ASPECTS OF COMMUNICATION IN THE FARMING MILIEU: RESULTS OF AN EMPIRICAL RESEARCH IN GREECE ([1])

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Communication is coming to be perceived generally as a social issue, «social interaction through messages», and constitutes the practice of social relationships (Fiske, 1992, p. 18). Communication plays a basic role in life, since every group, community or culture can be defined as «people in communication» (Cherry, 1987, p. 10). The study of communication, although a relatively new discipline, has undergone considerable development. In the farming milieu and — to be specific — in agriculture, extension «involves the conscious use of communication of information to help people form sound opinions and make good decisions» (Van den Ban and Hawkins, 1988, p. 9).

The process of communication was once conceived as a one-way, linear transmission of speech from the sender to the receiver (a formulation of Laswell) leading to a certain result, based on the stimulus-response approach of the behaviourist school of psychology (Maletzke, 1991, pp. 27-29). In the wake of Shannon and Weaver's mathematical model of communication (in Fiske, 1992, pp. 23-42) and Gerbner's model (1987), more refined and complex models were developed involving preceding and intervening variables and applying chiefly to mass communication (Rogers, 1986).

There are broadly speaking two main schools in the study of communication. The first, more conventional, is chiefly interested in the way in which messages are transmitted, focusing its attention on who influences what and how, regarding individuals as senders and receivers of messages and communication as a transmission process. The second approach, which may be referred to as the mainstream semiotic approach, places emphasis on the way in which messages interact with people to

Abstract

Communication is thought of as being a crucial factor in the modernization process and has been used in a wide range of development initiatives and problems as an element of a variety of strategies. The present paper tries to define the function of communication, especially of that provided by the Greek Extension Service, towards the modernization of the Greek agriculture. The use of survey data and the Multiple Correspondence analysis provides a categorization of farm households in the Study Area and their distinctive characteristics as far as communication and changes on farm level are concerned. Furthermore, while taking into account the organizational framework of the Greek Extension Service, an attempt is made to detect crucial elements of their functioning as change agents concerning the types of households identified as well as to propose a number of changes deemed as being necessary for the Service's improved effectiveness.

Résumé

La communication est considerée comme un facteur qui joue un rôle essentiel dans les processus de modernisation. Elle a été utilisée dans des nobreuses initiatives de développement comme un élément des diverses stratégies. C'est article essaie de définir les fonctions de communication et plus spécifiquement celles qui sont offertes par le Service de Vulgarisation Agricole Grecque. L'utilisation des données d'enquête et de l'Analyse des Correspondences Multiples offrent une classification des exploitations agricoles dans la région d'enquête et présentent leurs caractéristiques distincts concernant la communication et les changements au niveau de l'exploitation. De plus en tenant compte du cadre organisationnel du Service de Vulgarisation Agricole Grecque, on essaie de détecter les éléments critiques de leur fonctionnement comme agents de changement concernants les types d'exploitations identifiés, ainsi que de proposer un certain nombre de changements considerés comme nécessaires pour l'amélioration de l'efficacité du Service de Vulgarisation Agricole Grecque.

produce meaning. The first approach treats social interaction as a process of influencing the situation of whoever happens to be transmitting. Any deviation from the expected result is perceived as a communication failure, necessitating a re-examination of all elements in the process. The second approach is interested in the recognition of the meaning of signs as evidence of the operations of a cods and a cultural context. Social interaction is defined as an operation which constitutes an individual as a member of his community, so that misunderstanding are seen as possibly attributable to cultural differences between the transmitter and the receiver, thus necessitating an examination of these differences ([2]).

Initial research concentrated chiefly on technically mediated communication, «ignoring» communication of the immediate interpersonal type. Later however the question was raised as to the relationship between these two types of communication. It was ascertained that under comparable conditions personal contact possesses certain advantages over mass communication, chiefly because of the reduced critical distance involved and the possibilities of immediate feedback between the two partners in the transaction (Maletzke, 1991, pp. 34-36).

Today, after this initial period during which mass communication «was often thought to be a very powerful and direct force for development» (Rogers, 1976, p. 134) it is generally agreed that in order for commu-

nication to be effective as a developmental factor it must be supplemented or accompanied by structural changes in the resource base and the broader environment (Hornic, 1980, McAnany, 1978, Rogers, 1978). The relationship between the behaviour of individuals and the environment in which they live, and in particular the role of social and cognitive factors in exposure to information, are well established (Beinstein, 1977, Hirschaman, 1981, Siardos, 1986, pp. 134-138). It is considered that the development of telecommunications and information technology constitute a valuable potential for improved availability of services in rural areas, not to mention improved cost-benefit ratios in agricultural activities and a more balanced distribution of economic benefits. To the extent, therefore, that information technology is a key resource in agricultural development there is a justified interest in the potential role of the mass media and information technology, both as support systems for agricultural/rural extension and as systems whereby farmers and their communities can communicate both with each other and with the urban centre. Modern technological developments offer alternative solutions almost inconceivable only a decade ago, which have nevertheless given rise to pessimistic forecasts to the extent that their use is dependent of power relations in the social, economic and political field. They may even be leading to a new «illiteracy gap» (Garforth, 1986, p. 195,

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([2]) At the same time a third viewpoint has also been developed rejecting both these approaches as reflections of a dominant scientific tradition described as «foundationalism», and advocating a charge of paradigm in favour of a variation of what is called «constructionism». From this perspective «communication is the primary process. It is the means by which we come to know the world. It is the means by which meaning, values and social institutions are constructed» (Penman, 1988).

Samarajiva and Shields, 1990, Cater, 1981, Parker, 1978, Petryszak, 1977) [3].
In Greece, the Extension Service is the chief means whereby information on agricultural topics is transmitted to the farming community, utilising 800 extension agents located throughout the countryside as well as the mass media. The present study represents an attempt to contribute to the clarification of the position occupied by communication in the context of agricultural modernisation in Greece. The investigation focuses on only one part of the communicative nexus of relationships, placing chief emphasis on relations of interpersonal and mass communication, along with the factors which influence them and with the changes being carried out at the individual farm level.

Methodological approach

This study draws on some of the statistical data collected in the framework of a more wide-ranging programme of our Unit whose basic aim is the investigation and clarification of the modernisation process in Greek agriculture. The Prefecture of Phthiotis was selected as the general field of investigation because it was considered as being representative of the existing on National level - diversity among the types of natural environment on the one hand and the production systems on the other (Panagiotou 1974).
For the purposes of extracting the most representative sample of farmers from the viewpoint of our research needs, the rural commune (or community) was chosen as the basic unit of agricultural development. Indeed, as other studies have similarly confirmed, the Greek rural commune constitutes an outstanding social, geographic and to a large extent ecological entity, with quite specific structural characteristics and production systems.
The sampling procedure was completed in two stages: a) choice of communities representative of the prefecture, and b) determination of the sample farms in the chosen communities. In the first stage the 187 communities in the prefecture were divided into groups on the basis of their production system [4]. Specifically, communities with a common productive system constitute a separate group from the viewpoint of farm development characteristics (Panagiotou, 1986). Six (6) relatively homogeneous groups of communities were identified and thirty (30) communities were designated as representative of the prefecture. In the second stage, in each of the 30 communities chosen, the farms belonging to permanent residents were graded on the basis of land area in hectares and random sampling was carried out at the level of each grading. A total of 738 farms were selected. The data used refers to community characteristics (secondary data) and data from the 738 questionnaires which can be categorised in three broad groups:

— variables referring to the households (demography [5], succession), the farm heads (age, general and agricultural education, occupation, etc.) and the farms (owned, hired, cultivated and irrigated land),
— variables referring to communications aspects (both personal contacts with rural services and extension officers and the mass media - attendance and type of programmes in RTV, readership of newspapers), and
— variables referring to the knowledge of schemes related to farm modernization and variables referring to changes on the farm level (introduction of new crops and/or cultivars, and introduction of new techniques) (the definition of the variables is provided in the Appendix).
The statistical analysis of the data was completed in two stages: a) on the univariate level (analysis of frequencies) and on the bivariate level (analysis through crosstabulations and correlations) and, b) on the multivariate level for identification and analysis of the internal relationships between the groups of variables, employing the Analyse Factorielle des Correspondances Multiples (AFCM) [6].

Data analysis

1. General characteristics of the sample

a. *Individual characteristics.* The characteristics of the sample are, briefly, as follows: the average age of the heads of farm households included in the sample was approximately 53 years. Only 9% of them had attended school beyond the third year of junior high school. 76.5% of interviewees put farming as their chief occupation. 56% were engaged in no other occupation. Of the pensioners, (approximately 19% of the sample), 84% were engaged exclusively in farming whereas 86% of the interviewees employed chiefly in non-farming occupations (a category which constituted approximately 11% of the sample) farmed as a supplement to their main income.
Of the children remaining in the farming households 39% were exclusively occupied with farming, 20.5% were employed in other income-earning work and 9% performed housekeeping tasks. As for the demographic profile, 67.5% of households exemplified a good, 7% a medium and 25.5% a poor demographic profile.
68.5% of interviewees were familiar with the Agricultural Training Centres and 43% had attended courses at them. Finally, 34% of farmers stated that other farmers in the communities consulted them frequently, while 30% said they rarely consulted them or did not consult them at all.
b. *Farm characteristics.* The situation was in brief as follows: The average owned allotment size per farm was 6.8 ha. 54% of farm operators did not rent land. The average total expanse under, cultivation, including both owned and rented land, was 9 ha.

79% of farms possessed their own irrigated land, and irrigated land constituted 84% of the total area under cultivation.
On the basis of area of land cultivated, the predominant crops were cereals (40% of the total), olives (26.5%) and cotton (22.3%). There was also cultivation on a smaller scale of tobacco (7.3%) and grapes (1%), with even smaller figures for vegetables, including tomatoes for industrial use.
c. *Attitudes to farming.* 47% of those questioned thought that farming as an exclusive income source can provide a satisfactory standard of living for a family. Of the farmers who believe that they cannot secure a satisfactory income from farming alone, slightly more than half (54.5%) would like to have a supplementary occupation apart from farming, whereas 35% would like to exercise another profession and to have farming as a sideline. There were an additional 5% who wanted to abandon farming. It should be noted that over half of those questioned remained in farming through lack of any occupational alternative and another 27% remained because of family tradition. A small proportion remained either because of the positive side of village life (8.5%) or because of their conviction that farming would continue to provide a satisfactory income.
Moveover, only 40% of farmers were in

[3] For a concise presentation of the «communication effects gap hypothesis» and the modification to the initial hypothesis of Tichenor et al, see Shingi and Mody, 1976 and Rogers, 1976, pp. 141-143.
[4] In defining the production system account was taken of the chief branches of production and the characteristic magnitudes which shape the productive structure in the broader sense at community level, such as land ownership, productivity of land and of work, level of mechanisation, proximity to the plains etc. So defined, the production system very closely reflects the productive structure of the community, expressing both its potentialities and the obstacles it will place in the way of agricultural development, (Panagiotou, op. cit.).
[5] By using a combination of age, marital status, the presence or absence of dependent children or family members assisting on the farm, operators were categorised as being «good», «medium» or «poor» household demography types as follows:
* Type 1 (Good household demography) All farm operators under 40 years; those aged from 40 to 55, married with children; those over 55 years of age with a family member on the farm.
* Type 2 (Medium household demography) Farm operators between 40 and 55 years of age without children.
* Type 3 (Poor household demography) Farm operators over 55 years with no the family member assisting on the farm (Mannion et al., 1984, p. 46).
[6] The AFCM belongs to a new branch of statistics known as «Analyse des Donnees». It possesses the basic advantage of not being based on a predetermined model, but creating a descriptive model through expanding the relationships between the given data. The AFCM, in particular, which represents and interprets multiple crosstabulations, has been used quite frequently with data deriving from surveys. It is a method which enables the user to choose a sub-total of variables, summoning up the active variables, and to establish a typology of interviewees demonstrating the characteristics profiles and relations between the variables. It also enables the researcher to employ the technique of variables supplementaires, i.e. supplementary variables, the study of whose positioning in relation to the profiles the answer to various questions and thus a basis for decision-making (see Volle, 1985, Labrousse, 1983, Lagarde, 1983, Dervin, 1988, Rijckevorsel and Leew, 1988, Hatziparadeisis, 1991).

favour of one of the children of the family staying on the farm, an attitude chiefly attributable to uncertainty as to the possibilities of their securing a stable and satisfactory income (51.5%). Education is also a factor little conducive to children's staying in farming (23%), as is land shortage (10%) and the fact that farming is a difficult occupation, requiring much hard work (6%).

d. Contacts with Agronomists and Rural Services. Around 39% of farmers declared that during 1988 they had an agronomist visit their farm, while 32% had attended some informational meeting featuring an agronomist (i.e. extension officer). 36% had visited the Farming Directorate of the Prefecture and 39% had visited the local extension officer. In addition to this 40% stated that they had visited the agronomist of the Agricultural Bank of Greece and 35% mentioned private agronomists (dealers in agrochemicals and/or machinery). A smaller number had visited either a research station (18%), or an experimental or demonstration field (8%). The periodicals of the Ministry of Agriculture enjoy a relatively limited readership (11.5%). It seems that the chief source of information are the announcements put up in local authority office (60%). These contacts are made primarily for the purposes of acquiring technical information and directions as to how to go about obtaining a subsidy. Other — significantly less frequent — motives include curiosity and the need to take out a loan or acquire a permit to drive an agricultural vehicle.

e. Mass media influence. The influence of the mass media can be gauged from the following: as regards radio it seems that most farmers listen for less than two hours daily (56%) while a smaller number (13%) never listen at all. Television is the most popular medium (3% never watch, and 54% watch for less than two hours). On the radio the most popular programme are the news (48%), entertainment programmes (about 25%) and agricultural programmes (about 25%) while for television the corresponding figures are 58.5% for the news, 25% for entertainment and 12.5% for agricultural programmes. Radio and television are the chief means of communicating general information (77.5% in contrast to the figure of 21% for the metropolitan daily newspapers). About 30% of the sample claimed to read newspapers every day, while 49% read then rarely or did not read then at all. 42% never bought a newspaper to take home.

f. Information concerning the activities and programmes of the Ministry of Agriculture. As regards knowledge of the activities of the Ministry of Agriculture, only 32% stated that they often had news of such activities, while

one in five (about 21%) said that they never heard anything. The chief sources of information are radio and television, agricultural co-operatives and village council offices. Information is also acquired, albeit to a much lesser extent, from Ministry of Agriculture periodicals, private agronomists (dealers in agrochemicals and/or machinery) and newspapers.

As for knowledge of the programmes/schemes managed by the Ministry of Agriculture: 62% have heard of the European Community's improvement/modernization schemes (EC 797/85 Regulation) and 36% have heard of the special section of these plans dealing with young farmers. There is also a relative familiarity with the restructuring programmes (39%), manufacturing and marketing support programmes (23%) and agrotourism and handicrafts programmes (15%). Only 10% of those questioned had ever taken advantage of an improvement / modernization scheme. Somewhat more had made use of restructuring programmes, while there was only minimal utilisation of other programmes. More advantage is taken of schemes of subsidisation and compensation, which are more widely known.

g. Changes in the crop system. In the year the study was carried out (1988) only 15% of farmers had introduced, for the first time and since 1980, new crops for cultivation. An additional 2.5% had introduced a second new crop. The principal new crops introduced were cotton (2% of those questioned), kiwis (1.8%), durum wheat (1.6%), Virginia tobacco (1.5%), olives (1.5%), maize (1.1%), almonds (1.1%) and smaller quantities of pistachio nuts, clover and tomatoes for industrial purposes. As regards changes of variety, such changes had been implemented by about 15% of producers, while another 10% of farmers had introduced a change of variety in their second crops. The main changes of variety were those entailed by the introduction of durum wheat (8.8% of those questioned), new varieties of cotton (2.6%), Virginia tobacco (1.6%), varieties of melon (1.4%) and maize (1.2%). Other smaller-scale changes occurred with the remaining cereal types and with beet.

The reasons most often cited for these changes included the greater yields of the new crop varieties, easier marketing and the availability of quite significant subsidies.

h. Changes in techniques of cultivation. At the same time quite a number of farmers implemented changes in their techniques of cultivation (23%). Most farmers confined themselves to introducing one new technique or practice (16.8%), but a relatively significant percentage introduced a second as well (6.2%). The main such practices cited included improvement of irrigation systems (7.2%), soil analysis (6.1%), drilling and water use (3.3%), mechanisation (3.8%) and new techniques of cultivation (3.5%). As significant factors discouraging experimentation with and adoption of such

new practices the farmers cited lack of information and guidance (24.5%), the high cost of installation and implementation (25%), the complexity of the credit mechanisms (11.5%), the producers advanced age (22%), the complexity of the new techniques (12.2%).

2. Multivariate analysis ([7])

To ascertain which particular combination of variables was at work in the phenomena under investigation, 37 variables were employed in 110 classes or modalities. For the 27 variables relating to individual characteristics of producers, farm characteristics, community characteristics and communication, 82 classes or modalities were drawn up and taken to the active (les variables actives), i.e. the variables from which the factorial axes were extracted. The remaining 10 variables, in 28 classes or modalities, were not taken into account in calculation of the factorial axes but were employed as supplementary variables (variables supplementaires) and refer to knowledge and utilisation of programmes, aid and subsidies and, changes on the farm. In brief what was being studied was a table measuring 738 (cases) by 110 (modalities).

The overall inertia of the configuration of the points for the active variables is 2.037. In the process of analysis five chief axes are extracted, which account for 26% of the overall inertia of the configuration. In **Table 1** it can be observed that the percentage inertia accounted for by the chief axes falls 9% for the first axis to 4% for the third, at which point it stabilises for the remaining two axes. Attention focuses on the first two axes, with the remaining axes being examined by way of supplementation, as auxiliary data.

The first axis expresses the «dynamism» of farming households, since the variables which account for it are as follows : (in descending series as regards the percentage of inertia accounted for in the axis): total area under cultivation (9.7%), total irrigated area (8.9%), area of owned land (6.8%), purchase of newspaper/frequency of newspaper reading (5.9% in each case), age of farm operator (5.8%), contacts with extension officers (5.6%), area of rented land (5.1%), household demography (5%), educational level of farm operator (4.6 percent) and agricultural training (4.5%). Percentages are lower for: chief occupation of

([7]) The results of the bivariate analysis will not be referred to at this point in the present study, but will be introduced in the concluding chapter. This expedient has been adopted both for reasons of space and because these results are finally to be incorporated into the conclusions drawn from the multivariable analysis.

Table 1 *Table Eigenvalues and Percentage Inertia per Axis.*

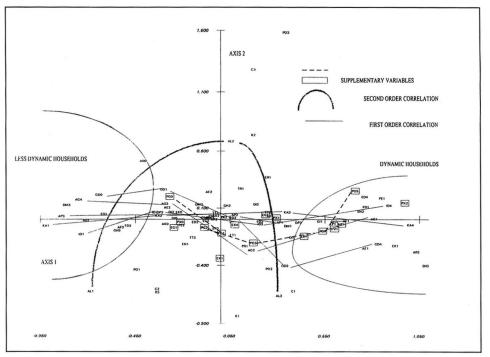| Axes	Eigenvalues	Percentage	Cumulative Percentage
1	0.19	9	9
2	0.11	5	14
3	0.09	4	18
4	0.08	4	22
5	0.09	4	26

farm operator, visits to agricultural exhibitions, research centres and experimental and demonstration fields, extent to which the subject's advice is sought by other farmers. From observation of the co-ordinates of the points of modality (class) on the graph of the two axes being examined (**Graph 1**), a transition can be detected from farm households characterised as «dynamic» to households characterised as «less dynamic». Connecting the ratings for the abovementioned variables, lines are formed, running parallel to Axis 1 such that three basic groups appear, or — otherwise expressed — three basic farm household profiles. On the right-hand side of Axis 1 there appear households characterised by large total areas under cultivation (AK4 = 12 ha. and above) and large total areas under irrigation (AR3 = 6 ha. and above), as well as high educational levels (ED3 & ED4 = at least 3rd year high-school lever education), and relative youth (AG1 = below 44 years) of farm operators. These households also possess large areas of owned land (ID4 = 10 hectares and above) and rent other large areas as well (EN2 & EN3 = 3 hectares or more). The heads of these households have frequent contact with agricultural services and with extensionists (GD4), visit farming exhibitions and research centres (EK1), buy and read newspapers on a daily basis (AF1 & FD1 respectively).

Towards the centre of the axis there can be seen the households for which the figures for the abovementioned variables are in the medium range.

On the left-hand side of Axis 1 there appear the farms whose operators are elderly (AG4 = 65 years and above), pensioners who farm to a limited extent (AR3), small freehold farms (KAI = 3 ha. or less), farms not using rented land (EN0), farms without irrigation or with a negligible area of irrigated land (AR1 & ARO = 2 ha. or less).

Because the axis to which we are referring corresponds to the highest level of overall inertia (9%) in relation to the other axes, the conclusion is that the differentiation between the tree farm profiles is quite pronounced, particularly for the two extreme categories.

As for the seconds axis, which corresponds to 5% overall inertia, this can be equated with the variables referring to the characteristics of the communities, i.e. distance from Lamia - the Prefecture capital (C), population (PO), distance from the provincial capital (K), and altitude (AL). This axis to some extent distinguishes the characteristics of the farms from the characteristics of the community. If the ratings for the abovementioned variables are connected, they form parabolical lines, an indication that these variables are not altogether independent of the variables of Axis 1, but are in a second-order correlation with them, i.e. a weaker correlation. Thus, as regards for example altitude, households in mountain communities tend to approximate the profile of the «less dynamic» households.

Graphic 1

The remaining active variables, which chiefly concern the mass media (apart from newspapers) are not to be equated with the first two axes, but correspond very closely to the fifth. This, together with their positions on the graph — the ratings for them are to be found very close to the centre of gravity — lead to the conclusion that these variables are not involved in the differentiation of farming household profiles, i.e. have a low discriminating capacity.

Employing the technique of supplementary variables, a projection is made onto the graph of the variables for the two main axes referring to knowledge-use of programmes/schemes and subsidies and changes in farming during the period under examination. A projection of the ratings for the supplementary variables supplement the profile of the previously distinguished farming households. It is to be observed, therefore, that the households with the «less dynamic» profile are characterised by least knowledge and use of programmes/schemes and least, in fact negligible, changes in the system and practices of cultivation. By contrast, in the «dynamic» households there appear increased knowledge and use of programmes and changes both in the system of cultivation (introduction of new crops (ES1) and new varieties (EP1) as well as in practices (CV1). In the intermediate profile the situation is unclear in relation to all the supplementary variables, precluding any differentiation of these variables.

Discussion-Conclusions

The basic aim of this study is the investigation and clarification of the position of communication in the context of agricultural modernization in Greece. The discussion that follows mainly focuses on the crucial findings of data analysis with the view of determining the role and the importance of communication in the realisation of changes on farm level. In this respect, the range of the existing communication interventions on the part of the extension service is also considered.

The study focused on analysing the relations between three types of variables, i.e. a) on characteristics of the farming communities, farming households and farm operators considered to be functioning as external («antecedent») variables, b) on communication variables (interpersonal and mass) occupying the position of intermediate variables influenced by the preceding group of variables and along with it influencing the third group, and c) on variables related to a spectrum of changes taking place in farming.

At the bivariate level (X^2 criterion, Kendall's Tau, etc.) it was ascertained that there is a positive correlation between contacts (interpersonal communication) with agricultural extension services and agronomists and certain characteristics of the farm (owned land, total area under cultivation, total area under irrigation), characteristics of the household (demography, arrangements for succession), and characteristics of the farm operator (youthfulness, general educational level, agricultural training).

As regards the mass media, it was found that only the purchase and reading of newspapers is correlated positively with the abovementioned characteristics, as with the characteristics for the community (proximity to the plain, population). There does not seem to be any statistically significant relationship between these variables and either programme type or frequency of viewing

or listening to television or radio. Agricultural programmes seem to be a singularly irrelevant factor. Knowledge and use of Ministry of Agriculture programmes/schemes is positively correlated with farm characteristics, characteristics of the head of the farming household and above all with contacts with agronomists and reading of newspapers. No such correlations exist in the case of the other mass media.

Finally, as concerns changes at farm level (in the system and techniques of cultivation), these present statistically significant but weak positive correlations, in turn, with characteristics of the farm, youthfulness and level of training of the farm operator, contact with agronomists and agricultural extension services, knowledge and use of programmes/schemes. As for the mass media, only in the case of the newspapers does there exist any correlation, positive, with changes in agricultural techniques.

Employing multivariate analysis (AFCM) three household profiles were identified. The first, described as «dynamic», is characterised by large farm size, youthful farm operators of high educational level, in regular contact with agricultural extension services and agronomists, kept in touch with events through a daily reading of the city newspapers. The second, intermediate, profile presents an intermediate level of readings for the variables, while the third or «least dynamic» profile is characterised by elderly farm operators, for the most part pensioners, who also farm, on holdings the smallest of all those observed. Households in this category have only the slightest of relationships with the characteristics of farming communities, and it seems that the «least dynamic» group tends to be found in mountainous regions ([8]). Moreover, through projection of the third group of variables onto the axes it was ascertained that the «dynamic» profile corresponds to increased knowledge and use of programmes/schemes and changes on the farm, while on the other hand, the «least dynamic» profile corresponds to minimal or negligible figures.

The key conclusions to the drawn from the analysis can be summarised as follows: In the conditions prevailing in the area a) interpersonal communication plays an important role in the implementation of changes in agricultural practice, and b) the mass media — with the exception of newspapers — do not seem to exert any influence in the direction of such change.

As regards the role of interpersonal contacts, their superiority vis a vis the mass media in comparable circumstances is well established. The role of interpersonal contacts has also been emphasised in the classical model of the diffusion of innovations, and it seems particularly relevant for extension agents at the persuasion stage in connection with the adoption of an agricultural innovation, especially in the case of «intermediate profile» farm operators. But the role of the mass media has also been recognised at the level of general dissemination of news, chiefly for «dynamic profile» farm operators, as has been the mutually supportive functions of mass communication and interpersonal communication (Lionberger, 1960, pp.42-51, Rogers and Shoemeker, 1971, pp.251-266).

In the case of the agricultural extension service in Greece what is most striking is that it is the «dynamic profile» producers that are the most dependent on contacts with agriculture-related services and extension agents, despite the fact that the role of the latter has been significantly downgraded and is largely confined to functions of a bureaucratic type and not to advisory tasks with a developmental orientation (Panagiotou and Louloudis, 1984, p.23). This finding in the existing circumstances only goes to emphasise what a decisive modernising role agricultural extension agronomists can play. Farmers continue to regard the extension officer, whatever his very real shortcomings, at the most trustworthy source of information ([9]).

As regards the positive role of newspapers in comparison to radio and television, this interpretation may be a reflection of general considerations to the effect that these media, and television in particular, suffer from certain limitations which detract from their value as means of transmitting information when compared to the press. As a general rule, individuals who derive their information from newspapers display superior levels of comprehension and general knowledge. Fleeting visual or auditory impressions provide a weak basis for cognition in the absence of a semantic framework which could lend significance to these impressions, and it is unusual for such a framework to develop purely from watching television and listening to the radio i.e. without carefully programmed pedagogical intervention (Robinson and Davis, 1990). It is surely to coincidence that «dynamic profile» households are characterised, among other things, by relatively young farm operators with a high level of general education who keep in touch with events through daily reading of the metropolitan press. These are the people, moreover, who have the necessary financial resources for taking commercial risks and introducing innovations. Their relatively high economic potential also makes them favoured «customers» of the agricultural extension programmes, within the general logic of the «progressive farmers' strategy» that is the norm for the extension services (Roling, 1976 & 1988, p.67).

The absence of appreciable influence of radio and television in effecting change at the individual farm level may be attributable, among other things, to the fact that three groups of factors rarely coexist: a) a suitable communicative environment, b) planning of communication and information transmission, and c) the appropriate communication technology.

It has been found that many communication programmes fail because of the assumption that the transmission of information on itself can, if the means of expression are suitable, bring about changes in behaviour. This assumption fails to take into account the educational function of the wider environment, the relation, that is, between the behaviour of individuals and their environment. Without changes in the environment and changes in the availability of resources, however (equipment prices, farm credit, research priorities conducive to the development of suitably adapted technology, agricultural extension services, etc.) there is nothing to reinforce any such changes in behaviour. Thus, particular attention must be paid to developing systems of communication in the framework of the specific social environments in which they function (Bordenave, 1976). It has also been found that the effectiveness of the mass media is enhanced when the transmission of messages is followed by group activities, discussion and decision making (Hornic, 1980, Ploman, 1975).

Research into communication and the spread of innovation has chiefly concerned itself with communication in the sense of the transmission of new skills, tools and farm improvement materials independently of the objective situation (farm size, available capital etc.) of those being addressed, a consideration which decides whether acceptance is possible or impossible for the majority of farmers. For communication to be effective, however, it has to be appraised not on the basis of how capable it is of influencing individuals' opinions but on the basis of how much effect it can have on their behaviour, such that the individuals in question might, for example, be encouraged to introduce basic changes into the environment in which they live (Beltran, 1975, Fliegel, 1984, pp. 77-88).

In any case, it has been shown that intellectual factors (in the form of education) can broaden the field of action and enhance receptiveness to information. At the same time social factors (individual and social interest, participation in informal and formal groups, individual role expectation) shape and condition the informational model. Thus the model adopted by an adult in exposing him/herself to information will be a product of the combined action of all

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([8]) As emerges from the findings of a relevant typological study also based on the research data used in the present work, the «least dynamic» group typifies an economically marginal type of farming, located principally in mountainous areas and characterised by the practice of extensive agriculture activity and by increasing dependence on non-farming income sources (chiefly the state, either through employment or the receipt of a pension) for its reproduction. Households of the «dynamic» type constitute the most professional kind of farming units to be found in the area covered by the study, i.e. primarily lowland areas, where a highly developed and highly mechanised intensive farming is practised (Kazakopoulos and Panagiotou, 1992).

([9]) Androulidakis, 1987; Panagiotou A. and A. Koutsouris, seminars of the General Directorate of Agricultural Extension and Research of the Ministry of Agriculture for Agricultural Extension Department Heads and Directors of Farm Training Centres, Athens, 22/6 to 3/7, 1992.

Table 2 *Variables and modalities used in the multivariable analysis (AFCM).*

Individual Characteristics		Children interested in agriculture	Yes (DP1)	Community Characteristics		Agricultural programmes attendance in TV	Yes (ET1)	Do other farmers takes the interviewee's advice	Vero often (GH11)	Changes in crop system & cultivation techniques	
Age	44 (AG1)		No (DP2)	Altitude	Mountainous (AL1)		No (ET2)		Occasionaly (GH2)	Introduction of new crops	Yes (ES1)
	45-54 (AG2)		N/A-N/R (DP3)		Semi-mountainos (AL2)	Main source of information	Press (PE1)		Rarely-never (GH3)		No (ES0)
	55-64 (AG3)	**Farm Characteristics**			Plain (AL3)		Radio-TV (PE2)	**EEC Schemes-subsidies**		Expansion of crops	Yes (EP1)
	Over 65 (AG4)	Owned land (Ha)	0.00-2.45 (ID1)	Population level	-750 (PO1)	Newspaper reading frequency	Everyday (FD1)	Number of schemes known	0 (PG0)		No (EP0)
Education Level	Illiterate (ED1)		2.50-4.95 (ID2)		751-1499 (PO2)		Frequently (F2)		1 (PG1)	Cease of crops	Yes (DK1)
	4-6 Class of primary (ED2)		5.00-9.90 (ID3)		1500-3000 (PO3)		Rarely-never (FD3)		2 (PG2)		No (DK0)
	Junior high school (ED3)		Over 10.00 (ID4)	Distance from lamia	Small (C1)	Purchase of newpaper	Yes (AF1)		3 (PG3)	Contraction of crops	Yes (PR1)
	Senior high school (ED4)	Rented land (Ha)	0 (EN1)		Medium (C2)		Rarely (AF2)		4 (PG4)		No (PR0)
Agricultural education	Yes (AE1)		.1-2.9 (EN2)		Large (C3)		No (AF3)		≥5 (PG5)	Introduction of new varieties	Yes (CV1)
	No (AE2)		3.0-6.0 (EN3)	Distance from the provincial capital	Small (K1)	**Personal Contacts**		Number of subsidies known	1 (EG1)		No (CV0)
Occupation	Farming (AP1)		Over 6.1 (EN4)		Medium (K2)	Contacts with agronomists (extension officers) and rural services	0 (GD0)		2 (EG2)	Introduction of new techniques	Yes (NP1)
	Farming+ other (AP2)	Total irrigated land (Ha)	0 (AR0)		Large (K3)		1 (GD1)		3 (EG3)		No (NP0)
	Pensioner+ other (AP3)		.1-1.9 (AR1)	**Mass Media**			2 (GD1)	Number of schemes used	0 (PX0)		
Household Characteristics			2.0-5.9 (AR2)	Hours radio attendance	>2 hours (TR1)		3 (GD3)		1 (PX1)		
Demography	Good (DM1)		Over 6.0 (AR3)		1-2 hours (TR2)		More than 3 (GD4)		2 (PX2)		
	Medium (DM2)	Cultivated land	0-2.9 (KA1)		0-1 hours (TR3)	Visit to agricultural exhibitions	Yes (EK1)	Number of subsidies used	1 (EX1)		
	Poor (DM3)		3.0-6.9 (KA2)	Hours TV attendance	>2 hours (TT1)		No (EK0)		2 (EX2)		
There is future in agriculture	Yes (DI1)		7.0-11.9 (KA3)		1-2 hours (TT2)	Contacts with private agronomists	Yes (AK1)		3 (EX3)		
	No (DI2)		Over 12.0 (KA4)		0-1 hours (TT3)		No (AK0)		4 (EX4)		
	N/A-N/R (DI3)			Agricultural programmes attendance in radio	Yes (ER1)	Information from announcements	Yes (GI1)				
					No (ER2)		No (GI0)				

his/her previous cognitive and social experiences (Hirshman, 1981).

Two further causes of failure in programmes related to the planning of communication and information transmission are: a) the fact that often exact knowledge of the field of intervention is not available, and no attention is paid to the principles concerning the definition of goals, based on individuals' objective needs; and b) the credibility or lack thereof of the information source. Supplying very general information (mostly of a documentary nature) can help farmers to raise their aspirations and motivations, but it leaves then with few clues as to «how to do» things and «what to do». Furthermore, it has nothing to say about whether or not the people concerned possess the means to do what might be proposed. In general information transmission (apart from special farming programmes which — for a country such as Greece — could be said to be very few in number) is urban-biased, in the sense that the time allotted to urban vs rural news and information is biased in favour of the former. A certain prejudice has also been identified, particularly in rural areas (McAnany, 1978) against information originating in government services, unless the government has taken explicit measures to improve the situation.

The present-day availability of communications technology means increased potential for supporting the work of Agricultural Extension personnel, and for feedback from those who have been stigmatised as passive recipients of messages. Thus the media, and particularly teleconnumications, can play a significant role as bridges between groups and communities within agricultural districts themselves, instead of simply transmitting messages directly from the centre to the mass farming public. The new approach to self-development placing prime emphasis on participation, mobilisation and group effectiveness foreshadows a new function for the mass media. This may be summarised as the provision of information, at local request, on problems, potentials, and appropriate technology choice. It may however also include the provision on information concerning the achievements of different local groups (Rogers, 1976, pp. 140-141). Of course this is a decision that will depend on the operative framework of the Agricultural Extension Service and also on its general philosophy (Garforth, 1986, p.187).

On the basis of the aforementioned, some basic prerequisites for the success of communicative interventions in the agricultural field have thus been identified. Examining the role of the Agricultural Extension Service, the chief medium for the communication of information to the rural areas of our country, both through its extended network of local extension agents and through its central radio, television and press divisions, it is established that a great number of these prerequisites are lacking. Among other things mention could be made of the

lack of adequate planning of media interventions, whether centrally or at the local level, in such a way that they might correspond to the real developmental needs of the variegated rural economic structure. This is also a consequence of the failure, chiefly at the local level, to establish comprehensive agricultural extension programmes. It is also due to a dramatic restriction of the developmental and advisory role of agricultural extension officers through their being burdened with administrative and managerial duties.

It is therefore necessary that there should be a redefinition of the role and the structures of the Agricultural Extension Service in the framework of contemporary needs, including all the complexity of the problems of Greek agriculture. It emerges also that there is a need for a more comprehensive study, including the use of field experiments and/or network analysis, with the aim of examining communication in relation to change in farmers' behaviour and not merely to whether the messages of the mass media or of Agricultural Extension are accepted or not. It is a question of conceiving the communication process as transformational (Freire, 1970). The role of communication has to be understood as being that of facilitating development in a rather indirect and contributory way, depending upon circumstances. In the course of such an undertaking particular attention must be paid to examining the critical factor of social structure and the way it determines the behavioural characteristics of the different categories of farmers as well as clarifying the relationships between communication and social, economic and political processes (Felstehousen, 1973). ●

References

(1) Androulidakis S.: «Research on the Educational Needs of Yannitsa Lake Area Farmers». Unpublished PhD thesis, Thessaloniki, Greece: Faculty of Agriculture, Aristotelian University of Thessaloniki, 1987.
(2) Beinstein J.: «Friends, the Media, and Opinion Formation», *Journal of Communication* 27(4), 1977, pp. 30-39.
(3) Beltran L.: «Research Ideologies in Conflict», *Journal of Communication* 25(2), 1975, pp. 187-193.
(4) Bordenave J.D.: «Communication of Agricultural Innovations in Latin America», in E. M. Rogers (Ed.) *Communication and Development*, London: Sage Publ., 1976, pp. 43-62.
(5) Cater D.: «The Survival of Human Values», *Journal of Communication*, 31(1), 1981, pp. 190-194.
(6) Cherry C.: «What is Communication?», in J. Corner and J. Hawthorn (Eds.) *Communication Studies*, London: Edward Arnold, 1987.
(7) Dervin C.: *Commen Interpreter les Resultats d'une Analyse Factorielle des Correspondances?* Paris: I.T.C.F., 1983
(8) Felstehausen H.: «Conceptual Limits of Development Communications Theory», *Sociologia Ruralis* XIII(1), 1973, pp. 39-53.
(9) Fiske J.: *An introduction to Communication.* Athens, Greece: Communication and Culture Publ., 1992.
(10) Fliegel F.: «Extension Communication and the Adoption Process», in B. Swanson (Ed.) *Agricultural Extension.* Rome: F.A.O., 1976
(11) Freire P.: *Pedagogy of the Oppressed.* N. York: Herder & Herder, 1970.
(12) Garforth C.: «Mass Media and Communications Technology», in G. Jones (Ed.) *Investing in Rural Ex-*

tension. London: Elsevier.
(13) Gerbner, G. «A Generalised Graphic Model of Communication», in J. Corner and J. Hawthorn (Eds.) *Communication Studies.* London: Edward Arnold, 1987.
(14) Hirschman, E. «Social and Cognitive Influences on Information Exposure: A Path Analysis», *Journal of Communication*, 31(1), 1981, pp. 76 - 87.
(15) Hornic R.: «Communication as Complement in Development», *Journal of Communication*, 30(2), 1980, pp. 10-24.
(16) Kazakopoulos L. and A. Panagiotou «Socioeconomic and Agricultural Aspects of Farming Types in Greece: The Case of Phthiotis». Paper at the 8th World Congress of Rural Sociology, Pennsylvania State University, U.S.A., 11-16 August 1992.
(17) Labrousse C.: *Introduction a l'Econometrie.* Paris: Dunod, 1983.
(18) Lagarde J.: *Initiation a l' Analyse des Donees.* Paris: Dunod, 1983.
(19) Lionberger H.: *Adoption of New Ideas and Practices.* Iowa: The Iowa State University Press, 1960.
(20) McAnany E.: «Does Information Really Work?», *Journal of Communication*, 28(1), 1978.
(21) Maletzke, G. Theories of Mass Communication. Athens: Papazisis Publ., 1991.
(22) Mannion J., J. Phelan and P. Munnelly: *An Assessment of a Development Programme for Farming in a Peatland Area.* Dublin: ACOT, 1984.
(23) Panagiotou A.: *Comparative Research on Agricultural Development at the Prefecture of Phthiotis: A Typological Analysis.* Athens: Agricultural University of Athens, 1974.
(24) Panagiotou, A. «Production Structures and Agricultural Development in Greece: A Methodological Approach to the Developmrent of Unities of Agricultural Development». Proceedings of the International Congress on Economy and the Rural Sector, Athens: Agricultural Bank of Greece, 1986.
(25) Panagiotou A. and L. Louloudis L.: *Higher Agronomic Studies and the Effectiveness of Extension Officers.* Athens: Agricultural University of Athens, 1984.
(26) Parker E.: «An Information - Based Hypothesis», *Journal of Communication*, 28(1), 1978, pp. 81-90.
(27) Petryszak N.: «The Frankfurt School's Theory of Manipulation», *Journal of Communication*, 27(3), 1977, pp. 32-46.
(28) Penman R.: «Communication Reconstructed», *Journal for the Theory of Social Behaviour* 18(4), 1988, pp. 391-410.
(29) Ploman E.: «Information as Environment», *Journal of Communication*, 25(2), 1975, pp. 21-25.
(30) Rijckevorsel J. and J. Leew: *Component and Correspondence Analysis.* New York: John Wiley and Sons, 1988.
(31) Robinson J. and Davis D.: «Television News and the Informed Public: An Information - Processing Approach», *Journal of Communication*, 40 (3), 1990, pp. 86-97.
(32) Rogers E.: «Communication and Development», in E. M. Rogers (Ed.) *Communication and Development.* London: Sage Publ., 1976, pp. 121-148.
(33) Rogers E.: «The Rise and Fall of the Dominant Paradigm», *Journal of Communication*, 28(1), 1978, pp. 64-69.
(34) Rogers E.: *Communication Technology: The New Media in Society.* New York: The Free Press, 1986.
(35) Rogers E., and F. Shoemaker: *Communication of Innovations.* New York: The Free Press, 1971.
(36) Roling N.: *Extension Science.* Cambridge: Cambridge University Press, 1991.
(37) Roling N., J. Ascroft and F.W. Chege: «The Diffusion of Innovations and the Issue of Equity in Rural Development», in E. M. Rogers (Ed.) *Communication and Development.* London: Sage Publ., 1976, pp. 63-78.
(38) Samarajiva R., and P. Shields: «Integration, Telecommunication, and Development: Power in the Paradigms», *Journal of Communication*, 40(3), 1990, pp. 84 - 105.
(39) Shingi P., and B. Mody: «The Communication Effects Gap», in E. M. Rogers (Ed.) *Communication and Development.* London: Sage Publ., 1976, pp. 179-98.
(40) Siardos G.: *Agricultural Extension.* Thessaloniki: Giahoudis - Giapoulis Publ., 1986.
(41) Van Den Ban A. and H. Hawkins: *Agricultural Extension.* Essex, England: Longman, 1988.
(42) Volle M.: *Analyses des Donees.* Paris: Economica, 1985.
(43) Hatziparadeisis A.: «Statistical Study of the Cohesion of the EC countries». Proceedings of the 4th Panhellenic Congress of Statistics. Athens: ELKEPA - ESI, 1991.