Research Costs and Social Returns: Hybrid Corn and Related Innovations," Journal of Political Economy, October 1958.

[3]"Some Problems on the Development of Hybrid Rice," Scientia Agricultura Sinica, Feb., 1978. Available in JPRS 71, 717, PRC Agriculture no. 3., p. 1-18.

[4]This phrase is suggested by Michel Cernea.

[5]V. W. Ruttan and Yujiro Hayami, "Technology Transfer and Agricultural Development, Technology and Culture 14:2 (April 1973), p. 120.

exploration and trade missions carried seeds with them, and often had botanists to identify useful new crops; but extension agents were not required.

Often, however, an extension system can make a crucial initial input into the spontaneous extension system. It can play a catalytic role in energizing the spontaneous extension system. Moreover, in some social environments, spontaneous extension works poorly. When a village (or country) is divided by class, religion, caste, linguistic, factional cleavages, or ecological factors (mountains, flooded fields), exchange of farming information between families may be very limited. Formal extension programs could have a major impact in such a situation. Unfortunately, such places sometimes receive less extension contact because the extension agents find it less comfortable to work in such a social environment.[1]

Spontaneous extension may also be slow in a village that has such strong cultural homogeneity and unity that no one is willing to deviate from the norm and try an innovation. An innovator may risk becoming socially isolated, and may even be accused of witchcraft.[2] In Java, one journalist writes, "What the Javanese discovered is what every anthropologist (but almost no development economist) knows: The most potent force in every village is not government fiat but rather it is a fear of the neighbors' gossipy censure or 'What will people say?'"[3] In such a case, spontaneous

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[1]This experience was revealed in careful studies of two Indian villages. J.P. Hrabovsky and T.K. Moulik, "Economic and Social Factors Associated with the Adoption of an Improved Implement: A Study of the Olpad Thresher in India," Agricultural Development Council paper, 1967, pp. 8-9.

[2]Lele, p. 76.

[3]Richard Critchfield, "More Food, Fewer Months, Java Confounds the Doomsayers," The Christian Science Monitor, Nov. 24, 1978, p. B.12.

diffusion from a single innovator may be negligible, if a courageous innovator exists at all. However, if such a village begins to change, everyone may change almost simultaneously.

The problem of peasant resistance to change may be frequently overestimated. Peasants may prefer to tell outside observers that recommended innovations are culturally unacceptable rather than go into the complex and controversial details of technical suitability, risk avoidance, suitability of price, availability of consumer goods on which to spend increased cash income, interactions within a delicately balanced farm system, and local land tenure relations. They may not be able to articulate their underlying fear that a particular innovation will undermine the long-term ecological balance of soil, fertility, animals, fish, etc. on which their descendants will depend. They may not want to describe their interest in the maintenance of existing patron-client social relationships, which although exploitative, also provide some economic security and cultural stability. Nor may they want to explain that they see diffusion of a particular innovation (along with its credit and market linkages) to represent penetration into their community by a distrusted political or ethnic group or an exploitative government. They may be suspicious of extension agents who seem to come just before election time.[1] Nor may they be willing to admit resentment of those aggressive, lucky or well-connected enough to get access to new technology, and credit to buy it.[2] It is far easier to tell an outside observer that

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[1]Marion Brown, p. 207.

[2]For a detailed analysis of socio-political problems caused by an attempt to modernize fishing in Java, see Donald Emerson, "Biting the Helping Hand: Modernization and Violence in an Indonesian Fishing Community," Land Tenure Center Newsletter, No. 5 (January-March, 1976).

the innovation simply is "culturally unacceptable." Simultaneously, outside observers may have their own reasons for being satisfied with an answer of cultural unacceptability, and may fail to probe additional factors.

Research on extension systems does show that farmers who have extensive contact with extension agents are more likely to adopt new farming methods.[1] Correlation, however, does not prove causation. The larger market-oriented farmer can afford to be more innovative, and is also more likely to seek extension services. The correlation between extension contact and adoption sometimes is highest in cases where an innovation is not particularly profitable.[2] In such cases some farmers are willing to follow (for a brief period, at least) the advice of an extension agent perhaps because he is an effective salesman, perhaps to endear themselves to the extension agent and obtain more profitable favors in the future.[3] In at least one case, farmers with more extension contact had lower yields, although the direction of causation is not clear.[4]

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[1]Everett Rogers, Joseph Ashcroft, and Niels Roling, Diffusion of Innovations in Brazil, Nigeria, and India (East Lansing: Michigan State University, 1970).

[2]This has been demonstrated clearly with data on short-term adoption rates of fertilizer in different regions of Ethiopia. Bisrat Aklilu, "Technological Change in Subsistance Agriculture: The Adoption and Diffusion of Fertilizer in Ethiopia's Minimum Package Areas," Ph.D. dissertation, Boston University, 1976, pp. 233-234.

[3]David Leonard points out that extension agents and some farmers can have patron-client relationships. The agent needs a farmer who will try almost anything so that he can assure superiors that he is managing to arrange some adoption. For the farmer, doing the favor of adopting new techniques for the agent may assure access to credits, market information, educational opportunities, etc. which may have long-term payoffs far greater than the losses incurred due to unprofitable innovations.

[4]Uma Lele, The Design of Rural Development, p. 71.

How should such extension success be evaluated? Must extension services be considered effective when they result in farmer adoption of new techniques, even if these techniques are not profitable?

This problem points to further complications in evaluation of extension. Perhaps the goal of extension is not so much the popularization of a particular agricultural technique, but rather the spread of a particular mode of analysis so that the farmer can more accurately evaluate his experiments. Record keeping, rigorous cost accounting, and statistical analysis give the farmer more accuracy in selecting and changing continuously improved techniques over long periods of time. Certainly this approach to analyzing farm innovation is far more useful than simply convincing farmers blindly to obey a suggestion to buy for single season. It clearly is far more difficult to measure the long-term payoff of this new analytical approach than to estimate the profitability of a single enlarged sugar crop. The long-term consequences of blind obedience, however, both economically and politically, can be most severe.

The final and most serious problem of evaluating extension systems is that the systems and their results are inevitably, intimately and inextricably tied to the entire political, economic and social order. The question of who benefits from an extension system is in the final analysis shaped by patterns of distribution within the family, which are shaped by broad cultural factors; by the interaction within villages, which is closely related to land tenure relations; by urban-rural interactions as reflected in price, tax, investment and migration patterns; and by international market structures.

Extension systems should not be credited or blamed for political, economic, social, or technical factors beyond their control. It is unfair to blame the U.S. or Indian extension systems alone for the failure of Black sharecroppers or landless laborers to benefit from development. Likewise, it is erroneous to give excessive plaudits to the U.S. or Kenyan extension systems without acknowledging decades of agricultural research that generated superior techniques that could be extended.[1] Nor can one expect an extension service to have more than marginal impact on prices of commodities traded internationally or controlled domestically. Extension systems will generally reflect and perhaps intensify the existing order of economic and social relations, whatever thay may be.

Where society is more egalitarian, extension can reinforce this tendency, as in China, Taiwan, and Israel and elsewhere. In China, collective ownership of land assures that the benefits of rural development are shared reasonably equally. Moreover, collective ownership of land establishes local organization, which can contribute personnel, funds, and skills to extension work. The extension system in China works closely with rural local organizations, is substantially staffed by farmers and financed by them and is essentially merged with the research system. Professional specialization and status are sharply attenuated.[2] Both the role played by rural local organization and the support from the center are common features of other

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[1]David Leonard Points out: "One of the reasons for the strength of Kenya's farming sector has been the quality of its research complex." Reaching the Peasant Farmer, Organization Theory and Practice in Kenya (Chicago, University of Chicago Press, 1977), p. 246.

[2]Benedict Stavis, "Agricultural Research and Extension Services in China," World Development 6:5 (May 1978) pp. 631-645.

successful extension systems. However, it is clear that the consequences of extension in China are more related to basic political factors than to the specific characteristics of the extension system.

C. Potential Problems in Extension Systems

It is reckless to make generalizations about extension programs, considering the wide diversity of experiences. Nevertheless, three types of problems sometimes limit the ability of an extension system to serve the needs of the rural poor. The first problem is that extension systems can be directed by an urban-based political system to benefit urban interests. Secondly, for a variety of reasons, extension agents may work primarily with the rural elite. Thirdly, extension systems create their own bureaucracies which can generate their own bureaucratic and personal interests. These factors mean that the actual results of many extension systems, regardless of the rhetoric, may be other than helping the rural poor.

1. Urban Control. Agricultural extension systems usually are not controlled by farmers themselves. George Axinn notes that only 13 out of 78 extension systems around the world involve some funding from farmers or local government.[1] Instead, extension systems are funded and are controlled entirely by governments, which are often obligated to give priority to urban political forces. Frequently, they have specific, narrow goals, production of cash crops, such as cotton, peanuts, cocoa, coffee, rubber, etc. to obtain foreign exchange for urban luxury consumer

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[1]George Axinn, "Agricultural Research, Extension Services, and Field Stations," in International Encyclopedia of Higher Education (San Francisco: Jossey-Bass, 1978), p. 243.

good or for financing capital imports. Also they want higher food production to reduce the pressure on foreign exchange caused by food imports. Extension services may be closely related to monopolistic marketing structures, which assure that the benefits of agricultural growth goes to the trader or consumer, in the domestic urban areas or abroad.

This approach usually emphasizes generating marketable surpluses of grain or cash crops by providing industrial inputs, so this type of extension system normally concentrates its efforts in places close to roads or other transportation infrastructure. People living far away from roads get less attention.

Moreover, the innovation suggested by the extension system may not fit easily into the farmer's complex farming system. The farmers may perceive different needs. Nevertheless, if the innovation can be used and if access to markets is adequate, farmers may welcome opportunities to sell profitable cash crops.

An extension system that is successful in spreading cash crops will not necessarily bring direct benefits to the rural poor. Indeed, some economic planners may believe cash crops can be spread by displacing small farmers and tenants, so that larger, technically sophisticated, financially strong farms can emerge; and so that a flexible, mobile, quiescent rural labor force can be created for plantation labor and for mines, and factories as well. In other cases, however, small-holder cultivation of cash crops is encouraged. If the case crop is labor intensive and has a high value, cash crop cultivation may offer the small farmer (with high labor to land ratio) his best chance for a higher income.

2. Rural Elites. These urban-rural categories of analysis must be supplemented with the dimension of class. It is not unusual

for urban classes to ally with the narrow rural elites.[1] In such a situation, most of the benefits of development will go to the cities, but the rural elites will also prosper. The rural poor will remain clients of the rural elites, and are tempted to migrate into the urban labor force.

Certain features in the methodology of extension work are congruent with, and reinforce, such a political alliance. Analysis of the activities of extension workers in many countries shows that they tend to focus attention on the few "progressive farmers," who have adequate resources to afford and risk new technologies, and who are interested in selling (and buying) more. Such an empirical finding is often converted to a prescription. It is presumed (sometimes accurately) that knowledge will "spread" from these "community leaders" to other farmers, and that the benefits will eventually "trickle down" to the poor, through more efficient technology, more jobs, or lower food prices. (There is, however, a risk. The "progressive farmer" may, for ethnic, cultural, psychological, or historical reasons, turn out to be someone who is not trusted or respected in the community. In such a case, there may be very little spread affect.)[2]

From an administrative point of view, it is convenient for extension agents to work with large farmers. To have an innovation utilized on 100 hectares of land, it is far easier to convince one farmer with 100 hectares than to convince 100 farmers with only one hectare. If the extension agent is judged by his success in extending an innovation over a wide area, he will not waste his time with small farmers. In addition, the extension agent, often coming

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[1]Michael Lipton, "Towards a Theory of Land Reform," in David Lehmann, ed., Agrarian Reform and Agrarian Reformism (London: Faber and Faber, 1974), pp. 311-312.

[2]Everett M. Rogers, with F. Floyd Shoemaker, Communication of Innovations (New York: Free Press, 1971), p. 5.

from an urban or wealthy rural background himself, will find it far more pleasant dealing with the large farmers, who can provide food and drink and who is likely to be literate (or have a literate son) and to be interested in farming innovations. Moreover, due to the political power of the larger farmers, it is likely that the very technology developed in the research system will be better suited to the needs of larger farmers,[1] making it even more rational for extension agents to orient their energies to large farmers.

In a broad sense, the village elite generally serves as the linkage point between the village and the government for many functions--police, tax collection, military recruitment, political mobilization. It is normal that the rural elite be perceived by government, extension agents, the rural poor and the rural elite themselves as the logical way for extension agents to enter the village economy and society. Thus, both the philosophy underlying some extension methods, the administrative practices of most extension systems and technological factors match precisely the needs of a small minority of "progressive farmers," who generally own more land.

Not surprisingly, the empirical research in most countries shows that a small minority of farmers do get the bulk of extension services. In one survey in Kenya, progressive farmers (who constitute only 10 percent of all farmers) received 57 percent of the extension visits. The 47 percent of farmers considered non-

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[1] Rene Benalcazar R., "New Techniques, Agricultural Extension Services and Credit Facilities as Instruments of Economic Development, with Special Reference to Latin America," in Theoda Dams and Kenneth Hunt, ed., Decision Making and Agriculture (Lincoln:University of Nebraska Press, 1978), p. 521-22.

innovative got only 6 percent of the extension visits.[1] Other surveys in Kenya agree.[2] Likewise, even in socialist Tanzania, with strong rhetorical pressures toward equality, one survey showed that 59 percent of wealthy farmers had a high level of extension contact, while only 29 percent of poor farmers had such contacts.[3] In one locality of Northern Nigeria, the local elites had reasonably good knowledge about extension activity, while most farmers had negligable information.[4] Thus, the normal pattern is that extension services concentrate on services for the larger, progressive farmers.

This unequal access to extension services can have different consequences for long term trends in income distribution and social structure, depending on the character of institutions and on the markets. In many countries this tendency of extension to help primarily the rural wealthy reinforces underlying economic, political, and social trends. With profits coming from improved technology, large progressive farmers may buy out their neighbors who are unable to meet the costs of commercial farming, particularly if land ceiling restrictions are lax. Some small farmers, and particularly their sons, may have no choice but to become landless laborers or migrants to cities. Thus a knowledge gap between the rich and poor reinforces an economic gap.[5] These tendencies will

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[1] David Leonard, pp. 125-177.

[2] Joseph Ashcroft, Niels Roling, Joseph Kariuki, and Fred Chege, Extension and the Forgotten Farmer (Wageningen: Afdelingen voor Sociate Wetenschappen aan de Landbouwhogeschool, 1973), p. 31.

[3] James DeVries, "Agricultural Extension and the Development of Ujamaa Villages in Tanzania: Toward a Diological Agricultural Extension Model," Ph.D. dissertation, University of Wisconsin, Madison, 1978, p. 167.

[4] Peter Matlon, "The Size, Distribution, Structure, and Determinants of Personal Income Among Farmers in the North of Nigeria," Cornell Agricultural Economics Ph.D. dissertation, 1977, p. 390.

[5] On next page.

be particularly severe if inputs are "lumpy" (tractors, tube wells) and only the larger farmers can afford them or use them efficiently, or if the total demand for the crop in question is inelastic. In such a situation, when the early adopters of improved technology produce more, the price will drop; the late adopters will get no benefits, and the non-adopter may be hurt by lower prices.

If, however, inputs are divisible (fertilizer, seed) and demand for the commodity is very high and if prices will not be depressed by increased production, the late adopters (who generally are smaller farmers) can get some benefits from the new technology. Indeed the smaller farmers are likely to get most of the benefits if the innovation requires high labor inputs per land area. Such farmers may quickly adopt labor intensive cash crops, vegetable cultivation, animal husbandry, or dairy, if they get access to information, credit and markets. In one locality of Northern Nigeria, it appears that smaller farmers got preferential access to new peanut seeds, although there is the possibility that village elites who made these allocations benefited directly (by switching the seeds and giving poorer farmers bad seeds) or indirectly (by increased political patronage) from them also.[1]

What has extension done for these smaller farmers who are hurt by the expanding power of larger farmers? One subtle analysis of extension in the U.S. maintains that its main contribution has been not to increase their productivity but rather to facilitate

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Prakeash M. Singh and Bella Mody, The Communication Effects Gap: A Field Experiment on Television and Agricultural Ignorance in India," in Everett Rogers, ed., Communication and Development: Critical Perspectives (Beverly Hills: Sage, 1976), p. 83.

[1] Peter Matlon, p. 383.

peaceful social change in the face of overwhelming economic forces. Extension programs obscured for small farmers their long-term inability to compete successfully with larger farmers; they were lulled away from potentially effective political actions which might have restructured markets. They eventually were forced out of business. "By its sincere but futile effort to maintain a rural way of life, Cooperative Extension helped to defuse a potential farmer revolt in the United States. By giving farmers a false hope that adopting new techniques of farming and farm management would preserve their family farms, extension furthered the transformation from a rural to an urban society in a way that avoided violence."[1] A more generous analysis might say that extension agents helped nonviable farmers make the difficult decision to leave farming. A cynical analyst might question whether extension systems have deliberately tried to drive small farmers out of business to maximize profits of large agribusiness corporations.

3. Bureaucratic Interests

Extension systems can employ a large number of people, who naturally have an interest in their own welfare. They view extension as a career, and naturally to a large extent plan their extension activities in a manner most suited to career advancement and most congruent with self-perception of career status. They are often extremely sensitive to the nuances of bureaucratic power and status. Minor differences in procedures for computing travel

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[1]Robert Carlson, "Cooperative Extension: A Historical Assessment," Journal of Extension, 8:3 (Fall 1970), p. 14.

allowances can have an important impact on personnel behavior. In many circumstances, extension agents are regular government employees with civil service and pension rights, and this inevitably shapes their behavior. They may be attracted to government service because of its security and pension. The normal functioning of government will influence the behavior of extension workers; if irresponsibility, lack of performance, and petty corruption are not controlled in other ministries, there is no reason to expect the extension department to function differently. If college graduates anticipate getting government work with a pension, it may be naive to expect them to work for non-governmental agencies (e.g., private cooperatives) without pension rights. All such factors inevitably affect the functioning of an extension system and enhance or reduce its ability to serve the needs of rural poor.

In many cases, especially when extension services are first established, their young cadres may radiate a distinctive enthusiastic spirit inspired by a nationalist yearning to modernize their country. For example, one observer described extension agents in Peru in the early 1950s in glowing terms: "The agents...are well-trained, honest, responsible, very much interested in their jobs and in getting results. They show sympathy and understanding for the people they are trying to help."[1] Similar comments might have been made about the staff of Ethiopia's Extension and Project Implementation Department (EPID) in the early 1970's.

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[1]Anibal Buitron, cited in Arthur Mosher, Technical Cooperation, pp. 66-67.

However, in some (older?) extension services, the personnel become somewhat elitist and isolated from farmers. These tendencies have been described graphically in Venezuela:

> The agents insist on being addressed as "doctor."...[They] never leave their jeeps to visit the houses but instead beckon members of the household to their car... The seemingly foppish cleaning of town shoes with a paper handerchief to remove the mere suggestion of mud and the taking of fruit without asking are other perceived manipulations of the extension agents' sense of superiority.[1]

Similarly, in Colombia, "agents wore ties and suits when working in the field and refused to eat or talk with their peasant clients."[2] The actual extent to which such behavior is associated with less advice and difficulties in communication with farmers is, of course, an empirical question meriting careful study; but in any event there is a consensus of opinion that farmers will not trust this advice, regardless of its accuracy.[3]

D. Issues in Improving Extension Services

Despite the difficulty in evaluating extension systems, and despite widespread problems, political support remains for extension programs, and they are likely to be maintained and expanded. Thus the practical challenge is not to gauge whether extension works in an overall sense or to list the problems, but rather to make particular

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[1] R. Chesterfield and K. Ruddle, "Nondeliberate Education: Venezuelan Campesino Perceptions of Extension Agents and their Message," in T.J. LaBelle, ed., Educational Alternative in Latin America (Los Angeles: University of California Latin American Center, 1975), p. 153. Cited in Dennis Rondinelli and Kenneth Ruddle, Urbanization and Rural Development, A Spatial Policy for Equitable Growth (New York: Praeger, 1978), p. 92.

[2] Allen Jedlicka, Organization for Rural Development (New York: Praeger, 1977), p. 23.

[3] Rogers argues that communication will be better between people who are similar, and calls this the principle of homophily. Everett Rogers and F. Floyd Shoemaker, Communication of Innovations (New York: Free Press, 1971), p. 210.

suggestions that can maximize the value of extension systems which will exist anyway.

Just as water obeys laws of gravity and flows downhill, agricultural extension systems naturally tend to help those who control the system. Thus the crucial question is what forces control the agricultural extension system. Control over extension systems can be exercised at the center, through rigid bureaucratic and personnel regulations, or it can be deconcentrated to agents stationed in the field but responsible to and closely monitored by the center. Both of these approaches will be considered "centralized systems." Alternatively, control can be decentralized to local agencies, who can hire and fund personnel and specify program ends. This approach will be called a "decentralized system."

For extension to help the rural poor is analogous to water flowing uphill. Water does, of course, flow uphill, when a pump applied pressure or suction, and when pipes confine its flow. Similarly, it is possible for an extension service to help the poor. It must be pushed by strong centralized management and pulled by rural local organizations with real power. Just as pumps can be turned off or break and pipes can clog or rust, however, administrative pressure and local organizations may cease to be effective after a period of time. A complex, delicate balance that somehow combines the

advantages of centralized administration with those of local control is needed.[1]

From the point of the rural poor, the critical question is at what administrative level--the central political system or the local social system--do they have greater representation and power. It is at that level that power over an extension system should be stressed, if it is to best serve the poor.

1. Centralized Management

Some writers on extension in developing nations emphasize the potential benefits which can be achieved for more rigorous, centralized management in which extension agents are given narrow specific tasks and rewarded accordingly. They argue that central control can compel extension agents to act in a desired manner.

The first step in this requires limiting the tasks that are given to the extension agent. Because he is often a government's primary contact with farmers, the extension agent has multiple tasks. He is saddled with responsibilities for policing, debt collecting, data collection, general reporting, and input supply and rationing, in addition to giving technical advice. In time of national disaster, the extension service may be given the task of distributing food or other types of relief and emergency equipment. Each

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[1]The importance of rural local organizations is highlighted by Norman Uphoff and Milton Esman, Local Organization for Rural Development in Asia (Ithaca: Cornell Rural Development Committee, 1974).

of these roles requires a different style of operation (disciplinary, predatory, clerical, commercial, innovative); a different relationship with farmers (hostile, passive, servicing, advisory); and different patterns of movement (extensive field travel or regular presence in headquarters).[1] There are, of course, economies to be secured by having a single agent perform all these tasks. At the same time, it is unlikely that he will be able to perform any of the tasks particularly well. Robert Chambers points out:

> The time and energy of extension staff at the lowest levels tend to be regarded as infinitely elastic; in fact they are, and should be treated as, finite and scarce.[2]

Not only will he lack time to do everything; he will find that the work style and pattern of relationship necessary for one responsibility will preclude effective execution of other responsibilities. Moreover, because the demands on him are contradictory and priorities are not spelled out, it is far easier for extension agents to shirk all responsibility and do little work. The tendency to reduce work loads may well be reinforced by work group loyalties of junior staff, hostile to high level staff with authority.[3] Thus, for a variety of reasons, a clear choice should be made concerning the prime responsibilities of the extension agents. This seems a simple suggestion, but in reality such clarity of purpose is rare in Africa, among other places.[4]

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[1] Robert Chambers, Two Frontiers in Rural Management, p. 5.

[2] Ibid.

[3] Leonard, pp. 64-80.

[4] H.S. Belay, "A Comparative Analysis of Agricultural Extension Systems," Journal of the Association for the Advancement of Agricultural Sciences in Africa 2 (Supplement 2, Papers Presented to the Conference on Agricultural Research and Production in Africa, September 1971) (June 1975), p. 319

Daniel Benor proposes that the prime (or sole) responsibility of the extension agent be conveying agricultural information. "It is important...that...the agents are not diverted from their task of advising farmers by any conflicting demands to perform other services." Other agencies should perform other tasks.[1] The extension agent should be able to focus attention exclusively on bringing information to farmers. Arthur Mosher, however, suggests other functions are important, and that there is an evolution of extension systems in which the function changes. Extension agents function first as "encouraging companion" for local innovators; then as a source of technical information; then as a contact person to help sophisticated farmers get information from subject matter specialists; then as a group organizer to facilitate discussions about the politico-economic framework that affects agriculture; and finally, as a stimulator of general development.[2] Whether or not Mosher's categories are precisely accurate and inevitable in a system being designed for the rural poor, it is certainly correct that there are a variety of extension needs, and these needs are always changing as development proceeds. Benor may have accurately gauged the level of development in Turkey and India, and may be correct that farmers there now need information. But this observation should not exclude the possibility that other tasks may be more relevant in other situations.

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[1] Daniel Benor and James Harrison, Agricultural Extension, The Training and Visit System (Washington, D.C.: The World Bank, 1977), pp. viii, 11.

[2] A.T. Mosher, "A Note on the Evolutionary Role of Extension Work," Land Economics 42:3 (August 1966), pp. 387-389.

The next issue is the selection of target groups on whom extension agents should concentrate their efforts. Indeed, the one attractive feature of a centralized system is the apparent capability to redirect extension services from the normal beneficiaries--the large, progressive farmer--to the small, poorer farmer. Benor proposes that extension agents try to serve all farmers, particularly small farmers. He suggests that each extension agent work directly with six to eight village extension workers, who are government employees. Each of these village extension workers will work with eight groups of farmers (each group involving from 300 to 1,200 families depending on circumstances). In each group, about 10 percent of the farmers (i.e. 30-120) are selected as contact farmers. (Other experiences, mentioned below, highlight advantages of working with smaller groups--under 30 people.) The village extension worker would then have a rigid schedule of visits with each group and its contact farmers once fortnightly, always at the same time (e.g., every other Tuesday). Then, each week one day is available for the village extension worker to receive specialized training from subject matter specialists. Because training and visiting are set according to rigid schedules, the system has been named the "training and visiting system." (The principle of rigidly scheduled visits had been previously utilized by the Kenya Tea Development Authority.)

The contact farmers are not elected by the group of farmers. Rather, they are appointed by the government. In theory, the village extension worker will work in consultation with village leaders to assure that the contact farmers are progressive farmers and are representative of various types and sizes of farmers. Implicit in that practice is the

fear that if villagers were autonomously to elect contact farmers, they might be wealthy farmers, not representative of the average. On the other hand, if there has been no broad discussions in the village about the selection of the contact farmers, then most farmers may be unaware of who the contact farmers are, and will not know to ask them for advice.

The World Bank has utilized this T & V system in Turkey, and in different states in India (these projects have a total cost of $141.5 million, of which the Bank has loaned $70.7 million), and has issued a detailed paper suggesting how to evaluate these projects.[1] Benor reports these projects helped increase yields over 50 percent from 1.3-1.7 tons to 2-3 tons per hectare.

It should be mentioned that some writers on extension suggest not trying to reach all farmers. In the Latin-American context, one writer suggests that extension agents concentrate their efforts on medium-sized farmers. The large farmers do not need help, and the small farmers are too numerous and weak for the capacities of existing extension services.[2] In India, specialized agencies have been created for specific target groups, the Small Farmer Development Agency (SFDA) and the Marginal Farmers and Agricultural Laborers Development Agency (MFALDA). These agencies help small farmers and landless laborers establish enterprises that need little access to land, such as fruit and vegetable or dairy production, veterinary services, marketing assistance, etc.

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[1] Michael Cernea and Benjamin Tepping, A System for Monitoring and Evaluating Agricultural Extension Projects (Washington: World Bank, 1977). Details on the Bank loans for these projects are on p. 85.

[2] Rene Benalcazar R., "New Techniques, Extension Services ...," p. 523.

In the U.S., on the other hand, in recent years some people argue that most farmers have enough sources of technical information, and that there is little justification for having major public programs exclusively oriented to serving a small clientele of successful farmers. Instead, they suggest that a new direction for extension could be general adult nonformal education and assistance, particularly for poverty-stricken people in both rural and urban areas.[1] Others suggest that extension agents work with small businessmen in general.

Crucial to making an extension system function effectively to meet whatever goals are established for it are the incentives which shape the behavior of the agents. Leonard believes that the manner in which promotions are made within an extension service is one of the most critical incentives.

But what criteria are to be used for making promotions? Senority? Number of adopters? Area of adoption? Quantities of inputs distributed? Subjective feelings of farmers about the value of the extension agent? Moreover, how can this performance be monitored? Will it depend on internal reporting? If so, are these internal statistics likely to be distorted? Considerable thought must be given to structuring the career ladder and internal incentives of the extension system so that the induced behavior is consistent with desired policy outcomes. As general guidelines, Leonard suggests that efforts be made to hire only those who would eventually be capable of promotion; that at least 25 percent of employees receive substantial promotions within 10-15 years; and that promotions and upgrading

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[1] Paul Miller, The Cooperative Extension Service: Paradoxical Servant - The Rural Precedent in Continuing Education (Syracuse: Syracuse University Publications in Continuing Education, 1973).

be based primarily on job performance.

An awkward contradiction exists with regard to salary scales for extension agents. On the one hand, higher salaries might seem to be a logical incentive for more diligent performance and to attract better trained personnel. On the other hand, in some situations if there are no countervailing pressures, such an approach can result in attracting highly educated urbanites and thereby increase the economic and cultural gap between farmer and extension agent. This can impede communication.[1]

There is a similar contradiction with regard to the training of extension agents. In the absence of effective management and suitable incentives, more education can be counter-productive. Leonard found that there is an optimal amount of training; extension agents with more training may expect more promotions than realistic, and become frustrated and less effective.[2] Indeed, in some projects in Africa, farmers and farmers' sons have been given only a few weeks of training and have been effective in communicating specific information to other farmers.

While there are advantages in a centralized extension agency, there are inevitable problems as well. No matter how well it is managed, it is difficult to be sensitive to the extreme diversity of natural environments. Thus, from this point of view, the risk of the training and visit system or of employing people with a few week's training is that despite short-term successes, these approaches may not encourage an inherent capacity to learn or respond to changing requirements over space and time. This may not be a serious problem in the plains of India

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[1]Uma Lele, p. 72.

[2]Leonard, pp. 121-22.

and Bangladesh, but might be absolutely critical in the environment of mountainous Nepal.

Moreover, it is likely that a centralized extension system may be dominated by urban and bureaucratic political interests, which may not coincide with farmers' interests. If promotions are determined at the center, it is almost inevitable that better, more ambitious agents will gravitate to the center in their orientation, work, and eventual domicile, and will not work directly with farmers.

One factor which influences the suitability of a centralized extension system involves the characteristics of the crops or technology in question. Centralized systems may be well suited to a crop for which research is reasonably advanced, which is highly sensitive to field management, and whose quality is very important for marketing requirements. Tea and tobacco are major examples, and in different parts of the world highly centralized, intense, expensive extension systems are oriented towards such single crops. (In Kenya, tea growers have one extension agent for 120 farmers, and extension services cost $18 per farmer.[1]) Centralization may also be important in commodities where timeliness in marketing and processing are critical, such as palm oil and fresh milk.

A good example of the potential value and problems inherent in centralized, targeted extension programs can be seen in the experience of India. From about 1969 through the early 1970's, efforts were made to target integrated services to small farmers through the Small

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[1]Uma Lele, p. 64-69.

Farmers' Development Agency (SFDA) and to landless and near landless farmers through the Marginal Farmer and Agricultural Laborer Development Agency (MFALDA). The Programs subsidized banks for credit services to qualifying farmers, and provided inputs and information to expand irrigation, multiple cropping and animal husbandry.

Extensive problems were encountered.[1] Subsidies to banks to encourage them to loan to small farmers were not really able to change the modus operandi of the banks. Farmers sometimes did not believe that the receommended buffalo, cattle, pineapples, etc., were suitable varieties; animal and plant diseases took their tolls. Petty corruption and bureaucratic rigidities continued; bribes and gifts were needed to get eligibility certified, to obtain application forms, to have them processed, to get landlords to take some responsibility for their laborers, to get veterinarians to certify the health of animals, etc. By the time these direct expenses were added to indirect expenses of travel, an overnight stay near a government office, and income foregone during the time spent on such processes, the potential profit for the poor farmer from new economic activities was seriously undermined. Administrators and local elites managed to get a large share of the benefits.[2] Finally, despite the intentions of the program, it was not really able to concentrate on the desired target group. Many large farmers were able to participate in the program by dividing their land among children and thus claiming to be small farmers.

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[1] See Biplab Dasgupta, Agrarian Change and the New Technology in India (Geneva: U.N. Research Institute for Social Development, 1977), p. 227-239.

[2] Author's field observations, Andhra Pradesh, January 1976.

Nevertheless, the program had some successes also. Some smaller farmers were able to buy tube wells, and many landless and near landless were able to get into dairying, for which land ownership is not a prerequisite.

2. Decentralization

To guard against the dangers of centralized programs, many writers advocate that extension systems be decentralized and controlled directly by farmers. The logic of the decentralized system is that it will assure that extension programs fit more accurately local needs, perceptions, values, knowledge, and natural conditions. It is less likely to be controlled by urban or bureaucratic needs.

There are several examples of such organizations. In most states of the United States, county level farmers' organizations have a major influence on the hiring, firing, and salaries of county extension agents. In Taiwan, extension agents are hired by township farmers' associations. Their salaries are directly related to the profitability of the farmers' association, and this is somewhat (but not entirely) related to productivity of agriculture in the township.[1] Thus, the agent is presumed to have a strong incentive towards helping to increase local farm productivity. In Finland, township councils control extension work. In mainland China also, people who perform an extension function are hired directly by communes and brigades. In Israel, farmers' representatives make up an advisory board which reviews the annual work plan of the extension system.[2] In all these cases, there may be central guidelines concerning salaries, educational qualifications, etc., but farmers and

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[1] Benedict Stavis, Rural Local Governance and Agricultural Development in Taiwan (Ithaca: Cornell Rural Development Committee, 1974), p. 93.

[2] Raanan Weitz and Arshalom Rokach, Agricultural Development: Planning and Implementation, An Israeli Case Study (New York: Praeger, 1968), pp. 391-392.

local officials can have some influence on hiring, salaries, and programs. More important, it is presumed that social pressure will be placed on extension personnel to serve local needs.

Decentralized systems have their own types of problems. If extension agent's salaries are determined locally, there may be wide, unjustified differences in salary levels, that contribute to rivalry, jealousy, and poor morale. More important, from an equity point of view, it is likely that the wealthy regions will pay their agents more, while the poor regions will pay less; thus the regions which need energetic agents most desperately may be unable to attract the best agents. Both in Taiwan and the U.S., there are strong pressures to reduce local salary differences of extension agents to permit more equality and stability in the career ladder of extension agents.

Another problem with the decentralized system is maintaining high levels of technical competence in the extension agents. Local people may not realize the types of innovations that are possible, and therefore choose extension agents with only limited capabilities. Likewise, extension agents in such a situation may feel obligated to spend all their time visiting farmers, and may fail to reserve some time for continued technical training. In mainland China, the extension system was under central control from 1962 until the early 1970's and it would not be suprising if centralizing influences reemerge in the next few years as China stresses scientific and technical advance.

The most serious problem with decentralization and local farmer control is that it does not fully or automatically solve equity problems and may even aggravate them. If the rural sector is highly

inegalitarian and power is concentrated, it is likely that farmer control will mean control of the extension system by large farmers. Small farmers, tenants, and laborers, may not benefit. In the southern U.S., for example, it is difficult to see how local control over extension by (white) farmers could have helped (black) sharecroppers. Land owners were eager to mechanize cotton and the sharecroppers were forced to migrate. Given the character of local political, judicial, marketing and credit structures, the black sharecroppers could have been protected only with strong, countervailing central pressures.

Analogously, males may use an extension system to extend male control in certain parts of the economy where females had strong claims. Particularly in Africa, woman commonly manage farms and do much of the marketing. In Haiti, too, women are frequently farm managers. However, it is also common that extension systems are staffed and controlled by men, who give inadequate services to the women farmers.[1] Such a system is ineffective at best, and probably reduces the relative role of women.

Hence, the crucial question is always: to whom is power to control an extension system decentralized? Sometimes central power is useful to control local elites (defined by wealth, age, sex, caste, ethnicity, etc.), and to facilitate more equitable participation in local organizations of more numerous but less powerful people, such as low caste groups and women.

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[1] For a detailed analysis of this situation in Kenya, see Kathleen Staudt, "Women Farmers and Inequities in Agricultural Services," Rural Africana 29 (Winter 1975-76), pp. 81-94.

Even in egalitarian situations, decentralized farmer control cannot automatically assure equity. It is likely that extension services will be used by a few aggressive farmers, will enable them to expand, and will contribute to an inegalitarian situation. Exactly how this happens depends on the details of technology involved; but if there are economies of scale in profitable technology and if investments are lumpy (e.g. tube well, tractorization), tenant eviction is likely. It is wrong to expect a decentralized extension system to prevent this, unless special programs are undertaken. Another problem with local control is that it does not solve the overall economic problem of advanced agriculture, namely excessive production leading to low prices, unless it can organize farmers to limit production voluntarily.

Of course, the ideal system would be to combine, somehow, the strengths of a carefully managed, centralized system with the flexibility and responsiveness of a decentralized system. This is complicated and difficult, but it is precisely this combination which some observers believe has been achieved in the modern American corporate structure, which allows decentralized structures to make their own operating decisions within the context of centralized strategic and financial control.[1]

One structural device recommended by an organization specialist is to have some individuals (e.g. farmer group leaders or second level administrators) function simultaneously in two levels of

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[1]Alfred Chandler, Jr., Strategy and Structure: Chapters in the History of American Industrial Enterprise (Cambridge: M.I.T. Press, 1972). Cited in Hans Binswinger and Vernon Ruttan, Induced Innovation (Baltimore: Johns Hopkins University Press, 1978), p. 333.

organization. This heightens their ability to exchange information and feedback in both directions. An individual with such a dual role can be considered a "linking-pin," as he links two organizations.[1]

In practice, the precise balance between central and local control will change as some problems are reduced and others appear more pressing. An example of the types of changes that are needed can be seen in the farmers' associations of Taiwan. To assure that they were controlled by farmers, the general manager of each local association had been elected by the association's board of directors. However, this election process became entangled in local factional politics. When one faction controlled a farmers' association, it tended to divert benefits to its members; members of other factions were reluctant to participate. To reduce these problems the government decided in 1974 to appoint directly the general managers of local farmers' associations. This "solution" will, of course, eventually recreate the original problems of excessive centralization, and at that time, perhaps a new "solution" will be needed.

If extension systems are expected to serve the rural poor, perhaps the most important factor in the centralization-decentralization issue is a political analysis of the balance of forces at central and local levels. If the central political system has important political reasons to improve the conditions of the rural poor, and if the local political systems are highly inegalitarian, then a more centralized system may serve the rural poor better. If

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[1]Allen Jedlicka, Organization for Rural Development, pp. 98-108.

however, the central government is more concerned with an agricultural system geared to urban needs, and if the countryside is reasonably egalitarian, decentralization may serve the needs of the rural poor better. Finally, of course, where the central political system is concerned primarily with urban needs, and where this is closely linked to a strong rural elite, it may be unrealistic to expect any extension system by itself to be particularly beneficial to the rural poor.

3. Modes of Communication

Effective and efficient communication of information to target audiences is, of course, a critical aspect of extension, and much discussion about extension naturally has focused on this topic. Two types of issues seem particularly important in this regard, namely, the relationship between the content and form of the message, and the extent to which the form of the message generates an interactive process with the audience.

a. Content and Form

A wide range of communication media exists: newspapers, radio, television, cinema, film strips, tape recordings, books, magazines, posters, flannel boards, theater, puppet shows, group discussions, individual discussion. Various practitioners have found different forms particularly useful. Probably the easy mistake is to believe that one particular form of communication is best. Undoubtedly, the suitability of a mode of communication is related to many environmental factors, including the cultural context (for example, is theater popular? are people literate?) and level of economic development.

The form of effective communication is also related to the content of the message. Obviously, different forms of communication are required for these different functions. To use Arthur Mosher's categories cited above, mass media may be well suited to serve as an "encouraging companion" or as a stimulator of general development, but individualized instruction may be needed to provide specialized information on complicated technical questions. Another form of communication--based on socially adept group organizers and interaction communication (described below)--may be needed to spark group activities.

The need to relate the form of communication to the social and economic environment and to the content of the message has been confirmed in the Basic Village Education Project, in Guatemala. In this experimental project, various combinations of mass media (radio), farmer meetings organized by a monitor, and individual technical instruction were tested. The results of the experiment were:

> ...there is no single most effective media combination for all situations.
>
> The potential effectiveness of the various media combinations varies with the level of development, the economic well-being, and the present and prior exposure to mass media and technical assistance. For an area relatively advanced... radio alone will be immediately used as a source of new information...In contrast, the full radio-monitor-agronomist media combination is required...in an area rating relatively low...In the traditional...areas, radio is capable of introducing new agricultural ideas and reducing the fear of implementing them. However, reinforcement by agronomist and/or monitor is needed to maximize impact of radio as an information source...[1]

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[1] The Basic Village Education Project, Guatemala, Final Report (Washington, D.C.: Academy for Educational Development 1978), p. ii.

b. Interactive Communication

Communication can be more than the transfer of particular information. It can catalyze an interactive process through which the recipient, individually or in conjunction with others, develops new thought processes and new patterns of social interaction. This is, of course, the basic purpose of education (in contrast to training).

The main purpose of group literacy programs in the style of Paulo Freire is not simply to train people in literacy, but to educate them to their individual and group potential. Freire calls this process "conscientizacao."[1] Experiments involving group participation in making film or video tape indicate that this process also can contribute to the emergence of new perceptions and patterns of social interaction.[2] Similar changes can occur when people are asked to create a play, or presumably a radio program.

There is some evidence that new social processes can be created even by the more passive process of having groups organized to watch collectively (or state) owned television sets, which can include agricultural extension programs. Apparently, in the presence of the new technology of television, traditional cleavages can be overlooked, at least in the short run. In India, it has been observed:

> One of the most notable offshoots of (Satellite Instructional Television Experiment Project) SITE has been the role of TV as a social equalizer. It was common at the initial stages to see different sections of the society watching the programs while sitting in distinct groups. But slowly these disappeared and it was no longer possible to distinguish "big" farmers from "small" farmers, harijans from non-harijans, or educated farmers from the illiterates.[3]

Radio listening groups may have similar social benefits.[4] Of course, in

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[1]Paulo Freire, Pedagogy of the Oppressed (New York: Seabury, 1970).

[2]W. Anthony Williamson, "The Fogo Process in Communication," in Training for Agriculture and Rural Development (Rome: FAO, 1975), pp. 93-98.

[3]Lal Karamchandani, "Television for Rural Development, Indian Experience with SITE," Training for Agriculture and Rural Development (Rome: FAO, 1976), p. 134. See also Shingi and Mody, "The Communications Effects Gap," p. 93.

[4]F.M. Ragheb, "Training and the Green Revolution," in Training for Agriculture and Rural Development (Rome: FAO, 1975), pp. 1-9.

all such matters one must wonder if traditional social patterns reassert themselves after a while, after outside observers, who sparked the interactive process, leave.

For both, technical learning and broader education, practical training and direct farmer-to-farmer interaction can play extremely valuable roles. Farmers often can learn many things (such as use of new machinery, identification of insects, analysis of characteristics of new varieties) more thoroughly and rapidly in the field than they can in the classroom, even with the best of audio-visual equipment. Often the best, most trusted teacher is another farmer who successfully uses a new technique. Indeed, one of the dangers of audio-visual aids is that their use might discourage a training/education program from using field trips and practical demonstrations. Of course, practical work can be overdone. In China there have been reports that physical labor in the agriculture schools (or at least one model school that is being criticized) was so extensive that students had no time for theoretical training.

4. Sources of Extension Information

An extension system with inaccurate or irrelevant information is worse than a financial drain. It poisons the farmer's perception of modernization and reinforces reluctance to try new techniques. Unfortunately, it is not unusual for extension agents to offer erroneous and contradictory information. Farmers who follow their advice find their yields may increase, but insect losses may increased the next year.[1] Or they may find two extension

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[1]Gillian Hart, "Labor Allocation Strategies in Rural Japanese Households," PhD. Dissertation., Cornell Agricultural Economics, 1978, Chapter 4.

agents both confidently encouraging very different planting dates for cotton.[1] Or they may find recommended inputs unavailable, or marketing opportunities inadequate.

What are reliable sources of accurate, relevant information for an extension system? There are two major sources of information: the scientific community (both domestic and international) and the farmers themselves. There are, however, vast problems in organizing regularized communication with either group, particularly from the farmers. In theory, an extension organization is supposed to be a bridge or link between scientific researchers and farmers, providing two-way communication and "feedback." In practice, however, most extension systems emphasize dissemination of information from scientist to farmer, and do not adequately carry information from the farmer to the scientist. In Kenya, for example, Leonard has found, "The processes of feedback and technical innovation have proved weak in the Ministry of Agriculture, particularly below the national level."[2] Upward communication is difficult because of the geographic dispersion of extension agents, social (and sometimes racial) barriers that exist between junior and senior staff, and an intellectual inability and bureaucratic reluctance of junior staff to suggest changes in general recommendations.[3]

When extension agents fail to provide feedback from the smaller, poorer farmers, a class bias emerges in the feedback process into the research system. New technologies are "induced" by the specific requirements

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[1] Uma Lele, p. 65.

[2] Leonard, Reaching the Peasant Farmer, p. 160.

[3] Ibid., p. 162

of the economy. However, this induction is not automatic. Induction requires institutions, of which an extension system is one, to convey specific technological needs of various producers to the researchers.[1] If the extension system does not provide feedback about the needs of small, subsistence farmers, it is unlikely that appropriate technologies will be induced for them. In the absence of such pressures, the innovations that are induced are more likely to be suited to the needs of large aggressive farmers, who can influence the research system directly by going to a university to talk with scientists or indirectly, through a Ministry of Agriculture to which they have access.[2] The farmers with cash crops crucial for foreign exchange earnings (rubber in Malaysia, cocoa in Ghana, coffee, sugar and coconuts in the other countries) seem to have little problem conveying their needs to research institutes. But the perspectives and needs of the poor, limited-resource, subsistence farmer, unable to purchase machinery and chemicals, rarely inform the work of research units. Thus, any extension system, and especially one designed to serve the needs of rural poor, needs to emphasize feedback, particularly from small farmers.

The bias towards overemphasizing communication <u>to</u> the farmer, instead of <u>from</u> the farmer, has several sources. First, it reflects the structure of control within the extension system. If the extension system is controlled and financed by farmers, the agents usually are responsive to interest and needs of farmers,

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[1]Alain de Janvry, "Social Structure and Biased Technical Change in Argentine Agriculture," in Hans Binswanger and Vernon Ruttan, <u>Induced Innovations</u> (Baltimore: Johns Hopkins University Press, 1978), p. 311.

[2]Rene Benalcazar R., "New Techniques, Agricultural Extension Services."

and are quick to communicate upward the farmer's concerns. If, however, the extension system is controlled by the central government to develop specific crops for urban consumption or export, the extension system will see its task is to convince farmers to try specific practices, and not to understand the farmers' perspectives.

As extension services become specialized, they are staffed with educated people. In many countries, very few rural residents have access to formal education, so extension services may become staffed with people with urban backgrounds. There is a tendency for the urban educated people to presume an ignorance and hostility to innovation among the backward, traditional farmer.[1] This justifies a program designed to instruct and lead the farmer. This tendency is reinforced by general bureaucratic compulsion to justify rather high salaries of government employees relative to farmers. Of course, this bureaucratic interest merges with broader social forces eager to justify the privileges of the educated elite.

Ironically, some of these negative tendencies of an extension system may be obscured and even reinforced by a highly energetic, patriotic spirit within the system. However, at issue is not the dedication, probity, or aspirations of extension agents--which can be highly variable and very important--but rather their underlying attitude to farmers and their conception of their roles in relation to farmers.

In the U.S. these types of problems were minimized by the recruitment procedures of extension programs, which essentially require that

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[1] Rene Dumont, "Training for Rural Development, the Gulf between Farm and Town," in Training for Agriculture and Rural Development (Rome: FAO, 1976), pp. 15-17

extension agents came from farm families. This ensured some underlying attitude of respect to the farmers, and reduced the likelihood of a social gap between agent and farmer.

The normal training programs for extension agents can easily reinforce the notion that extension agents teach farmers. They are taught how to convey information to the farmers--how to use demonstration plots, local fairs, mass communication, audio-visual aids, felt boards, tape recorders, etc., and review research on effective communication techniques. They also learn how to select "informal leaders," who can pass information on to others. These various communication techniques are important, and proper selection among them can do much to assure that information reaches the poor. However, only in a few places are extension agents taught how to learn from farmers and how to convey information from farmers to scientists.

In reality, some farmers have a great deal of technical knowledge, vast experience, and keen insight into agricultural questions, as many extension agents have discovered. Moreover, in many cases, "spontaneous extension" systems function very effectively, and profitable technologies spread rapidly as friends and relatives exchange information, and as merchants and salesmen buy produce and sell inputs.[1] These characteristics of a rural community render the conventional extension role of transfer of information from scientist to farmer substantially superfluous in many cases--a fact extension systems sometimes realize but must obscure to protect their

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[1] In the U.S., with a far better developed commercial infrastructure than most developing countries, the formal extension service is the first source of information for farmers only 15-40 percent of the time. In one survey only 14 percent of farmers considered extension to be the most reliable source of information. Win M. Lawson and Howard M. Dail, "Sources of Information for Farmers," Journal of Cooperative Extension 4:3 (Fall 1966), pp. 163-168.

own claims to be helping development and therefore deserving of more resources.

These facts highlight alternative (or additional) roles for extension systems. If extension agents can learn superior techniques from the most advanced farmers, they can then help spread this information to other farmers and to researchers. Effective feedback from farmers can certainly indicate which innovations from researchers are relevant to farmers' needs and what sorts of further improvements are needed. Feedback is essential to researchers to learn how an innovation fits into the farmers' overall farming system and seasonal labor constraints and opportunities. Moreover, specific superior varieties and cultural practices of advanced farmers can often be brought directly into research programs. One observer sums up this perspective:

> Extension workers learn from progressive farmers what to tell others. In fact, much agricultural development in such countries as Holland can be explained by this mechanism of locally originated innovation rather than by the utilization of agricultural research station finding.[1]

Similar observations could be made about the U.S., where farm bureau agents originally saw their task as facilitating exchange of ideas among farmers, and not conveying new ideas from research stations to farmers. This would suggest that the early U.S. and European information exchange systems might have relevant lessons for current needs elsewhere. Feedback is also needed to designers of extension communications, so they will know how to plan effective radio programs or other formats for communication.

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[1]Niels Roling, Joseph Ascroft, and Fred Wa Chege, "The Diffusion of Innovations and the Issue of Equity in Rural Development," in Everett Rogers, ed., Communication and Development: Critical Perspectives (Beverly Hills: Sage, 1976), p. 68, citing observations of Professor A.W. van den Ban, Agricultural University, Wegeningen.

Sometimes a preliminary requirement for effective feedback is that farmers become aware of their own knowledge and confident in expressing themselves in the presence of government officials. In many cases, rural people have been so badly repressed for generations that this emergence of consciousness and confidence is a difficult process. Paulo Freire recommends that this process can be facilitated in a small discussion group where people give reassurances to each other. A skilled leader can use a dialogical process to help people discover and express what they know. Freire suggests that adult literacy programs are particularly effective vehicles for this process.[1]

Other types of activities can serve a similar function. In a pilot project conducted in a Tanzanian village, a dialogical process with a group of villagers uncovered how much they knew about methods for grain storage. When various traditional techniques were combined with some modern ones, low-cost but effective grain storage systems were developed.[2] In principle, once villagers have discovered that they have the power to solve one set of problems, such as grain storage, they may apply this knowledge to other problems. Thus, it would be most interesting to do follow-up studies in the villages where this pilot project was conducted, to see if farmers there are using group dialogical processes to solve other community problems. A report of a somewhat similar project in Ecuador, also based on Freire's principles, indicates a widespread expansion of community activities, such as schools, bus service, rural electrification,

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[1]Paulo Freire, Pedagogy of the Oppressed.

[2]Appropriate Technology for Grain Storage. (New Haven: Economic Development Bureau, 1977).

roads, bridges, night guards, running water, drainage, etc.[1]

One of the most deliberate, systematic attempts to incorporate the knowledge of advanced farmers into the extension system was developed in Japan in the 1870's when the government wanted to modernize agriculture but realized that the large-scale farming practices of the U.S. and England, utilizing large machinery, were irrelevant.[2] In 1878, the government appointed one or two leading veteran farmers in each prefecture to serve as an Agricultural Correspondence System. These veteran farmers would gather detailed reports about local agricultural techniques and conditions, send them to the government, receive suggestions from the government, and organize local Agricultural Discussion Societies to enable all farmers to share the information. In 1881, a national organization for veteran farmers was established, the Agricultural Society of Japan. Four year later, an "itinerant instructor system" was organized, utilizing both graduates of agricultural colleges and veteran farmers. Veteran farmers were crucial in staffing the system until 1889, when sufficient trained people were available to staff the system. A few years later, the itinerant instructor system was merged with the newly formed Prefectural Experiment Stations, and in 1899 many extension services were incorporated within compulsory farmers' associations, which received

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[1]Edgardo Rothkegel Ortuzan, "The Ecuador Non-Formal Education Project, " in Richard Niehoff, ed., Non-Forward Education and the Rural Poor (East Lansing: Michigan State University College of Education, 1977), p.p. 111-120.

[2]Takekazu Ogura, Agricultural Development in Modern Japan (Tokyo: Fuji Publishing Company, 1967), pp. 301-303: Toruzo Tatsuno and Reiichi Kaneko, Agricultural Extension Work in Japan (Tokyo: Agriculture, Forestry, and Fisheries Productivity Converence, 1959); and Ron Aqua, Local Institutions and Rural Development in Japan (Ithaca: Cornell Rural Development Committee, 1974).

some state subsidy. From 1911 to 1935, the agricultural associations hired 5,200 to 14,000 technicians. After 1948, extension services were consolidated under direct government sponsorship.

In China, also, major efforts have been made to assure that the research and extension system absorbs the insight of ordinary farmers.[1] Advanced farmers have travelled to other localities to explain their techniques and have joined research stations to demonstrate and test their methods for high production. At the same time scientists have been posted periodically to work directly with farmers in local testing stations which are sponsored by communes, brigades and teams. These local stations are staffed with a combination of young school graduates and mature, advanced farmers.

While these two experiences suggest some ways of maximizing farmer input for extension services, there are certainly far more approaches which can be tried. In the Basic Village Education Project in Guatemala, the monitors who organized group meetings to discuss radio broadcasts provided weekly feedback reports to the producers of the radio programs. It is unlikely that the radio broadcasts alone, without this organized feedback to assure relevance, would have been so effective.[2]

Another method of providing feedback is being tried in Chile, in which various extension agencies will compete to provide extension services. The government gives vouchers to farmers, which they use for the extension agency of their choice--the regular government system or

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[1]Benedict Stavis, Making Green Revolutions: The Politics of Agricultural Development in China (Ithaca: Cornell Rural Development Committee, 1974), pp. 172-89, and "Agricultural Research and Extension Services in China," World Development 6:5 (May 1978), pp. 631-45.

[2]Nesman, "Basic Village Education," p. 124-125.

an extension system attached to a seed or fertilizer company, to a bank, etc. The agency can turn the voucher in to the government for cash. Another feature of the system is that the extension systems are required to prepare detailed financial analyses of farm accounts to identify profitable farms and farm activities. In Guatemala, a careful review of farmer tests is being conducted by the Institute of Agricultural Science and Technology to assure feedback.

While farmers are knowledgeable, they are not omniscient; nor are scientists and highly trained subject matter specialists irrelevant. Indeed, precisely because farmers are knowledgeable, the information that they demand is often highly technical and very specialized. Sometimes farmers ignore extension agents not because they are unwilling to change, but because they suspect that the extension agent does not have suitably specialized technical information. In the Indian Punjab, for example, progressive farmers go directly to researchers at the agricultural university. In Finland farmers demand personalized suggestions from animal nutritionist and forestry management specialists.

Thus, an extension system that learns from farmers must also include highly trained subject matter specialists. In both Japan and China, the policies of expanding farmers' inputs have not prevented the development of professional extension systems using academically trained personnel. In Japan, by 1889 professional extension agents had replaced veteran farmers as "itinerant instructors." In China, ideological pressures against professionalization have been strong, particularly in certain years (e.g., 1958), but academic training in agriculture has continued, and graduates have been constantly placed in research and

extension units. China's new policies adopted after 1977 stressing the importance of science, technology, the value of rigorous formal training, and the benefits of farm management will most likely lead to a professionalization of the extension system. China's experience, in particular, not only offers innovative approaches to assuring farmer input. It also highlights the difficulties of doing this while developing a professional extension system capable of dealing with very sophisticated, specialized, information. A similar lesson emerges from the Guatemala project, where better results were obtained by backstopping the monitor with an agronomist.[1]

Communication between extension and scientific researchers is not the responsibility of extension personnel alone. The organization and values of the agricultural science research units--which are shaped forces that control research--influence how much scientists are receptive to feedback. Research and extension systems have different goals, and are subject to the control of different ministries. Sterling Wortman warns:

> Too often, scientists as well as extension leaders consider the activities leading to adoption by farmers are not the responsibility of the research establishment. Until this erroneous idea is overcome, progress will be slow indeed.[2]

The difficulties inherent in this problem should not be minimized. Scientists often prefer to work in laboratories or nearby experimental

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[1]Edgar G. Nesman, "The Basic Village Education Project: Guatemala," pp. 121-131.

[2]Sterling Wortman, "The Technical Basis for Intensified Agriculture," Agricultural Development, Proceedings of a conference sponsored by the Rockefeller Foundation, April 23-25, Bellagio, Italy (New York: The Rockefeller Foundation, 1969). Cited in Burton Swanson, Coordinating Research, Training, and Extension," in Training for Agriculture and Rural Development (Rome: FAO, 1976), p. 9

plots, developing insights of interest to their professional colleagues in universities and international research centers. This seems the most promising strategy for higher professional, social, and economic status. In contrast, conducting extensive on-farm trials, spending much time traveling in the field, and talking with extension agents and farmers is less attractive to scientists and may present a serious role conflict.[1]

Coordination and feedback between research and extension is also related to the level of basic physical and institutional infrasturucture. Agricultural scientists often feel their job is done when they have developed a superior seed variety, or ascertained that a particular chemical can deal with a particular pest. Extension agents may be eager to popularize the seed or chemical. But the task of multiplying the seeds or manufacturing or importing the chemicals is not done by either the research or extension organization. It can easily be overlooked or mismanaged, with the result that researchers are annoyed that their suggestions are not being adopted, while extension agents are frustrated that they are not getting inputs from research.

There is much room for experimentation and innovation with regard to policies that can maximize scientists' receptivity to feedback. A general value system and specific incentives which support and reward scientists who orient themselves towards farmers may be useful. The challenge is to do this without cutting a country off from international scientific exchanges--which tend to stimulate and reward scientific excellence and simultaneously break feedback loops with farmers.

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[1]Swanson, "Coordinating Reasearch . . .," p. 10.

Structural innovations may be relevant also. China has taken the radical step of essentially merging their research and extension systems into a multi-level network of experimental stations, which are staffed to varying degrees by scientists, local educated youth, administrators and farmers. These stations conduct experiments at all levels, from genetics at central stations to field tests at local levels. Extension personnel are not specialists in conveying information, but are links and participants in the experimental and learning process between and with farmers and scientists.[1] In the Puebla Project in Mexico, research and extension personnel, although retaining distinct functions, worked closely together on a day-to-day basis, and this was considered crucial to the project.[2] In the U.S., many individuals in land-grant universities and elsewhere have one portion of their salaries and responsibilities earmarked for research activities and a separate portion specified for extension activities. This also contributes to close linkages between research and extension.

Naturally, if extension and research systems emphasize feedback from farmers, there are important implications for agricultural education programs. A closer link between farm and school is needed. Farm workers might be admitted directly into higher education (after appropriate literacy training); students might be given plots of land to work at the beginning of their studies, and grades could take into account general attitudes

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[1] Stavis, "Agricultural Research ..."

[2] Swanson, "Coordinating Research ...," p. 10.

towards farming and helping farmers.[1] Some steps are being taken in some places (Nepal, Malawi, Malaysia, etc.,) to do this.

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[1]H.K.F. Hoffmann, "University-level Education in Agriculture, A perspective for the Year 2000," in Training for Agriculture and Rural Development Rome: (FAO, 1976), pp. 50-51.

E. Group Organization

Throughout the discussion of centralized organization, decentralized control, modes of communication and feedback lies the question of the degree to which extension systems should help farmers bring about group action. In some philosophies of extension, the notion of group action seems useless. If an extension agent is going to work with progressive individual farm managers and help them develop specific farm plans, then he must work with individuals; groupings of farmers are irrelevant. Similarly, it would appear, if the extension system emphasizes mass communication (e.g. radio, newspaper) which reaches each individual directly, local organization would seem unnecessary.

On the other hand, organizing farmers into groups can greatly simplify many of the tasks in agricultural extension and development. Working with a group enables the extension agent to reduce the equity problems inherent in working with the large progressive farmers. He need not risk the administrative problems of working individually with large number of small farmers. He can also get around the problem of working with progressive people who are socially isolated in the village and whose innovations will be shared by others.

Group approaches to extension serve a broader purpose also. There is a wide range of innovations in agriculture which require social interaction. There are three reasons for this. The first is the issue of economies of scale. Many activities, such as marketing, have important economies of scale. The second issue is the free rider problem, i.e., how to make sure that everyone contributes his share to building or maintaining collective goods, such as roads or irrigation canals. The third is the external diseconomy problem, e.g., how to make sure that one person's rational actions do not harm other people.

In the latter two situations, some coercion and/or special individual incentives are required to enforce contribution and participation, or to prevent some action.[1] Typically, coercion is applied through the police

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[1]Mancur Olson, Jr., The Logic of Collective Action (New York: Schocken, 1968), p. 2.

and courts of the state apparatus. In many cases, however, the state does not have these resources, or they are used in an arbitrary, patronizing, and corrupt manner. There can be great advantages if the coercion and incentives required by development can emerge voluntarily as social pressure from organized social groupings, and at least partially substitute for state power.

To give some concrete examples, groups can generate social pressures that encourage repayment of credit.[1] In some villages in Java, village social pressures have been successfully utilized to encourage adoption of family planning. Extensive publicity about family planning generated a mood of acceptance, and publicly listing non-acceptors created some social stigma. With such community pressure and gossip, most people decided to participate.[2] Similar experiences are reported in China.[3] Such social pressures can equally apply to agricultural innovations.

Group action is useful in many other activities. If extension activity is concerned with improved public works, maintenance of irrigation systems, or distribution of irrigation water, some group action by farmers is essential. Group organization can be very useful in creating new marketing channels. They can both save farmers the time and energy inherent in individual marketing, and can offer competition to traders. In many situations, marketing cooperatives are the easiest to set up because these benefits are

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[1]Dale Adams, "The Economics of Loans to Informal Groups of Small Farmers in Low Income Countries," Department of Agricultural Economics and Rural Sociology. Ohio State University, mimeo, 1978.

[2]Richard Critchfield, "More Food..." p. B 12-13.

[3]Leonard Chu, Planned Birth Campaign in China, 1949-1976 (Honolulu: East West Center Communication Institute, 1977), p. 41.

so obvious. If tractors, threshers or other machines are sensible, group purchase and utilization can assure that benefits are widely shared and can reduce the likelihood that the first individual purchaser of machines will use his new profits to buy out his neighbors, who can no longer compete with him. If improvements in livestock management are suggested -- such as regulated grazing and breeding or control of communicable livestock diseases -- cooperative action by many farmers is needed. Group action by farmers may also be useful in controlling plant diseases and pests, including rodents. For improvements in general sanitation, which are crucial for improved human health, some collective actions (or at least restraints) are needed. For these types of activities and others, group organization can be very helpful, and extension work can both be facilitated by groups and help form the groups.

At a broader, more political level, when farmers are organized in groups, they are more likely to exercise power over the personnel and policies of the extension system.
When organized, the farmers are better able to fund local extension activities and to participate in local experiments by contributing land and their own knowledge.

At the broadest, philosophical level, the animation rurale projects in former French colonies are "based on the belief that man is by nature a social animal who finds individual fulfillment through participating in activities which lead to the development of his community." This view has its roots in both Catholic humanism and African socialism.[1]

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[1]Jeanne Marie Moulton, Animation Rurale; Education for Rural Development (Amherst: University of Massachusetts Center for International Education, 1977), p. 20-21.

One of the most important potential benefits of organizing farmers into groups is that it becomes feasible to train individual farmers who are selected by and responsible to a group of farmers. Such persons can be extremely effective in interpreting new ideas to farmers and in bringing farmers' problems and observations to the research system. Unlike government-employed extension agents, the trained farmer stays in the village, is not seeking promotion to urban areas, and is accessible at all times to villagers. If this person is selected by a group of farmers, it is likely that social pressures will increase his likelihood to share quickly and fully information about modern technology with his neighbors.

From a financial point of view there are important advantages. Such a person can be paid a salary relative to a farmer's income, not relative to bureaucrats' salaries. Moreover, part or all of the local person's salary can be financed by the farmers' group, perhaps through the profits of credit, marketing, or grain processing activities, as the extension agents of Taiwan's farmers' association are paid. In Finland, specialized voluntary associations of farmers have been created to provide technical assistance in a wide range of areas -- marketing and purchasing, cattle raising, forestry, management, etc. Farmers pay for individualized specific services.[1] Both the lower salaries and local, self-financing which are possible through this approach can greatly reduce recurrent government expenditures on an extension system and make it less likely that financial constraints will prevent expansion of an effective system.

The training of representatives of groups of farmers has, in fact, been the cornerstone of several extension programs. The extension program

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[1]Nils Westermarck, Finnish Agriculture (Helsinki: Kirjayhtymä, 1969), p. 57-71.

at Comilla, devised by Akhter Hameed Khan, was based on this idea. At Comilla, a Thana Training and Development Center was established to offer a wide range of instructions to representatives (cooperative managers and model farmers) elected by local groups of farmers. These representatives came for instruction for a whole day every week or two, and then reported back to weekly group meetings in the Villages.[1]

In animation rurale projects in former French colonies in Africa, the same principle of having villagers select representatives to receive special training has been utilized. These individuals are called "animateurs."[2] In the Puebla Project in Mexico, paraprofessionals helped maintain a link between extension agent and farmer.[3] The World Bank's T & V system is a bit different because the contact farmer is selected by the government, not elected by the villagers.

In any of these approaches, group organization can provide valuable economies of scale. It is far more efficient for an extension agent to brief a group of farmers directly than to work with individuals.[4] For example, in Bangladesh, if one hundred model farmers hear an explanation of a Thana Extension Officer and then each one conveys this information to thirty members of his village society, then the extension agent has reached 3,000 farmers in just one week. Likewise in the T & V System, a Village

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[1]Akhter Hameed Khan, Reflections on the Comilla Rural Development Projects (Washington: American Council on Education Overseas Liaison Committee, 1974), p. 17.

[2]Jean Fauchon, "Integrated Rural Development and Planning for Rural Communities," in Training for Agriculture and Rural Development (Rome: FAO, 1975), pp. 79-85.

[3]Swanson, "Coordinating Research...," p. 11.

[4]Leonard emphasizes the economy of communication to groups. p. 203. See also Rene Benalcazar R.,"New Techniques,Ag. Exten. Services..," p. 523.

Extension Worker (VEW) can be working with eight groups of farmers, each with 40-150 farmers, or a total of 300-1,200 farmers. A fully trained Agricultural Extension officer would be responsible for eight VEW, so would be overseeing extension activities of 2,500-10,000 farmers. In the absence of group organization, it would be difficult for an agent to reach effectively a fraction of these numbers. In the intensive cash-crop schemes, an agent normally serves only a few hundred farmers.

Even in projects stressing agricultural extension via radio broadcasts, it appears that supplementing the radio programs with weekly group forums organized by a "monitor" added to the impact. When the monitor is backstopped by an agronomist, the effectiveness seems even higher.[1]

As suggested earlier, groups can also be utilized in the process of helping people to discover their own knowledge and power.[2] The group may be for literacy training or grain storage (as suggested above) or may be shaped around general agricultural technology needs; it might be radio listening group or film making group.

There are, of course, problems inherent in the notion of organizing groups. The theory of using groups generally assumes that the groups are characterized by an internal cohesion, a sense of mutual obligation, and a rough equality. It is presumed that because group actions are rational, it is rational for every individual to participate in the group. These presumptions are frequently erroneous.

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[1] Edgar G. Nesman, "The Basic Village Education Project: Guatemala," pp. 121-131.

[2] Paulo Freire, Peadogogy of the Oppressed.

It is remarkably easy to establish a group that lacks internal cohesion. A group may be composed of people living in a particular locality or along a river, or road. The size of the group may be arbitrarily fixed according to the number of people likely to be served by a warehouse, or according to the ideal economies of scale for a cattle dip, tube well, or for farm credit. In such a case, it may be that the indigenous patterns of social interaction and trust -- kinship, friendship, temple membership, tool sharing groups, voluntary credit or funeral societies, political factions, etc. -- may not be congruent with, and may be completely unrelated to the lines of delineation which seem rational to administrators concerned with fertilizer, irrigation, range land management, or animal health. They may accidently throw together into a group people who are strangers, or who have been feuding for generations. Naturally, such a group will not function in the desired manner.

Another problem occurs in hierarchical societies characterized by extreme inequality and strong patron-client relationships. In such a situation the social inequalities will probably shape the character of the group. The powerful patrons or their representative will dominate the group and use its resources to reinforce their positions. Information, credit, inputs, and other resources expected to spread throughout the group are likely to be commandeered by the rich and powerful. The group becomes a new locus of profit, control, and corruption. These problems are, of course, reinforced by the general tendency of power to concentrate in the hands of leaders and organizers of groups -- the "iron law of oligarchy" described by Michels. When all these factors are combined it is not infrequent that groups really become tools of exploitation for the rich, and that the poor prefer to avoid the groups, whenever possible.

Finally, it may not be rational for an individual to participate in group activities which will benefit him. Indeed, if he can avoid the cost and obligations of group activities but share in the benefits without undermining group functioning, he obviously is rational.[1]

Whether and how these problems can be overcome depends on the character of the group in question. Some successful group activities are based on the indigenous voluntary groups which exist in rural societies -- kinship, religion, labor exchange, credit associations, etc. Size is important; particularly if the group is small enough so that each individual's actions perceptibly influence the group's fortunes, the internal social pressures for cohesive action can be strong.[2] But the group needs to be large enough to generate economics of scale. Perhaps the optimal size for such voluntary interaction is around 30 - 35 people -- the size of the Chinese work team,[3] of successful midwestern food cooperatives,[4] or of groups in Mexico's Puebla Project.[5]

These social pressures were utilized at Comilla, where the credit associations were required to have weekly meetings to maximize the face-

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[1]Mancur Olson, The Logic.

[2]Mancur Olson, The Logic..., pp. 53-57.

[3]Carl Riskin, "Maoism and Motivation: Work Incentives in China," in Victor Nee and James Peck, eds., China Uninterrupted Revolutions From 1840 to the Present (New York: Pantheon, 1973), p. 431.

[4]Ron Cotterill, The Social Economics of Participatory Consumer Cooperatives (East Lansing: Michigan Sate University, Department of Agricultural Economics, Agricultural Economics Report No. 369, December 1979), p. 31.

[5]Allen Jedlicka, Organization for Rural Development, p. 74

to-face relations and social pressures they would generate. As supervision at Comilla became relaxed and corrupt, as basic level groups were expanded and reformed so that face-to-face relations in the group setting became less important, the programs at Comilla became more controlled by the elite farmers.[1]

It is often the case, however, that a larger organization is required, either to obtain potential economies of scale (e.g., for purchasing trucks, installing electricity systems) or to include all potential "free riders" (e.g., a large irrigation system). As the group gets large enough so that an individual's actions no longer perceptibly affect the group's fortunes, and as group social pressures are reduced, some combination of personal incentives, threats of coercion, and external supervision seem necessary to assure participation.[2]

Equally important, some organizational format is needed to tie together small face-to-face groups of farmers into larger units that can provide appropriate economies of scale. In Taiwan, for example, the farmers' associations are organized from smaller village-based groups. Moreover, they have responsibility for tax collection and monopoly over fertilizer sales. Thus, all farmers were compelled to deal with the farmers' associations, even if they did not join. In addition, they had to join to take advantage of credit, extension, and marketing services.[3]

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[1]Harry Blair, The Elusiveness of Equity: Institutional Approaches to Rural Development in Bangladesh (Ithaca: Cornell Rural Development Committee, 1974), pp. 45-61.

[2]Mancur Olson, The Logic.

[3]Benedict Stavis, Rural Local Governance and Agricultural Development in Taiwan (Ithaca: Cornell Rural Development Committee, 1974).

Similarly, in Bangladesh, the two-tier cooperation system is being established. In China, the commune has three levels to provide different appropriate scales of operation; membership is compulsory. In the United States, the system of having farmers' organizations sharing in the hiring and control of extension agents involved a combination of federal subsidies to the Farm Bureau organization and personal incentives. At first, farmers were required to join the Farm Bureau to receive individualized extension services and to participate in the insurance and marketing programs of corporations controlled by the Farm Bureau.[1] In general, the U.S. system does not have smaller groups below the county level, but historically in some places township organization has played an important role.

Frequently groups are set up to administer credit programs. Governments make continuation of loan programs to group members contingent on repayment of past loans, and hope that the social pressures generated by those who want future loans will force potential defaulters to repay. This approach is used in Bangladesh.

An interesting variant is being tried in a World Bank credit project in Malawi. To obtain a loan, group members are required to deposit assets valued at 20 percent of the loans in a blocked saving account. Shortfalls in repayment are deducted from this account, and then the funds are returned with interest.[2] Such a program presumably generates strong social pressures for loan repayment, but may constrain small farmer participation, as they may lack assets to deposit.

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[1]Mancur Olson, pp. 148-159.

[2]Dale Adams, "Economy of Loans...," p. 5.

In Bangladesh, however, it seems that this approach is not adequate. Frequently, the defaulters are the larger, powerful farmers who are immune to village social pressures and may, in fact, have a vested interest in the collapse of institutional credit, which might compete with their own money-lending activities. In such cases, it would seem that the application of police and judicial power, involving the seizing of mortgaged properties, is necessary to supplement social pressures. Alternatively, different groups might be set up of small, medium, or large farmers, so that members have roughly equal status. In general, Adams reports that groups established for the sole purpose of obtaining credit lack viability.

For landless laborers, group activities in the form of labor unions can be extremely useful in improving not only wage levels but also working conditions (including stability of employment, dignity of treatment, etc.) This has been amply demonstrated in Kerela, India, among other places.

In some cases local groups will form spontaneously, as expansions of previously existing voluntary organizations. This is most likely to happen where land ownership is reasonably egalitarian and where government is tolerant of local organization. The Grange movement in the U.S. and the cooperative movement in Denmark are two examples.

In most cases, however, active government support for all these forms of group activities is needed. Careful, thorough supervision and checking from higher levels and the effective utilization of police and judicial power seem necessary to nip in the bud the first indications of corruption. Training programs are also useful to assure competence in organizational management as well as technology (e.g., bookkeeping, etc.). Government regulations that require groups to be composed of homogeneous farmers (i.e., all small, medium, or large) can be helpful in preventing patron-client relationships

from being replicated within new groups. Active, powerful local groups do not displace government roles, but rather place new, extensive demands on government.

Local schools can play a useful role in assisting groups of farmers. A teacher can provide some technical input; the school grounds can sometimes provide a site for a test plot, school children can become better educated for productive rural lives. The "peasant universities" of Scandinavia are an excellent example. (The risk of special rural schools is the possibility of institutionalizing a second-class education for rural residents.) In addition, adult literacy programs can be encouraged because they strengthen mass control over groups; an educated, literate populace will be more capable of understanding the finances of the group, more confident about participation, and more able to request government intervention to punish corruption. Sometimes an interactive communication process, in which people form groups to make plays, movies, radio programs, etc., can be helpful in creating and reinforcing group dynamics.

Nourishing group activities is a critical and delicate task. Small, effective groups can easily be smothered and crushed by rigid government activities. At the same time, government encouragement, support, and supervision are needed to assure a suitable balance of personal and group incentives and to regulate the use of coercion. Large groups and organizations cannot function effectively in a vacuum, and a government which ignores groups will destroy them as effectively as a government which rigidly controls them.

An example of a sophisticated, complex combination of policies to ensure group functioning can be seen in rural China. Work teams are reasonably small enough for each person's efforts to have noticeable impact.

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[1]Dumont, "Training for Rural Development...," p. 19.

[2]Rolland Paulston, Folk Schools in Social Change (Pittsburgh: University of Pittsburgh Center for International Studies, 1974).

They are cohesive, often closely related to kinship groupings and other pre-existing voluntary organization. Individual material incentives are used to encourage participation. At the same time, collective incentives exist and numerous political and ideological meetings reinforce group consciousness. Government supervision and training is extensive, but when government controls were too rigid, group cohesion suffered. Finally, coercion is in the background with regard to people who contemplate excessive private economic activities or migration away from the group.

The other problem with groups -- for which the above solutions will not be relevant -- is that they will be opposed by some political forces precisely for the reasons groups are advocated. Bureaucrats may not want groups, which can place demands on their activities. The locus of power may be moved away from easily satisfied bureaucratic supervisors to very demanding farmers. The rural elite may not want to see an organization of poor people which might be used to support demands for land reform and/or higher wages. Merchants and moneylenders may fear that groups of farmers may undermine their monopolies in marketing systems. Foreign economic interests may be worried. Urban political actors may fear that when farmers are organized, they will develop the political power to redress urban biases in economic plans.

Such factors were behind the weakening of animation rurale activities in Senegal after 1963.[1] Such problems have also been noted in Niger,[2] and indeed may have virtually blocked the participatory aspects of the program

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[1] Moulton, Animation Rurale, p. 84-86.

[2] Dominique Gentil, "Les Cooperatives Nigerieness Traditions Villageoises et Modernization Cooperative," l'Ecole Practique de Hautes Etudes doctoral dissertation, 1971, and "Methodologie de l'Implantation de Nouveau Systems Cooperatif on Niger," Development et Civilizations 52-53, (April-September 1973), cited in Moulton, p. 140-143.

from the beginning.[1] In many countries of Latin America (such as Brazil and Honduras) rural, urban, and bureaucratic elites have been highly suspicious of any groups in the countryside, especially if they are controlled by poor farmers. Often these political instincts have a sound basis. In many cases opposition political groups, including Marxist groups and Christian Democratic Parties have, in fact, had vigorous campaigns to organize rural groups. They hoped these groups would support their political movements in elections, in political demonstrations, or in other ways. To organize such groups, political movements may promise land reform, higher prices, or other benefits. Naturally this can frighten rural and urban elites. Far-sighted elites may in fact see some reason for reform, but not all will. Some will fear that any extension program that encourages or tolerates groups controlled by poor farmers will be too dangerous because it could be used by political opponents.

Obviously these issues applied historically in the colonial systems. There are sound political reasons for the failure of the colonial extension systems in South Asia and Africa to allow real power to devolve to farmers' groups. Conversely, it is difficult to imagine how the farmer acquisition systems in the United States and Finland could have evolved if British or Swedish and Russian rule had continued.

It is inevitable that the establishment of group activities among farmers, which seems necessary for many facets of extension work,

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[1] Robert Charlick, "Power and Participation in the Modernization of Rural Hausa Communities," University of California at Los Angeles Ph. D. dissertation, 1974.

will involve complex political issues. Political leadership is needed at the center to help urban, rural, and bureaucratic elites to see their own long-term interests in increases in farm production and in the broad distribution of benefits.

Likewise at the local level, leadership is needed. In most cases groups will not emerge spontaneously. The animation rurale programs recognized this need for leadership and had extensive government staff at several levels, vehicles, training centers, etc., to provide a cadre of organizers.[1] Setting up effective groups can be a very difficult challenge requiring dedicated, sensitive, patient, humble leaders and organizers. It is easy and disastrous to smother peasant initiative and reinforce the notion that the group is simply a tool for bureaucratic control. In the Tanzania pilot project on grain storage, the team of organizers was sensitive to this problem:

> First of all it was necessary to convince the villagers that the outside team did not have a preconceived idea which it had "up its sleeve" all the time just waiting for the little drama of village democracy to play itself out... It was only after having carried a certain line of design (the Nigerian crib) forward in discussion for several weeks only to drop it when the villagers brought up serious contentions, that the same credibility was finally established. It was then clear that the team did not have a vested interest in any particular design.[2]

From where do such organizers come? Are they part of the indigenous rural society? Alternatively can they really be trained, as animation rurale presumed? This is often the

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[1] Moulton, Animation Rurale, p. 26.

[2] Appropriate Technology for Grain Storage, p. 41.

critical question, for if gifted organizers are not available, and if typical bureaucrats do the organizing, it is likely that the groups will simply be reflections of the bureaucracy and the dominant social forces in which it operates; extensive participation is unlikely. Being a good organizer requires not only training but also particular commitment and values. It is frequently the case that people with these characteristics emerge from political, religions, and student movements, which have strong value orientations. If such organizers exist, will farmers be so suspicious of their motives that they will be reluctant to join organizations? Will elites allow them access to the poor? Thus a crucial aspect of group formation is whether or not a government maintains a political and ideological position that engenders support of potential group organizers, and acceptance by the people to be organized.

As with other issues, no uniform recommendation can be made about using groups. Clearly they can be tremendously useful, but there are many problems inherent in a group approach. Flexibility and sensitivity to changing relations is needed to find the best way of incorporating group activities into extension programs.

F. Conclusions

In trying to use an extension system for equity purposes, the problems are complicated and many of the suggestions are mutually contradictory. Policy makers are not spared the burden of making difficult choices. Moreover, the needs of countries and extension systems continually change, as one set of problems is resolved and others become more salient.

In planning and improving extension systems, perhaps the first step is to have realistic expectations of what is possible. Extension systems can make important contributions to development, but they cannot work

miracles or do everything. They can help people learn rigorous analytical techniques to evaluate experiments, they can help provide inputs and deliver credit. Of course, extension may not be able to do all these tasks simultaneously; a choice must be made about the priorities of these and other potential roles.

However, extension programs by themselves in the absence of land tenure reforms and vigorous, egalitarian input supply programs, should not be expected to reverse the trend towards concentration of assets in the rural society, or to save the small, poor, or inefficient farmer. They can however, assure that the small farmer is not disadvantaged with regard to access to information. In some cases the extension system may have no choice but to urge poor farmers to quit the farming profession. Nor can extension do much to strengthen the whole rural sector vis-a-vis the urban sector. Such factors are deeply entwined with the whole political structure, and extension can affect these matters only marginally, and only when conscious concerted efforts are made to do so. It must be accepted that the energy available in extension systems is usually very small compared to the momentum of existing economic and social changes. If the energy is focused in space and time (for example, on a small demonstration area) some impact can be visible, some problems will become more apparent, and some people will become better educated in these issues. But realism allows only limited expectations about the social changes that can be imposed by an extension system; there is no point in criticizing small, underfunded, inadequately staffed, politically weak extension systems for inability to make major changes in social and economic structure.

The internal management of an extension system can be manipulated for both growth and equity purposes. There are inevitably different types of inequities at both central and local levels; someone concerned with equitable development will try to design an interaction of central and local forces which maximizes tendencies towards equity. But ultimately a difficult choice will have to be made as to which level is least inequitable, and the preponderance of control must be vested at that level. Hence careful institutional analysis of the local and national polities is essential in designing or modifying extension systems.

Another set of issues in improving extension systems is the utilization of groupings of farmers. It is increasingly clear that extension programs that reach individual, progressive farmers will have high costs per farmer reached, and may aggravate problems of equity. If extension systems organize the work with groups, the cost of information dissemination can be much reduced; in addition, certain technical problems, such as irrigation, can be handled more efficiently. There is a chance that a larger portion of the rural population can benefit by getting more equitable access to information, credit, markets, and machinery. Most important, groups improve the potential for farmer control over the extension system.

It is not, however, easy to set up groups. Sometimes they can draw strength from existing voluntary organization; but if local culture is static and highly inegalitarian, it is most difficult for local groups to escape these tendencies. It is important that there are individual

financial and legal incentives to participate in group activities; some form of penalties or coercion may be needed. A multi-tiered organization may be needed to provide groups that are small enough for face-to-face interaction, while providing the foundation for other organizations large enough to provide suitable economies of scale. Innovative organizational strategies are needed to deal with these dilemmas. Moreover, astute political leadership will be needed to overcome opposition to having farmer groups. At the same time, individualized instruction should not be discarded entirely. As farmers get more advanced, they will need specialized, individual assistance in making complex managerial decisions.

Special attention can be given to make sure the extension system has the capacity to learn useful ideas about agricultural technology from advanced, experienced farmers. Particularly when research is not well advanced, this can be a useful source of relevant ideas which can be transferred to other farmers, and can be brought into more formal research programs. In these situations, agents need special training on how to learn from farmers, but this should not undermine the need for well-trained agents who can give the farmers the technical sophistication they demand. Undoubtedly, the correct combination of policies will vary from place to place and can be ascertained best by trial and error.

Finally, it must be remembered that the formal extension system is only one of many sources of information for farmers. The informal, spontaneous extension process--in which farmers get information from friends, relatives, merchants, etc.--is always very important. Thought should be given to how the formal extension system can reinforce and take advantage

of these informal networks. How to utilize merchants is a particular challenge. The interests of farmers and merchants do not coincide completely; but merchants often provide much information to farmers about input supplies and product markets.

It should be clear that many questions on agricultural extension must be geared to the specific local environment. Mechanical transfer of any country's extension system (whether that of the U.S., Japan, Taiwan, etc.,) is filled with danger. Moreover, a country's needs change as some problems are solved and other problems become salient. Closely monitored pilot projects can be useful to generate accurate information about how general ideas work out in particular locations. Making sure that the pilot project is replicable and utilized properly is a major problem, but there is no substitute for practical experience in situ.

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