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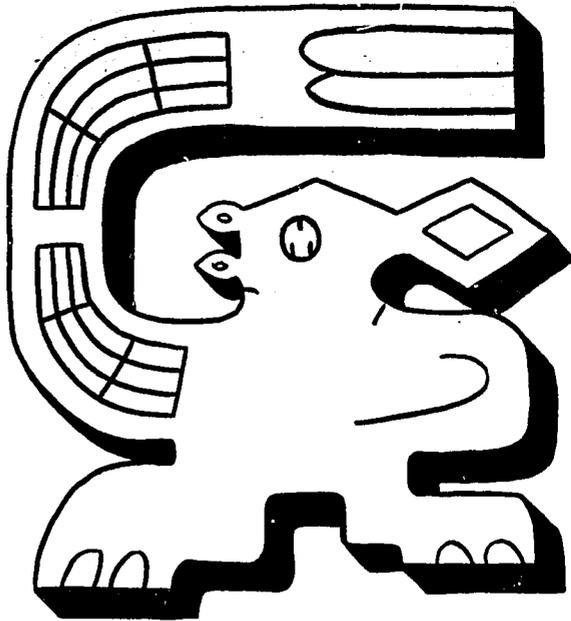
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# Agricultural "Extension" in Chile: A Study of Institutional Transplantation

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## Agricultural "Extension" in Chile: A Study of Institutional Transplantation

MARION R. BROWN

It is the purpose of this article to analyze recent and ongoing programs designed to improve the techniques of farmers and farm workers in Chile. Special attention is given (1) to the various administrative and institutional arrangements devised for carrying out this general function in ten different programs and (2) to the role that foreign financing and advice have played in shaping the present situation. Specifically, the paper focuses on some causes and consequences of bureaucratic proliferation in Chile's technical assistance effort and on the impact of transplanted United States "extension philosophy." The paper also deals briefly with two somewhat novel aspects of several technical assistance programs now under way in Chile: the integration of advisory work with marketing and credit services, and the use of compulsion in the promotion of modern practices.

The quotation marks around *extension* in the title indicate the need for a term that adequately represents the subject matter in question. Extension cannot be carelessly used here, because it is too widely understood to represent a specific type of program with specific institutional arrangements. Thanks to Point Four and its successors, *extension* is everywhere spelled with a capital *E*, having been translated with its multidimensional connotations into many languages around the world. In Chile the term calls up images of the U.S. Cooperative Extension Service, the land grant college, and the county agricultural extension office. It also starts arguments with

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Chilean *agrónomos* whose experience has been with visiting soil conservation or supervised credit experts rather than with agricultural extension specialists.

The problem of extension semantics is evident in the following excerpt from an official report of the Department of Agricultural Extension in the Chilean Ministry of Agriculture:

If extension is defined as a non-classroom educational program aimed at the rural population, with economic and social ends, then we can affirm categorically that only the Department of Agricultural Extension develops true extension programs. If, on the other hand, extension is described as the simple distribution of knowledge, which the present writer considers an error, then it can be supposed that other agencies also do extension work. However, [the Department of] Extension considers that this work is not extension, but mere direct help or technical assistance in the majority of cases.<sup>1</sup>

Given the wide acceptance of this definition, I must warn the reader that the term *extension* is used here in a different and more general sense, to represent not a philosophy, a specific methodology, or an institution, but the general function of disseminating agricultural technology. Agricultural extension activity, then, means any major organized effort to change the farming techniques of active farmers. This includes "the simple distribution of knowledge" as well as programs that provide resources along with information. It includes supervised and controlled credit as well as agencies that publish or otherwise distribute technical information or that send agents into the field to teach or provide technical help. Full-time teaching institutions such as vocational schools are not included. Instead, the study focuses on programs for currently active farmers.

#### Bureaucratic Redundancy

The most salient fact about agricultural information agencies in Chile is that there are a lot of them. In 1964 there were at least eleven governmental agencies and eight private and semiprivate organizations involved in one way or another in agricultural information and advisory work.<sup>2</sup> There is, of course, some coordination and cooperation among these agencies. Some are specialized and working in areas where their services are not duplicated, and some of the small agencies probably attract foreign funds that would not be available to a centrally administered service. Furthermore, there are persuasive arguments in favor of some duplication of function and overlap of jurisdiction in public institutions as a means of reducing the chances of

<sup>1</sup> Juan Galecio G., *Informe del Servicio de Extensión Agrícola de Chile* (Santiago: Ministry of Agriculture, 1959), p. 11, translated from original.

<sup>2</sup> A partial list of government agencies involved in the diffusion of agricultural technology includes: Departamento de Extensión Agrícola, Instituto de Desarrollo Agropecuario, Corporación de Reforma Agraria, Departamento de Defensa Agrícola, Departamento de Conservación de Suelos y Aguas, Servicio de Cooperación Técnica, Corporación de Fomento de la Producción, Industria Azucarera Nacional, S.A., Servicio de Equipos Agrícolas Mecanizados, Banco del Estado, and Dirección de Informaciones y Radio Difusión de la Presidencia de la República. Private organizations and semiprivate agencies include: Corporación de Venta de Salitre y Yodo, Compradores de Maravilla, S.A., Agroservicio, Fundación de Vida Rural, Instituto de Educación Rural, Instituto de Promoción Agraria, Universidad Católica de Valparaíso, and Sociedad Nacional de Agricultura.

failure.<sup>3</sup> This "don't put all your eggs in one basket" principle has recently been more concisely and convincingly formulated in terms of redundancy theory, which states that the probability of failure decreases exponentially as appropriate redundancy factors increase.<sup>4</sup> The principle is reflected in the elaborate back-up and fail-safe systems prevalent in modern technology (especially in defense, space, and aviation). Some have argued that the same principle operates in social systems and that duplication of function should not be invariably regarded as wasteful, but rather analyzed and possibly engineered as a safeguard against failure.<sup>5</sup>

The purpose of this article, therefore, is not to condemn duplication as bad in itself. However, in rejecting the presumption that all duplication is dysfunctional, one need not accept the counterpremise that all redundancy is good. There is a point of diminishing returns where duplication is concerned, just as there are different kinds of redundancy with different consequences. Surely it is not *always* more effective to start a new effort rather than attempt to improve an ongoing one. Surely there is a difference between redundancy by design and redundancy by haphazard proliferation. The value of duplication of function, then, is situation specific, and its test lies not in an a priori judgment, but in an examination of its consequences. It is in this light that I have attempted to analyze the phenomenon of bureaucratic proliferation within Chile's agricultural extension effort.

Before discussing this proliferation, a brief look at how it came about may be helpful. Clearly, it is not the child of careful redundancy planning. Rather, it is the result of many separate decisions by different entities, sometimes with reference to divergent goals. Among the causes of proliferation is the oft-noted tendency for any bureau to become self-sufficient. The initiation of new service programs for farmers in Chile has always meant the creation of a new extension team. For example, rather than combine the efforts of the State Bank and the Department of Agricultural Extension in a new supervised credit program, the government created the Institute for Agricultural Development (INDAP), which is at once a lending agency and an extension service. Later the Agrarian Reform Corporation was apparently unable to work out effective cooperative arrangements with either the Department of Agricultural Extension or with INDAP, and created its own extension and supervised credit services. Another stimulus for proliferation has been the desire to sidestep red tape within the traditional public administration structure. This has led to the creation of autonomous institutes and private and semiprivate organizations supported but not always controlled by the government.

#### The Impact of Foreign Assistance

Much of this kind of proliferation appears to have resulted from foreign funds and foreign advice intended to improve and coordinate Chile's agricultural development effort. Part of it grows directly from the persistent

<sup>3</sup> Martin Landau, "Some Remarks on the Concept of System as Applied to Institution Building" (Paper delivered at the Conference on Institution Building, Committee on Institutional Cooperation, French Lick, Indiana, 12-18 August 1968).

<sup>4</sup> Ibid.

<sup>5</sup> Ibid.

tendency to define extension in organizational rather than functional terms. Foreign money and advice have been spent more often to set up new organizations than to help existing institutions expand programs or assume new functions. For example, during a period of approximately ten years, funds from the United States have supported, and in some cases helped to create, programs of extension and technical assistance in at least nine Chilean organizations. Where the foreign money and advisors have gone, Chilean funds have followed, since these loans have nearly always been given on the condition that they be matched by national finances. Evidence of the role of foreign assistance in bringing about duplication of functions can be seen in the following brief history of extension in Chile.

The Chilean Department of Agricultural Extension, which claims roots in the nineteenth century, became a full department in the Ministry of Agriculture in 1948.<sup>6</sup> At the time it was the only major extension agency in the country, public or private. In 1949, working with the National Health Service and the Rockefeller Foundation, the department started an experiment in extension of health and agricultural information in Aconcagua Province. The plan's finances were administered by the National Health Service. Other departments also cooperated from time to time, notably the Department of Agricultural Research which set up a series of forage demonstrations in the area.<sup>7</sup> It is important to note that these agencies apparently succeeded in cooperating without a separate coordinating agency.

The plan had been in operation about four years when the U.S. Operations Mission made plans for a new and much larger pilot project. These plans were based partly on experience gained in Aconcagua, but unlike the earlier effort, the new scheme included a government bureau to administer a Plan for Development of Agriculture and Hygiene in the Provinces of Maule, Nuble, and Concepción—or Plan Chillán as it was more popularly called. The administering agency was made up of U.S. and Chilean personnel and was called the Department of Interamerican Technical Cooperation in Agriculture (DTICA). Housed in the Ministry of Agriculture, it was supposed to coordinate the development activities of several Chilean agencies within the project area. In fact, the participation of the veteran agencies was minimal. DTICA appears to have duplicated these departments within its area of jurisdiction. This was especially true in the case of extension.<sup>8</sup>

In 1957 the U.S. Operations Mission, cooperating with the Ministry of Agriculture and the National Agricultural Society, created and supported a private agency called the Agricultural Institute of Technical Assistance, or Agroservicio, which is best described as a farm management consulting service. Agroservicio received national support which otherwise would likely have gone to the extension department. Technical personnel were provided by the U.S. Operations Mission and equipment came from Plan

<sup>6</sup> Abstracted from Raimundo Cabrera G. and Inés Acosta, *Historia del Departamento de Extensión Agrícola* (Santiago: Ministry of Agriculture, August 1955), p. 13, mimeographed copy held by Department of Agricultural Extension.

<sup>7</sup> *Ibid.*, p. 14.

<sup>8</sup> Interview with Juan Galecio, former director of the Department of Agricultural Extension, Santiago, 1964.

Chillán. Agroservicio did not collaborate with the Department of Agricultural Extension, and even in Chillán it operated apart from the "coordinated plan," in spite of the fact that it was supported and advised by the same agencies that administered the plan.<sup>9</sup>

In 1958 DTICA began to expand its Chillán extension project to other areas of the country as a result of a new contract called the National Plan of Agricultural Extension.<sup>10</sup> Simultaneously DTICA proposed a reorganization of the national service into semiautonomous regions or zones, a step opposed by the director. This and other differences of opinion made the collaboration between DTICA and the department less and less workable.<sup>11</sup> In the face of what was openly regarded as competition and because of dwindling support from national and U.S. sources, the extension department asked for support and technical assistance from the Food and Agricultural Organization of the United Nations.<sup>12</sup> This illustrates an important fact about bureaucratic proliferation in Chile: when one foreign source of funds fails, an agency is usually able to find modest support from the national budget or from an international organization, thereby surviving—if only at the administrative level. Once firmly established an agency or bureau seldom disappears, though its original function may give way to the immediate goal of survival. In other words, the "bureaucratic explosion" is the result of a low death rate as well as a high birth rate.

In 1958 the State Bank of Chile, largely on the initiative of the U.S. Operations Mission, started its own agricultural extension service. The idea was to convert the bank's farm loan operation into a supervised credit program. Three pilot projects were operating by 1964.

In 1960 DTICA helped to finance still another pilot project in yet another agency—this one called Plan Navidad. This plan, basically an experiment in supervised credit, was carried out in conjunction with other departments of the Ministry of Agriculture, including a new one called the Department of Soil Conservation and Technical Assistance, which had just been formed by combining the old soil conservation and agricultural extension departments. (This consolidation was undone after about a year.) In Plan Navidad's second year of operation, a new agency called the Supervised Credit Department was created specifically to carry on with the plan and extend it to other areas.<sup>13</sup>

In 1962 the U.S. Operations Mission began to support still another private organization which was supposedly carrying out extension activities. This was the Institute for Rural Education (IER). In the next three years, aid to this institute increased until foreign money made up nearly a third of its budget. During the same period, government money earmarked for extension was switched from the national service to IER.

<sup>9</sup> *Programa Agrícola del Punto Cuarto en Chile: Informe de la División de Agricultura de la Misión de Operaciones de los Estados Unidos en Chile* (Santiago: USAID, September 1959), p. 75, mimeographed.

<sup>10</sup> *Ibid.*, pp. 6-7.

<sup>11</sup> An official report of the differences is contained in Galecio, *Informe del Servicio*.

<sup>12</sup> Galecio interview.

<sup>13</sup> *Plan Navidad, 1960-1962* (Santiago: Ministry of Agriculture, 1963), pages not numbered.

More dispersion of the extension function came also in 1962 when, in response to Punta del Este, there was a reorganization of the Ministry of Agriculture. For example, the Department of Agricultural Extension lost twenty-eight agricultural technicians (35 percent) to new agencies created that year.<sup>14</sup> One of these was INDAP, which also became legal heir to much of the equipment and personnel once occupied in the now abandoned Plan Chillán.

As of 1964, the Department of Agricultural Extension had almost no outside financing and a very small share of the national budget. Its finances and facilities were so depleted that field workers were in many cases forced to depend on other departments. For example, the entire extension service had some thirty-two vehicles—twenty-three of them on loan from INDAP.<sup>15</sup> In 1959 it had had fifty-six.<sup>16</sup>

### Transplanted Doctrine

Some of the impact of foreign programs on the organizational aspects of Chile's extension effort has resulted from a wholesale transfer of extension philosophy and methodology from the U.S., especially regarding administrative and institutional arrangements. From its inception as a ministerial bureau Chile's Department of Agricultural Extension has borne many similarities to its counterpart in the United States. In the early years this similarity was more in method (i.e., demonstrations, farm visits, meetings) than in structure, and was largely a result of the fact that some of the department's people had attended U.S. schools. Over the years the similarity has increased. The division of the country into pseudoregions and zones approximating U.S. counties, the introduction of subject matter specialists, supervisors, and home agents, the initiation of 4-C clubs for rural youth, and the organization of work along project and campaign lines were all instigated largely by U.S. advisors.<sup>17</sup> A good example of this kind of influence occurred in 1965 when an AID financed team of extension experts from California visited Chile. After a few weeks of study the experts recommended a new organizational structure, indicating that "studies of Extension administration are not necessary. What is necessary is the desire to implement an organization designed to perform the Extension educational function."<sup>18</sup>

Their report went on to suggest, among other things, that: (1) Extension must be "strictly educational in function, completely free from regulatory duties, servicing credit programs" and should not become involved in "crash" programs of current interest to the government."<sup>19</sup> (2) A new

<sup>14</sup> *Departamento de Extensión Agrícola, Organización, Personal y Funcionamiento* (Santiago: Ministry of Agriculture, 1963), p. 19.

<sup>15</sup> *Departamento de Extensión Agrícola, Organización, Personal y Funcionamiento* (Santiago: Ministry of Agriculture, 1964), p. 19.

<sup>16</sup> Galecio, *Informe del Servicio*, p. 18.

<sup>17</sup> Galecio interview.

<sup>18</sup> "Preliminary Report of the University of California Extension Team to the Chile-California Program Concerning the Agricultural Extension Function in Chile" (Santiago: USAID, February 1965), p. 3.

<sup>19</sup> *Ibid.*, p. 3.

subdepartment should be created in the ministry and charged with coordinating the activities of the several extension-type agencies.<sup>20</sup> (3) A "pilot Extension effort" should be established in the Maule River Basin and Zone VII.<sup>21</sup> (4) Small farmers and land reform colonists should be among the clientele of extension only if "social goals" are considered more immediate than production goals, since limited staff and budget will make it very difficult "to attain the social goal of working with small farmers who will have little impact on agricultural production."<sup>22</sup> (5) U.S. advisors should work closely with the new extension service for "a minimum period of five years. However, continuity need not necessarily be provided by the same individuals for all this time span."<sup>23</sup>

The visiting experts backed up their proposals with a good deal of insistence:

Should there be immediate action on the part of the government of Chile to make organizational changes that substantially satisfy the above fundamental conditions, the Chile-California Rural Extension Project personnel then recommend continued and expanded cooperative work, both in the organizational area and in field technical assistance. If such changes are not made, the value of future technical aid in the production sector of agriculture is open to serious question.<sup>24</sup>

On the whole the report had a very familiar ring, calling for another reorganization, for a new coordinating bureau, for short-term technical advisors, for yet another pilot project, and for avoidance, by all means, of "political" issues.

At the heart of this kind of advice is a notion that the basic communications task is one of persuasion and attitude change. This may be appropriate to modern agriculture in an industrial nation, but it ignores the economic, institutional, and other situational constraints that greatly limit the utility of a strictly informational or educational program for the vast majority of farmers in developing areas. Besides advocating a wholesale transfer of modern U.S. institutional forms, this kind of advice also denies the history of these institutions in our own country by implicitly ignoring the fact that early extension workers in the United States were very much involved in controversial and "political" activities. In Wisconsin these included zoning schemes, resettlement projects, consolidation of schools, tenancy legislation, rural electrification and other works projects, and organization of farmers into co-ops and pressure groups.

In short, foreign aid efforts have been marked by a tendency to see the modernization process primarily as one in which modern technology is transferred to backward nations. Foreign advisors have often failed to understand that development is also (and more importantly) a process by which ideas emerge and are tested and adapted *within* the specific problematic situations of developing nations. Consequently many of the recommendations of outsiders, however good they may be in the abstract, have been irrelevant to Chilean conditions. It is, for example, quite impractical for Chile to maintain a purely informational extension program that stays away from "political" issues. The surest way to make extension irrelevant

<sup>20</sup> Ibid., p. 4.

<sup>21</sup> Ibid., also pp. 20-36.

<sup>22</sup> Ibid., pp. 9-10.

<sup>23</sup> Ibid., p. 4.

<sup>24</sup> Ibid., p. 7.

and ineffectual in Chile is to isolate it from land reform, credit, and other "political" development programs that are and will be under way in the countryside.

Having thus criticized foreign aid, it is essential to recognize that decisions on the part of U.S. and other international agencies to support, and in some cases to help create, extension programs in so many diverse agencies are undoubtedly made with good intentions—and at least sometimes with an eye to problems not readily apparent to an outside observer. It is seldom possible to say who is right and who is wrong in arguments between agencies and departments, and it is certainly impossible to maintain anything like perfect coordination in any development effort, much less a bilateral one. Furthermore, if the extension function *were* being carried out in Chile, the matters of proliferation and transplanted doctrines would be quite uninteresting. However, even when the efforts of all the major programs are added up, extension is clearly not being carried out on any significant scale.

#### Existing Agencies

Quantitative data were gathered on ten of the nineteen or so agencies that were active in 1964. These included all of the larger ones as well as some smaller ones whose programs include experimentation with novel methods. Many of these have been identified in the preceding pages. Others, which have been much less influenced by foreign aid, are described in the following brief summaries.

1. The Instituto de Promoción Agraria (Institute for the Promotion of Agriculture or INPROA) is a private agency associated with the Catholic church. It was organized to carry out land reform on some church owned farms. It offers technical assistance and supervised credit programs for its colonists. Though very small, this program is particularly interesting because of its reliance on compulsion in promoting new practices. This facet of its program will be discussed later.

2. The Industria Nacional Azucarera (National Sugar Industry or IANSA) is legally a private corporation, though the government development corporation (CORFO) owns 90 percent of its stock. It was established in 1953 as a result of studies and experiments started in 1939. Its purpose is to increase national production of sugar with the ultimate goal of self-sufficiency. At present Chile imports about half of its sugar; in 1952 it imported virtually 100 percent. IANSA has a vertically integrated program which includes production contracts with farmers as well as processing and marketing arrangements for sugar beet products. It has a vigorous research program, and its supervised credit and technical assistance are widely regarded as the best in Chile.<sup>25</sup> An estimated 55 percent of its contracts are with small farmers (under ten hectares).<sup>26</sup>

3. Compradores de Maravilla (Sunflower Buyers or COMARSA) is a

<sup>25</sup> In 1964-65 some thirty-one research projects were carried out. These included fertilizer trials, varietal tests, and parasite control experiments.

<sup>26</sup> Interview with the director of the Departamento Agrícola de la Industria Azucarera Nacional, Santiago, July 1964.

private incorporated concern which contracts with farmers for production of sunflower and rape seed and provides some credit and technical advice to its contractors.

4. The Compañía Chilena de Tabacos (Chilean Tobacco Co.) is also private and largely foreign owned. It contracts directly with farmers, many of them small farmers and sharecroppers. Like IANSA, it is vertically integrated to provide credit and technical advice, buy the crop, and manufacture and sell the finished product.

The Institute for Rural Education, initially included in this study, was judged to be mostly concerned with full-time religious and vocational training at the high school level, and thus not much involved in the kind of extension work being considered here. It was therefore not included in the following table which summarizes salient features of the agencies surveyed.

The total number of farmers reached includes raw estimates by adminis-

TABLE 1  
SALIENT FEATURES OF NINE CHILEAN EXTENSION PROGRAMS, JUNE 1964

PROGRAM AGENT	STAFF		SCOPE		FARMERS REACHED
	Administra- tion and Service	Agricultural Technicians	Offices	Provinces	
Department of Agricultural Extension <sup>a</sup> .....	82	70	44	21	20,000
INDAP <sup>b</sup> .....	237	326	77	25	36,000
CORA.....	378 <sup>c</sup>	81 <sup>c</sup>	13 <sup>d</sup>	13 <sup>d</sup>	1,500 <sup>d</sup>
INPROA <sup>e</sup> .....	23	7	7	5	214
State Bank <sup>f</sup> .....	6	11	3	3	480
IANSA <sup>g</sup> .....	46	52	10	14	3,039
COMARSA <sup>h</sup> .....	17	12	7	18	7,380
Tabacos <sup>i</sup> .....	11	7	3	2	380
Agroservicio <sup>j</sup> .....	14	12	4	11	400
Total.....	784	578	168		69,393 <sup>k</sup>

SOURCES: There have, of course, been many changes since 1964, especially in CORA and INDAP which have been expanded by the Frei government. As of this writing, however, it has been impossible to secure more recent data on these agencies. The following were used for the specific data indicated.

<sup>a</sup> Data from the vice-director of the Department of Agricultural Extension, Santiago, June 1964.

<sup>b</sup> Data from the Supervised Credit Section, INDAP, Santiago, July 1964.

<sup>c</sup> William C. Thiesenhusen, "Experimental Programs of Land Reform in Chile" (Ph.D. diss., University of Wisconsin, 1965), p. 341.

<sup>d</sup> Data from the Department of Technical Assistance, CORA, Santiago, July 1964.

<sup>e</sup> Data from INPROA, Santiago, August 1964.

<sup>f</sup> Hugo Ossio Silivá, "El Crédito Supervisado en Chile" (Graduate thesis, University of Chile, 1964), pp. 10-24.

<sup>g</sup> Data from the Agronomic Department of IANSA, Santiago, January 1965.

<sup>h</sup> Data from the central office of COMARSA, Santiago, 1965.

<sup>i</sup> Data from the Chilean Tobacco Company, Valparaíso, February 1965.

<sup>j</sup> Data from Agroservicio, Santiago, July 1964.

<sup>k</sup> This total undoubtedly includes some double counting and thus probably overestimates the number of farmers reached.

trators, especially in the cases of CORA and the Department of Agricultural Extension, which did not have actual records of contacts with farmers. Programs that include loans or contracts do, of course, have a fairly exact count of the farmers with whom they deal. In any case, it is probably safe to conclude that approximately 50,000 farmers were receiving some kind of technical assistance and advice—if only occasional exposure to a bulletin—at the time of the study. This represents about 20 percent of the active farmers in Chile (the 1965 census shows 253,492 farming operations in the country).<sup>27</sup> In quantitative terms, then, it is clear that the extension function is being carried out only to a very limited extent.

This review of extension programs in Chile is not exhaustive. The brief descriptions and case histories do, however, establish the fact of duplication of function and stress the role of foreign advice in bringing it about. They also suggest that the proliferation and transplanted ideas have been detrimental to the agricultural development effort.

One important consequence of proliferation has been its effect on the ratio of administrative personnel to field staff. Most of the agencies list more administrative and service people than agricultural technicians. In addition, even those listed as members of the technical staff often have administrative and supervisory duties that limit the time for direct advisory activities. If there were fewer agencies, it is likely that competent technical people who now spend part or all of their time in noneducational work could do more field work and prepare more teaching materials. Thus it appears that proliferation may very well have had the effect of concentrating scarce resources at the administrative level, thereby impairing the development of effective linkages between agencies and clientele and contributing to displacement of the goals for which the agencies were established.

The fact that there are so many programs, and that each has its headquarters in or near Santiago, also leads to an over concentration of personnel in one area. In addition, most of the agencies are small and never succeed in putting together the "critical mass" of resources and talent needed to carry out a vigorous large scale program.

Another important dysfunctional effect of proliferation has been the constant disruption of ongoing projects as men, money, and equipment have been shifted around in one reorganization after another. Projects have started with much fanfare, only to be quickly abandoned in favor of newer efforts. Some people and equipment have been moved several times: from the Department of Agricultural Extension to Plan Chillán; from the Plan to Agroservicio; from Agroservicio to a newly consolidated department of extension and soil conservation, and a year later, back to the old department or to INDAP or CORA.

If the reader found it difficult to follow the complexities of the organizational proliferation described earlier (a common complaint among readers of an earlier, more detailed draft of this article), then perhaps he can better imagine what it was like for extension workers who lived through it. As one agent put it, "We are always starting over again at the beginning." The

<sup>27</sup> Department of Statistics and Census, *IV Censo Nacional Agropecuario, Año Agrícola 1964-65, Resumen del País, Cifras Preliminares*, (Santiago: Government Printing Office, December 1966), p. 2.

repeated reorganization has not only disrupted the work and affected the morale of extension workers, but it has also led to disillusionment on the part of farmers. Premature abandonment of projects and services has contributed to the prevailing notion in the countryside that agricultural advisory people "come around only when the government is looking for votes."

#### Package Programs

Extension programs which enjoy the most rapport with farmers, and which are generally regarded as the most effective in Chile, are those that form a part of larger programs that provide a package of services to farmers. These are also the programs that have been the least affected by proliferation, reorganization, and foreign assistance.

Three such programs are organized on a commodity basis.<sup>28</sup> They give credit, distribute inputs, and provide a firm marketing contract with the price fixed before planting time. Where credit and marketing institutions are absent or geared only to the needs of very large farms, integrated services on a commodity basis appear to be fruitful. Technical information is of little value, especially to the small farmer, unless it is accompanied by other changes that enable him to produce a surplus and sell it profitably.

This approach may be especially useful for agrarian reform.<sup>29</sup> Contracting the production of certain key crops with new landowners would seem to have several advantages: (1) Colonists would have much needed market security during the crucial first years. A more conventional extension program, even if it succeeded in raising production, would not provide a secure market. (2) By concentrating on single crops within given areas, agents could give better advice and improve rapport with their clientele. Chilean farmers seem to have little respect for general extensionists, but high regard for specialists in the sugar beet program.<sup>30</sup> Apparently being part of an integrated commodity-oriented program makes information service more effective, not only because the other services make it possible to use the information, but because there is more respect for the specialist as an extension agent.

Organizing technical assistance on a commodity basis may also permit the government to concentrate scarce service resources and personnel on crops most needed for import substitution or export. It may be particularly appropriate to current attempts to increase fruit production. As the economy develops and service institutions improve, technology introduced for contracted crops would probably spread to other crops, but rapid and spontaneous transfer of technology is not to be expected since deficiencies in both input and output markets would continue to exist for all but the contracted crops. Still the educational groundwork would have been laid and would probably encourage the later adoption of similar techniques for other

<sup>28</sup> These are IANSA, COMARSA, and Tabacos. Of the three IANSA is the most significant, since Tabacos is very small and COMARSA offers little credit or advice.

<sup>29</sup> In fact, both INPROA and CORA have incorporated many aspects of these integrated programs into their operations, and both have made arrangements for some colonists to work with IANSA.

<sup>30</sup> This is a commonly expressed impression in Chile, corroborated by preliminary findings of a survey conducted by the author as part of a separate study now underway.

crops. Some spread is already evident from the IANSA program, notably in feeding silage and beet pulp to animals, improvement of the general rotation pattern, and increased use of fertilizer and pesticides.<sup>31</sup>

### Compulsory Adoption

Another interesting facet of these programs, especially that of IANSA, is the high degree of control exercised over the technology used by contracting farmers. The production contract obligates the farmer to follow recommendations as to acreage, rotation, seed selection, planting and harvesting dates, fertilizer rates, pest control, and other technical aspects of production.

The program appears to be effective. Compliance is virtually 100 percent, and beet yields are among the highest in the world (average 379.4 quintales per hectare or about 16.4 tons per acre).<sup>32</sup> This represents a yield increase of about 250 percent since 1953-54 when the first sugar beet processing plant was constructed. This increase came quickly, with yields nearly doubling within the first three years and remaining high thereafter; the number of acres and growers increased about tenfold each during the same period.<sup>33</sup>

The farmer signs up voluntarily and presumably knows that he is accepting a whole package of technology along with the production contract, but for specific innovations his choice is limited. Compulsion greatly alters the normal pattern of practice adoption which has been shown many times to proceed through several stages, including awareness, interest, evaluation, trial, and adoption.<sup>34</sup> Unless one defines *adoption* as the simple signing of a contract, then the individual practices forming the package are "adopted" before the farmer has tried, evaluated, or even evinced interest in them.

One could hypothesize that compulsory programs restrict freedom, destroy initiative, decrease self-reliance, and increase the farmer's tendency to "let somebody else make his decisions for him." This would seem to be especially plausible in a land reform situation where generations of traditional servitude and dependence may heighten the possibility that such a program would merely substitute a new form of paternalism for the old. These issues are of more than academic interest, since both of Chile's land reform agencies (CORA and INPROA) use considerable compulsion in their technical assistance programs. Unlike IANSA, they neither deal with single commodities nor operate on the basis of production contracts. Their technicians, however, do make most management decisions for reform colonies during their early years.

Some learning theories suggest that repeated use of rewarding (profitable) techniques will, regardless of coercion, increase knowledge and change attitudes. On the other hand, Festinger's theory of cognitive dissonance

<sup>31</sup> These are preliminary observations based on interviews with farmers who grow sugar beets under contract to IANSA.

<sup>32</sup> *IV Censo Nacional Agropecuario*, p. 45.

<sup>33</sup> Unpublished data provided by IANSA, Santiago, February 1966.

<sup>34</sup> A complete discussion of these stages can be found in Everett M. Rogers, *The Diffusion of Innovations* (Glencoe, Ill.: Free Press, 1962), pp. 81-86.

suggests that coerced compliance does not necessarily result in favorable attitudes toward the technique.<sup>35</sup>

Though it is impossible to fully develop or test these theoretical implications here—they demand further research—it is possible on the basis of this study to relate a few general impressions about the results of the compulsory programs of IANSA and INPROA. Responses by some two hundred sugar beet growers, selected randomly from IANSA lists, seem to vary somewhat according to farm size, previous use of technology, and length of participation in the sugar beet program. Many growers, especially those with medium and large operations, seem little aware of the contractual obligations and possible sanctions for noncompliance. They tend to regard the requirements as recommendations which they voluntarily follow. Small farmers who have little previous experience with modern technology sometimes resent and even resist some of the practices, especially the very high fertilization rates, which they regard as extremely expensive. This reaction is more evident among new participants than among veteran growers.

INPROA controls the technology by direct management rather than by contract. The land reform program proceeds by stages: colonists spend a year or two as sharecroppers and a couple of years as renters before they receive title. During the transition the farm is operated as a unit with INPROA providing compulsory credit and supervision. The colonists are encouraged to form a cooperative and to participate in the management decisions, but as owner of the land, INPROA retains veto power.<sup>36</sup> By giving credit in kind instead of cash, INPROA has been able to insist on the use of hybrid corn, fertilizers, herbicides, and other practices. It has also introduced new crops.

It is important to note that new practices are being applied, many of which would not be used without INPROA's insistence. It is also quite evident that the pressure has caused some resentment—more so than in the case of IANSA. For example, the president of one colony's cooperative complained about having to fertilize at a rate that he considered excessive and at having to plant a variety of corn which, he claimed, gave very poor results. In another colony, where yields have been better, there is still some resentment. Several colonists complained at being obliged to sow wheat even though the best time to plant had long passed. They were convinced that the crop would fail and that planting it would make them late with their other crops.

There is also some question as to how many of the colonists are really "adopting" the new practices, in spite of the fact that most are applying them.<sup>37</sup> This is especially true where yields have been low, but even where

<sup>35</sup> These theoretical issues are discussed briefly in Leon Festinger, *A Theory of Cognitive Dissonance* (Stanford, Calif.: Stanford University Press, 1957), see especially pp. 90-95.

<sup>36</sup> A complete description of INPROA's plan is contained in William C. Thiesenhusen, *Chile's Experiments in Agrarian Reform*, Land Economics Monograph no. 1 (Madison: University of Wisconsin Press, 1966).

<sup>37</sup> This may be much like the situation on traditional *fundos* where *inquilinos* use modern practices on the owner's land, but make little or no effort to apply them to their own plots.

they have not, some colonists show signs of indifference. When asked if they knew about hybrid corn, ten of twenty-seven said "no" even though they had planted it the year before. They all knew that the corn INPROA had brought was supposed to be special, but several neither knew it by name nor that the seed had to be renewed every year. It was almost as if they did not think of the crops as theirs—considering themselves to be working for wages, just as before. It is worth noting that such colonists are probably the very ones who would not respond favorably to conventional extension and credit programs, also that their indifference and resentment may be transitory.

### Summary and Implications for Policy

To summarize the salient points of this paper:

1. Chile's agricultural extension effort is small and marked by a tendency toward bureaucratic proliferation and duplication of function.

2. This tendency appears to have been stimulated in part by foreign aid and advice which has been offered first to one and then another agency in search of bureaucratic agility and quick results. Foreign assistance has included little in the way of evaluation or research, and a great deal in the way of direct transplantation of ideas about organization and methods. In future efforts to help Chile modernize her agriculture, the industrial world would probably be well advised to practice the following principles: (a) Be very cautious about creating or supporting new programs. (b) Support locally developed programs rather than transplanted institutions, offering less advice and maintaining less control over the shape and direction of such programs. (c) Support and encourage research efforts to evaluate ongoing programs. A simple practical step in this direction might be made by establishing a scholarship program for indigenous students who wish to conduct undergraduate or graduate research on extension issues.

3. Programs that have been most effective in introducing new technology in Chile have offered credit and marketing services as well as technical advice and have been vertically integrated and specialized.

4. These same programs, and the land reform effort as well, have employed considerable compulsion in their promotion of modern practices. The compulsion clearly speeds adoption. Its other consequences, such as its effect on farmers' attitudes, are less clear and should become the subject of further study.