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THE CHALLENGE TO AGRICULTURAL ECONOMICS DEPARTMENTS
IN AIDING UNDERDEVELOPED COUNTRIES

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Since the topic of my paper, as listed on the program, is rather broad, I took the liberty of narrowing its scope to make the job of presentation and, I hope, listening more tolerable. In order that we can both be tuned in to the same wave length the title that I have in mind goes something like "The Challenge to Agricultural Economics Departments in Aiding Underdeveloped Countries".

There is increased pressure in universities in general and in colleges of agriculture and departments of agricultural economics in particular to provide aid to the underdeveloped countries of the world. Evidences of this can be found in (a) the increasing number of foreign students in our classes, (b) the increase in the number of journal articles devoted to problems of economic development and (c) the increased frequency with which our fellow faculty members are taking off for various parts of the world to join in a new type of crusade. The next few years will undoubtedly see further increases in the number and scope of both domestic and foreign programs having the common goal of increasing the rate of economic development.

We all tend to associate increasing levels of education with economic development. The casual relationship, however, is a difficult one to document. If we have made a commitment to materially aid the development of less fortunate countries it is imperative that we know something about the marginal productivities of various types of aid which could be applied. More specifically, would it be better for the underdeveloped countries to receive educational knowledge, including technological skills, or would it be better for them to receive large inputs of capital goods? As might be expected there is considerable pressure emanating from U.S. domestic heavy industry to provide the latter in preference to the former. If we assume that the real goal is to increase the human productivity of underdeveloped countries rather than to develop artificial markets for our own production it is necessary to look at this question rather closely.

Fortunately, some studies have been done on the economic development of the United States which shed considerable light upon the question. The economic history of the United States and other so-called "developed" nations attests to the importance of education and research and furthering economic activity. Denison and Schultz, in particular, have attempted to measure the relative productivity of various types of economic sources of growth in the United States. Their conclusion was that education and technology were the key factors during the 1930 to 1960 period. Denison estimated that 42% of the total increase in real income per worker was brought about by increases in education and that 36% was brought about by advances in

technology. Increases in capital goods per worker accounted for only 9% of the growth. During this same period real gross national product increased about 125%. Of this total increase about 27% was credited to increases in the labor force, 23% to education, and 20% to advances in technology. In estimating future increases in the U.S. national income, Denison states that education and increased technology present the most promising avenues. About the only alternative method of materially increasing national income per worker in the future would be to arrest the trend of reducing the work week per worker.

The implications of these studies are quite clearly that universities will be called upon to contribute their educational and research capabilities to furthering the economic development of the N. American countries as well as that of the so-called "underdeveloped" countries. In relating this problem more specifically to underdeveloped countries Shultz had the following to say "Many a major puzzle about economic growth in poor countries can be resolved by taking human capital into account. A discernable imbalance between the investment in human and non-human capital is the key whether it be the poor results from our economic aid to low income countries or the very slow rate at which these countries, although they are starved for capital, can absorb additional amounts of foreign capital".

Drawing upon these studies it seems quite clear that we are justified in associating increases in educational inputs with economic development. There is one point however, that Shultz refers to in his recent book on the economic value of education which makes the above proposition somewhat more tentative for underdeveloped countries. This has to do with the problem of the opportunity costs of providing additional education to young people. With the decline in need for non-skilled labor in the U.S., especially in the agricultural field, the opportunity cost of keeping the youth of the nation in school longer is not very great. In the less developed countries, however, this problem must be reckoned with. The dire need, to put children to work in the agricultural sector in order to produce much needed food and fiber implies a significant opportunity cost. At this point the question of providing these countries with some surplus food for specific needs becomes somewhat more palatable to the giver as well as the receiver.

As is stated by Rinser and Martin in their recent study of agricultural colleges in New England one of the great opportunities facing the Colleges of Agriculture is that of assisting countries in developing policies and institutions that will facilitate economic growth. There are two sets of reasons for the current concern over the welfare of the underdeveloped countries in the world. The first set has to do with the general altruistic desire to create a world free from poverty and to increase human dignity in general. Those types of reasons have existed from the beginning of human society but have become much more compelling when associated with the second set of reasons which concerns world politics and economics. As stated in the above-mentioned report. "Modern transportation

and communications have placed in the advanced societies picture windows through which backward societies gaze more or less longingly. This has created a 'revolution of rising expectations' in nearly all of the underdeveloped countries". It is argued that expenditures by the developed nations in providing assistance to the less developed nations are justified in order to prevent the latter from seizing upon totalitarianism as an instrument of economic growth. The economic side of this latter set of reasons deals primarily with the fact that the opportunity cost of providing aid to underdeveloped countries is not very high in a productive society that may often experience chronic problems of slack in the overall economy.

Considering the fact that we have some commitment to provide aid to underdeveloped countries for various reasons and considering the apparent great potential of education and technological advance in contributing to this economic development the Colleges of Agriculture come to the forefront. Producing enough food and fiber to enable its population to survive is the major pre-occupation of most underdeveloped countries. With its resources committed to producing the basic elements for survival, these countries by definition do not have surplus resources to use for producing things that would improve their standard of living. It seems imperative that they must go through an agricultural revolution before they are in the so-called "take off" stage. Rostow states that agriculture must play three distinct major roles. First, agriculture must supply more food to meet increases in population and growing urban populations so that the country can continue to grow without depleting its foreign exchange by importing food. Secondly, agriculture must be in a position to provide effective demand for the products of the country, and thirdly it must yield a substantial portion of its surplus income as inputs into the industrial sector. Some countries have attempted to bypass agriculture in the transitional period and have been notably unsuccessful unless they have considerable non-agricultural resources available to perform the function that agriculture is normally called upon to perform.

Because of the crucial role that agriculture must play, the well-grounded system of agricultural education research and extension in North America should be a major asset in providing aid to underdeveloped nations. The study by Martin and Brinser mentioned above, cites three general reasons for suggesting this. The first reason concerns the impressive volume of applied biological information available in our Colleges of Agriculture. The second concerns the ability of our agricultural colleges to create organizations for agricultural development. They have not only conducted research and teaching across interdisciplinary lines but also have coordinated research, extension and teaching activities to create extremely effective action programs. The third reason cited bears particular reference to this group. The contention is that the economists and sociologists that have a background of training and experience in agriculturally oriented problems and that have a basic understanding of agricultural technology are

particularly well suited to developing the units of production as well as the overall organizations of agriculture needed in underdeveloped countries.

As stated above, the burden of advancing the economics of other nations depends, to a large extent, upon the efforts of our existing Colleges of Agriculture. They have available at the present time a considerable amount of biological research and technological know-how that can, with some modification, be transferred to the less developed countries. However, since the economies of the underdeveloped countries have a different set of restrictions than exist in our countries the problems of economic and social organizations within agriculture and between agriculture and other sectors of the economy provide a challenge. The type of information needed to solve these problems is not readily available and undoubtedly will have to be produced in the more developed nations. This will involve considerable effort and an appreciation for problems and values quite alien to us.

In terms of training students from foreign countries to aid in the economic development of their homeland our agricultural economics departments have two basic challenges. The first concerns adopting curricula within our colleges or agriculture that will enable these students to come to our countries, at either the undergraduate or graduate level to receive the training that they need. The second challenge concerns the efforts that should be made by us to provide basic guidelines enabling underdeveloped nations to train their own agricultural economists. Both of these objectives assume that eventually the underdeveloped nations of the world must bring about economic development through the efforts of their own people.

At the present time most of the underdeveloped countries of the world are engaged in building education facilities. In most of the new African nations several universities are being built simultaneously. Many are supported with outside funds but, in addition, most of these countries have allocated significant portions of their own funds to building educational facilities. If this program of building continues, the need for us to train foreign undergraduates will diminish. At the present time, however, there is still a considerable need.

The agricultural economics training for students from the less developed nations should be somewhat different than we offer in our present day colleges of agriculture. In general the foreign student that comes to us as an undergraduate has a longer period of formal education behind him than our own students. In most cases, however, the instruction has been extremely rigid and often quite inferior. Adding to this fact the problem of language barriers, it might be quite desirable to require at least one semester (or a summer) of additional work of these students. This additional semester should involve what language training is necessary plus courses which would fill in obvious deficiencies in the student's background.

Considering the very basic nature of the agricultural organizations in these countries it would seem that our curricula, in some cases, are too sophisticated to meet their present needs. If, in some way, we could go back to our earlier technical types of curricula and incorporate into them all of the advances that we have made in theory that would pertain to a relatively simple economy, we would probably have the ideal solution. It is more practical, however, to take our existing curricula and make what adjustments we deem desirable to meet this new goal. If we confine our discussion to small departments, which most of us represent, it is not possible to think of setting up a vast number of new courses to deal with a relatively few number of foreign students. The goal then becomes one of establishing a suitable curriculum with a minimum number of new courses plus supplementary courses from other segments of the University.

Since a large proportion of the foreign students who come as undergraduates do not stay beyond the four year period, it does not seem desirable that they should be trained in preparation for graduate work. Their needs would be better met by a general program of study designed to prepare them to make practical applications of basic economic principles to simple productivity and marketing problems. It would seem desirable that these students be exposed to relatively more courses in agricultural production than are currently offered in most of our curricula. In addition, bearing in mind that many of these people will return to junior executive positions in their governments they should receive some basic courses in Public Administration and Business Management. Although it may certainly sound like a watered-down proposition to many people, there seems to be some reasons for believing that students of this type should perhaps spend less time on Economic Theory and more time on Agricultural Production, Public Administration and Sociology.

The foreign student pursuing a program of this type at the undergraduate level would be able to return to his country and fill a need which is not for a highly trained theoretical economist but for a person who can work in Agricultural Extension or with other Government agencies in solving the basic problems of increasing human productivity in an agrarian society.

As stated previously, it seems quite likely that in future years the demand by foreign students for undergraduate training in Agricultural Economics will diminish as facilities for providing this training becomes available in their home countries. On the other hand, however, I would expect that we will see a considerable increase in the demand for graduate training for foreign students. At the University of New Hampshire the number of students in the Graduate School is increasing significantly and the number of applications for admission by foreign students is rising at an alarming rate.

In general, the student from the less advanced nations that comes to us for graduate training will have some of the following characteristics:1/

1. He will have trouble producing original thoughts. In most cases the training that he has received at home will have been confined to the formal lecture system where questions are not encouraged and passing a test consists of regurgitating the vast quantity of facts and precepts that have been swallowed.
2. He will have trouble thinking in English. Unless the student has received most of his coursework in English he will be forced to think in his native language and to translate the results back into English.
3. He will be totally unprepared to embark on a program of independent study or research. His concept of research will be to collect vast quantities of unrelated descriptive data and to publish them.
4. He will have a strange (to us) set of human values. Very few of the students that have received the equivalent of a bachelor's degree in an underdeveloped nation will have come from a farm family. They are more often the sons of bankers, government officials or influential landowners. They are often steeped in the tradition of considering the peasants as untrustworthy and mentally inferior.
5. They will have little appreciation for the practical problems of agriculture. They will be much more interested in the broad problems of mechanical agriculture, foreign trade and irrigation projects than those of individual farm units.
6. They will have a deficiency in administrative skills. Although many of these people will have already held responsible positions in government and industry they are woefully unprepared.

These general characteristics of foreign graduate students give some guide as to the alternations that may be necessary in our present programs.

First and foremost is the necessity of teaching the student the art of independent thinking. This could be accomplished through the seminar technique and independent study. Obviously both of these operations require considerable faculty time. It is also imperative that the student learn the basic principles of research through the "process of doing". Only by working through the actual production and marketing problems will he learn to identify problems and the types of data needed to solve them. A thesis should be required of all foreign graduate students, even though the results may be rather unsophisticated.

The problem of orienting the student to practical problems of agriculture may be partially solved by putting him into

several production courses. In many cases an advanced course in econometrics can well be sacrificed for an intermediate level undergraduate course in poultry production.

I am sure that many of you have shared my despair at finding that a very mediocre graduate student has become, on returning to his home country, the Minister of Agriculture. Realizing that most of the foreign graduate students we train will become powerful leaders upon returning to their homeland can give a faculty member a very deep sense of responsibility. The fact that many returning graduate students end up in positions of high favor within their governments make it seem logical that some advanced courses in economic theory could be sacrificed for some courses in public administration, research methods, or agricultural policy issues.

The language barrier problem is one that should be avoided by the smaller colleges if it can be detected. There is little use in trying to train a graduate student until he is capable of handling the English language proficiently. By requiring foreign students to take English tests at the U. S. Embassy in their native country before formal admission to the Graduate School it is usually possible to identify those who are deficient. These students should be denied admission to schools that are not adequately prepared to offer intensive language training before the student starts his program of study.

The foreign student's unique (often) set of human values will cause problems for the Instructor, the other students, the Housing Director and the Dean. Orientation programs have often been initiated as a result of these problems. The most effective remedy, however, is exposure, over time, to typical north American students.

To illustrate the problems of training foreign students it might be permissible to refer to some personal experiences in Mexico where I recently did some consulting work for the Ford Foundation concerning the development of graduate and undergraduate programs in agricultural economics.

In 1964 there was one agricultural economist in Mexico holding a Ph.D. degree; in addition to this there were at that time no facilities for graduate education in agricultural economics in the country. Since that time a Master's Program has been initiated at the National College of Agriculture located outside of Mexico City. The prime purpose of this Master's Program was to take students who had majored in Agricultural Economics at the undergraduate level at the National College of Agriculture and give them further training in order that Mexico could be in the position of producing its own professionals with graduate degrees. Since the undergraduate program offered at the National School of Agriculture is the only one in all of Mexico, it is the sole source of potential graduate students not only for the recently initiated graduate program in that country but also for any graduate students that would be attending our own

universities. Briefly, the undergraduate program could be described as lacking in quality but not in quantity, or as one that is too formal to be practical for a country such as Mexico. The school operates on a system of three hours per week in the classroom for each course. The first year's curriculum is as follows:

Micro Economic Theory	2 Semesters
General Agricultural Economics	2 Semesters
General Agriculture	2 Semesters
Mathematics for Economists	2 Semesters
English	2 Semesters
Logic and Philosophy	2 Semesters
Mathematics Laboratory	2 Semesters
Rural Sociology	2 Semesters
History of Economic Thought	2 Semesters

This involves 27 hours of classroom instruction per week. It is difficult to imagine the student enduring such things as one full year of each macro economics, micro economics, economic policy and economic development plus four full years of intensive agricultural economics courses plus such things as a full year each in economic planning, econometrics, farm management, money and banking, and the history of economic thought. One gets the impression that most of the possible courses that could be taught in Agricultural Economics and Economic Theory are crowded into this extremely rigid four year program.

From what I can determine this type of program is quite typical of those being developed in other Latin-American countries and in the African nations. Considering the above curriculum, one may wonder why many of the foreign students who come to our country have been unsuccessful.

The major factor is poor quality of the training. The faculty of the Department of Agricultural Economics in Mexico is composed of two full time professors, three half-time professors, and fourteen professors who teach one course only. This preponderance of part-time appointments makes it very doubtful that the program offers much from the standpoint of continuity and quality. In addition there are in Mexico City 12 Agricultural Economists who have received Master's Degrees in the United States. Of these 12, only 2 were teaching in the above mentioned program, and they were only teaching one course each. Many of the faculty members taught in the Law School at the National University and travelled by bus out to the College of Agriculture one morning a week to teach a course in Agricultural Economics, which was quite often more flavored with Marxism than with Agricultural Economics. It is expected that an increasing number of Mexicans will be sent abroad for graduate education in agricultural economics not only to staff the graduate and undergraduate programs at the National School of Agriculture but also to make it possible to initiate programs or courses in Agricultural Economics in about fourteen other colleges of agriculture existing in the country.

The time seems quite distant when most of the less developed countries of the world will be able to provide their own graduate education in Agricultural Economics. For this reason and others stated above it seems quite certain that the bulk of this training will have to be provided in the more developed countries of the world. The task will not be easy, but should be worth the effort.

REFERENCES

- 1/ Most of which these noted in a study conducted by Dr. C. R. Wharton of the Council of Economic and Cultural Affairs.