



AN AGRICULTURAL DEVELOPMENT STRATEGY

The Numuyargobo Cattle Project
in Papua New Guinea

Robert F. McKillop

Department of Agriculture, Stock and Fisheries

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THE NUMUYARGOBO CATTLE PROJECT
IN PAPUA NEW GUINEA.

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EXTENSION BULLETIN NO. 2

DEPARTMENT OF AGRICULTURE, STOCK AND FISHERIES

PORT MORESBY

PAPUA NEW GUINEA

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THE NUMUYARGOBO CATTLE PROJECT IN PAPUA NEW GUINEA.

ABSTRACT

A brief history of the Numuyargobo Cattle Project in the Eastern Highlands of Papua New Guinea is given. Sociological principles from Talcott Parsons, Maslow, Kluckhohn and Strodbeck, McClelland and Katz are introduced and related to the Numuyargobo Project and the problems of change. From this discussion a strategy for agricultural education and change is developed which takes into account all aspects of the technical and the social systems and, by a problem-solving approach, increases the perceived likelihood of success, thereby mobilising the motivational forces for change.

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THE NUMUYARGOBO CATTLE PROJECT
IN PAPUA NEW GUINEA.

Robert F. McKillop *

INTRODUCTION

It is widely accepted that agriculture is destined to remain the basis of the economy in under-developed tropical countries. However, in these countries the development of agriculture has shown itself to be peculiarly difficult and has tended to lag behind that of other sectors of the economy. Thus the problem of stimulating agricultural development becomes a major one facing those planning economic development.

In Papua New Guinea considerable efforts have been made to formulate national programmes and policies for economic development (e.g. PNG Administration Programmes and Policies 1968). These programmes outline a five year development plan formulated by economic experts in the national headquarters. However, implementation of these policies is the task of individual farmers, businessmen and their advisors such as agricultural extension officers. Traditionally those supervising development projects have relied on a rational-economic model of human behaviour. The shortcomings of such a model is becoming increasingly apparent in developing countries such as Papua New Guinea and field staff are turning to the social sciences in order to better understand human behaviour.

The purpose of this paper is to examine our experiences with the introduction of cattle to a group of Highland people in PNG, to discuss some sociological principles and, from these, to develop a model which will assist us in future projects aimed at economic development.

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A CASE STUDY

THE INTRODUCTION OF CATTLE TO THE NUMUYARGOBO PEOPLE OF THE EASTERN HIGHLANDS DISTRICT⁽¹⁾

A. BACKGROUND INFORMATION

The Numuyargobo Confederacy comprises some 1925 people from three tribes in the Bena Bena Census Division of the Eastern Highlands District. They occupy some 13,600 acres of rolling grassland at the eastern extremity of the Asaro Valley some 12-20 miles from Goroka township. Most of their land lies between 5,000 and 6,000 ft. ASL and has an annual rainfall of 65" with a pronounced dry season between May and September.

The population density of 88 per square mile is low by Highland standards. Thus when plans were made to introduce cattle to the Highland people in 1959, the Numuyargobo area was selected for two of the original pilot projects.

B. COURSE OF EVENTS

The cattle were quickly seen as a means to prestige and status and with additional purchases the herd size quickly outgrew the small night paddock. The land tenure, particularly over grazing areas, is communal, so that individual clan members were unable to extend the fenced area. By 1966 the original Korofeigu herd had grown to 40 head, yet only a 5 acre night paddock was available. If the cattle were held in this small area at night they lost condition and some died; if not they were free to break into subsistence gardens and cause serious damage. Thus the introduction of cattle had brought considerable pressure on the social and land rights systems.

Moves to solve the dilemma came largely from the farmer groups. In 1966, one of the Numuyargobo clans, the Babatuguruga clan, invested the proceeds of a land sale in a large communal fence (100 acres) for their cattle herd. With pressure from the village people agricultural field staff in the Eastern Highlands revised their policies away from the Western concept of individual family farms towards a more flexible approach with the acceptance of farm units based on the kinship structure of New Guinea society. Agricultural officers encouraged Demarcation Committees ⁽²⁾ to settle the land boundaries

(1) Much of the data used in this discussion was collected by D. L. and M. E. Godyn who presented it in their D. A. S. F. Assignment, "The Numuyargobo Area Project Report" (D. A. S. F. Records 1970).

(2) Demarcation Committees consist of indigenous members nominated by every land holding group in a declared Adjudication Area.

of land holding groups, in this case the clan boundaries. The committees, motivated by the knowledge that their land was now potentially useful for cattle, set to work defining land boundaries which had been hotly disputed for generations.

Once defined, these boundaries could be permanently marked by wire fences erected for cattle and as symbols in themselves. During 1968 and 1969 progress with land demarcation proceeded at a remarkable pace. This is well illustrated in Table I.

TABLE I

Growth of the cattle industry in the Numuyargobo Confederacy

	1960	1962	1966	1967	1970
No. Projects	2	3	6	6	18
No. Cattle	9	26	92	121	383
Area Fenced for Cattle (ac.)	10	15	146	176	3569

To assist farmers in obtaining fencing materials, stock requisites, pasture seed and livestock, and to provide a machinery hire service, a co-operative society was formed among the Numuyargobo. General meetings of this co-operative were held on a fortnightly basis throughout 1968 and 1969. They served as the principal extension contact with the Numuyargobo people as the groups raised their problems with extension staff who then followed them up with field visits.

After 1969, however, the spectacular progress of the Numuyargobo people was not maintained. Land disputes stopped the fencing of new areas and many projects became heavily overstocked. The co-operative ran into financial difficulties and its apparent demise has occupied the attention of the Numuyargobo leaders to a point where they have neglected their projects, thus further undermining the co-operative.

In order to understand the successes and failures of the Numuyargobo project we will briefly examine some social principles.

C. RELEVANT FACTORS

1) Social Systems

Agricultural extension workers are invariably pre-occupied with technical matters. Where the cultural background of the extension officer differs

markedly from the farmer, any failure to consider the overall social environment as well as the technological aspects will almost invariably lead to maladaptions. Thus the extension officer needs to consider both the social system and the technical system in order to effectively promote change.

The development of an overall theory of social systems has been the major preoccupation of Talcott Parsons (1961:315).

To Parsons all actions occur in systems. The individual actors have their own goals and standards which are in part the free creations of the individual, but the actors are under pressure to develop goals and standards which are in accord with those of the socio-cultural system in which they live. Thus because of the socialisation process of the social and physical environment on the individual, there is a close relationship between the social system and the personality system of the individual actor.

Studies of interaction patterns in small groups by Bales (1955:424) provided Parsons with experimental quantitative data to develop his social theories. He developed a series of functional imperatives which any social system must meet. These have been reduced to four in number: two orientated towards the environment, collectively called task performance, and two internal to the system itself. These can most simply be summarised by Table II.

TABLE II

The Functional Imperatives of a Social System, after Parsons.

(From McClelland and Winter 1969 p. 359)

	Instrumental Activities	Consummatory States
TASK PERFORMANCE	Adaption	Goal Attainment
SYSTEM MAINTENANCE	(Pattern Maintenance (Tension Management	Integration

Parsons' theory of functional imperatives is a most useful tool for the analysis of extension problems.

To illustrate these imperatives from the Numuyargobo study, the goals of the social system appear to be to rear cattle and to use them to back-up their claims to land rights and so enhance their prestige.

The problems of adaption involve coming to terms with the environment. The introduction of cattle is an adaption enabling the utilization of grassland. The erection of permanent wire fences is an adaption to restrict cattle movement.

Success of the project is measured by goal attainment. However in agricultural extension there is frequently some discrepancy between the goals set by farmers and the goals set by those promoting development. Frequently the goals set by the farmers are limited, and once attained they may set new goals not related to further development of the current project. Attainment of the initial goals and the failure of extension staff to set themselves goals which are realistic to the farmers is frequently an important factor in the failure of development projects.

Parsons' Imperatives also point to another important source of project failure, the lack of consideration for the System Maintenance functions of the social system. The continued existence of the Numuyargobo clans as a social system depends on adequate integration derived from the establishment and maintenance of a level of solidarity and cohesion. This is achieved by the related functions of pattern maintenance and tension management.

The norms of PNG clans involve considerable commitment and obligation to the functions of the whole group. Frequently these obligations conflict with the requirements of the economic system introduced from our Western culture. Romola McSwain (1970) describes how co-operatives on Kar Kar Island, established from Western models, came under complex traditional pressure which "made it possible for the people not only to tolerate, but to approve of the very factors that were causing them to collapse". There is some evidence that many points of the rigid constitution of the Numuyargobo Co-operative conflicted with traditional norms and to solve the conflict co-operative rules were not upheld. This contributed to the society's setbacks after 1970.

2) Group Norms

Festinger (1950) has pointed out that group norms are necessary for providing individuals with the frame of reference for understanding the world and to enable the group to survive and move toward its goals (pp 271). Group norms thus serve to maintain social control, the pattern maintenance function.

In South Africa, for instance, Biesheuvel (1959) has reported that urbanisation has weakened the traditional African norms without replacing them with other means of social and psychological control. Such people have become anomically dislocated and are directed by impulse. The end result is lawlessness, violence and laxity of sexual morals - problems which appear to be the inevitable result of our attempt at economic development to date in PNG.

3) Basic Needs

Maslow (1943) has proposed a hierarchy of basic human needs which can be identified with the goals of any social system. These needs are:

- a) Physiological needs such as hunger, thirst, shelter, sex and sleep
- b) Safety needs including the need for security and order
- c) Social needs which include the need to belong and the need to love and be loved
- d) Ego needs such as the need for prestige, success, and for self-esteem
- e) Self-actualization - the need for attaining potentiality and continued self-development.

Maslow argues that the "lower" needs (i.e. physiological and safety) must be adequately satisfied before the next highest need can emerge in the individual. Economic activity in the New Guinea Highlands is undertaken primarily to satisfy the ego needs of prestige and status. It follows then that Highland people will not enter into new economic ventures until the "lower" needs have first been satisfied. In PNG society these needs are satisfied through membership within the kinship group which provides land rights, pooling of labour to satisfy physiological needs, security and belongingness. Thus a breakdown of the kinship group would undermine satisfaction of the basic needs and new economic ventures would be unlikely unless alternative satisfaction of "lower" order needs was first evolved within the social system.

4) Value Orientations

Maslow identifies the need for order and meaning as one of the basic needs of man's personality. This need is satisfied by the holding of consistent opinions about various factors in our environment. These opinions give meaning to the unknown and they may affect our feeling toward a subject. Our opinion and our feeling toward a subject together constitute our attitude toward the subject. A cluster of attitudes hierarchically arranged is referred to as a value.

Kluckhohn and Strodtbeck (1961) postulated that there are a limited number of human problems common to all societies. The solutions to these problems constitute the value orientations of a particular society. These value orientations vary only in the ranking patterns within a range of possible solutions. All alternatives of all solutions are present in all societies at all times but are differently preferred.

Kluckhohn and Strodtbeck studied five basic value orientations in selected cultures which serve the function of ordering human behaviour about these fundamental problems:-

- a) The Human Nature Orientation - the solution to the problem "What is the character of innate human behaviour?"
- b) The Man-Nature Orientation - the relationship between man and nature. Solutions can be subjugation-to, harmony-with or mastery-over-nature.
- c) Time Orientation - past, present or future.
- d) Activity Orientation - being or spontaneous activity, being-in-becoming or activity which has as its goal the development of all aspects of the personality as an integrated whole, and doing activity which results in accomplishments that are measurable by standards external to the actor.
- e) Relational Orientation - lineal (hierarchic), collateral or individualistic.

McClelland (1961) has listed the major variables thought by the various theorists to be associated with economic development (p. 173). These variables correspond closely with Kluckhohn and Strodtbeck's basic value orientations except that the human nature is not included as it is not commonly accepted to influence economic development. McClelland tested a number of hypotheses in order to establish which value orientations are present in countries having a high rate of economic development. He was able to establish the following with regard to Kluckhohn's value orientations:-

- a) Human nature:- not examined.
- b) Man-nature:- surprisingly, rapidly developing countries do not show a faith in one's ability to conquer or subdue nature, but rather they stress a concern with nature as something which requires management or co-operative action (p. 189).
- c) Time orientation:- traditionalism was shown to have an inhibiting effect on economic growth (p. 178). However, McClelland was unable to show that planning or an optimistic attitude toward the future was closely related to rapid economic development (p. 188).
- d) Activity orientation:- McClelland found clearly that countries with a high rate of economic development had a high need for Achievement level (p. 97) and a stress on hard work (p. 189). These criteria essentially involve a "doing" activity orientation. McClelland's thesis is that such an orientation is the main motivational drive toward economic activity.
- e) Relational orientation:- Western culture emphasises an individualistic orientation as essential for economic growth. McClelland's data suggest that a peer (collateral) orientation leads to faster economic development than authoritarian (lineal),

but he was unable to show that an individualistic orientation had any significant effect on the rate of development. A peer orientation with a present or future time orientation, where social control is maintained by public opinion, was an important factor, leading to economic achievement. Etzioni (1968) sees the energy for societal action and change as coming from mobilisation which entails collectivisation (pp. 392). A highly individualistic society is unable to mobilise its resources for collective usages. On the other hand tribal societies have a high mobilisation within the social unit, but on a national level there is little sense of social unity.

From this discussion then value orientations of a "doing" activity and future/collateralism where public opinion serves to mobilise forces of change, seem the most important factors leading to economic development. Scoullar (1971) in an examination of the literature (Ch. 2) concludes that the major value orientations of Highland societies are a "doing" activity orientation, at least for males, a future time orientation and a collateral relational orientation. Thus from Kluckhohn and Strodtbeck, basic change in value orientations is not necessary, but rather economic development requires pattern elaboration of the dominant orientations whereby the activities of the people are diverted into different behavioural spheres.

Finney (1969:58) describes Goroka society as having traditional values pre-adapted to the market economy. The society is "an achievement orientated (one) in which both individuals and groups (seek) to increase their status largely through accumulating wealth and making political transactions with it" (p. 10). Traditionally status was accomplished by investment in trade relations using mainly pigs, shell money, feathers and axes. With the introduction of a cash economy the valley provided new avenues whereby the people could enhance their status and the prestige of the group through conspicuous investment in trade stores, motor trucks and cattle projects. Thus although official policies and institutions were orientated toward individual business activity practically all of these indigenous enterprises were found, on closer scrutiny, to be based on traditional group structures and norms with the presumed "owners" playing a role more akin to a Western "managing director".

5) Goal Orientation

Scoullar (1971) has studied sociological variables between successful and unsuccessful agricultural projects in the P.N.G. Highlands. He found that goal orientation was the major factor in explaining the success of rural development projects accounting for 41.5% of the total variance of success. Thus "if the rural development project is perceived by the group developing it to be relevant to the goals of the group as a whole as well as the goals of individual members of the group, then it is likely that the project will expand its activities on a self-generating basis".

He also found that the use of traditional sanctions was an important factor in project success and with goal orientation it provides sufficient evidence to predict success.

6. Attitude Change

Traditional value orientations may well lend themselves to cattle projects and the mobilisation of society resulted in the rapid construction of very large projects, but this doesn't provide the technical know-how and managerial skills necessary for running these large projects as successful business enterprises.

The establishment of the project satisfied the group goal for conspicuous investment and therefore prestige, but the major reward for individual members will not come until the project is operating successfully and returning a profit to the individual. (Scoullar 1971:Ch. 5.) Thus the villagers are motivated to operate the project as a successful business enterprise. To be successful, however, required new knowledge, new skills and, frequently new patterns of work. To seek this knowledge and adopt these skills the villager must first perceive that his present methods of doing things are inappropriate. A process of attitude change is involved.

An understanding of attitude change is important to the extension officer. Daniel Katz (1960) suggests that four different personality functions are served by the maintenance and modification of social attitudes: adjustment, value expression, knowledge and ego defence. In the adjustive function people hold attitude consistent with a striving to maximise rewards in the external environment and minimise penalties. The individual is motivated to adopt attitudes which will gain for him the social approval and esteem of family, friends and neighbours. As economic activity is rewarding it is to adjustive attitudes the extension officer should appeal in a change situation. Katz points out that a change of adjustive attitudes will occur only when the old attitude, or an expression of it, is seen as no longer giving satisfaction to the holder. Where a dissatisfaction with old attitudes occurs it will be expressed as a problem. Therefore it is vital for the extension officer to begin any teaching situation with problems expressed by the farmers themselves.

In the value expressive function the individual derives satisfaction from expressing attitudes appropriate to his personal values and self-concept. Often these are integrated sets of attitudes learnt in childhood such as religious and ideological beliefs and values. Such attitudes are positive, but there is always the likelihood that they can slip over into a negative defensive function. Katz labels such attitudes as ego-defensive. They provide protection against the acknowledgement of basic unpleasant truths and the harsh realities of the outside world. Ego-defensive attitudes are aroused by threats from the external environment, or from within the personality and are encouraged by social support and appeal to authority. Thus the tendency of extension officers to tell farmers what he thinks they should know is likely to be seen as a threat to their self-image as

farmers and arouse ego-defensive attitudes. The result is usually withdrawal, apathy and resistance to any change. Therefore the aim of the extension officer should be to avoid any situation which may arouse ego-defensive functions.

Attitudes which serve the knowledge functions are based on the need to understand, to make sense and to give structure to the universe. If people do not understand fully what is involved in a suggested change then the change will be seen as a threat and will arouse defensive attitudes. There are no short cuts in behavioural change; each step must be fully explored and understood by the farmers expected to make the changes. If the extension officer can arouse attitudes serving the knowledge function the farmers will see where information is lacking and seek to find out information which they need.

From an understanding of the functions of attitudes the extension officer should be better equipped to develop and maintain a positive learning environment in his dealing with farmers. In particular Katz stresses the effect of the group (p. 195). For the individual the group serves the functions of identification with group values from which the individual's own values are derived, identification for security, a reference for standards of judgement, and as an aid in utilitarian attempts to maximise satisfactions. Thus in any attempt to change attitudes, social support and group influence assume first importance.

7) Reference Groups

Engel (1970) has shown that a group of Australian farmers form a well defined reference group through which they evaluate their farming and formulate their attitudes (p. 22). In P. N. G. the influence of the reference group is much more clearly defined and cohesive. Among the Numuyargobo people the basic reference group for cattle development has been the clan although many of the more recent projects are based on lineages. Because of the importance of social support in attitude change, it is important for extension programmes to be carried out with the group with which the individual farmer associates in his everyday life. Effective extension requires much more than contact between the extension officer and individual farmers; it depends on the complex interaction pattern of a social system and a guiding or structuring of this pattern to facilitate problem solving.

For problem solving, a freedom of communication channels is required where leadership is a momentary function accorded by the group to that person best able to contribute to progress toward the common goal (Gibb 1947). However, as Gibb (1958) has noted, there is a tendency in any group for the development of control of the resources for problem-solving by one or few individuals, creating blockages or filters in the communication system. This is a tendency from leadership toward headship which results in a rigidity within the group and lessens the problem solving ability of the group. An example of this is the person who dominates a public meeting through his or her knowledge of meeting

procedure and/or confidence in a public meeting yet is unable to contribute anything constructive toward a solution. The extension officer can counteract this by structuring group meetings in such a way that those best able to contribute have the confidence and support to play their part. To this end, small-group techniques usually result in more effective meetings.

D. ANALYSIS - DEVELOPING AN EXTENSION MODEL

The conclusions from this discussion are self-evident - people live in groups in order to satisfy their needs. Among farmers these groups are relatively stable and cohesive. Maintenance of this system is important to the satisfaction of basic needs in the individual, and therefore compliance with group norms will be an important goal to the individual. Where a project is seen as beneficial to the group as a whole, particularly from increased status and prestige, then the group is able to mobilise resources to achieve that goal. Traditional value orientations of the P. N. G. Highland people are pre-adapted to economic activity, and therefore economic development can best be achieved by building on the present social structure and institutions. Thus the extension officer needs to work with the reference group as a whole in its own environment, projects should be aimed at satisfying group goals, and the extension officer should resist all inclination to exercise his own control over the project, thereby allowing a functioning of traditional social controls.

In practice, however, extension services staff find it difficult to follow these principles. There is always the problem that the extension officer thinks that farmer goals should coincide with what he or she thinks is good for them; he is expected to implement national plans drawn up by economic experts without reference to the motivation of those expected to carry them out; he has probably received an education which emphasises only the technological aspects of agriculture and he hasn't received the training necessary to successfully conduct a group extension approach. In the case of the Numuyargobo cattle projects imposed national policy meant that cattle ownership was only recognised on an "individual" basis, that development loans were extended to "individuals" and that the Co-operative had to comply with a rigid set of statutory rules. Extension officers attempted to use group extension methods, but the meetings were held mainly with the cattle "owners" from each clan at the society centre, not with the actual social group to which these farmers belonged. The result of this apparent support for selected individuals by the Administration and the failure to consult the group was to undermine the status position of these people within their own group. Support for the running of the cattle projects began to be withdrawn by the groups thereby isolating the project "owners". Their usual reaction was to re-orientate themselves toward the group at the expense of the projects. The decline in project expansion after 1970 can be largely explained by this trend and by the failure to improve the management skills of the Numuyargobo people through training at a rate comparable with the provision of development finance through the Development Bank.

The review of sociological principles gives us a greater understanding of the problems inherent in development projects in rural areas and points the way to the considerations needed by extension staff engaged in such projects. Although we cannot draw up hard and fast rules for extension officers engaged on rural development projects the following 'model' is offered as a guide to extension personnel in order that they consider all aspects of the socio-technical system in which they are working:-

1) Reference Group

Work with the social reference group defined by the farmers themselves. In P. N. G. this would most frequently be the lineage or the clan depending on the area and the type of development.

2) Changing Value Orientations

Aim to work within the dominant value orientations of the group relying on pattern elaborations of these orientations to divert them into activities resulting in economic development and thereby satisfying national goals as well as farmer goals. For P. N. G. this means working within a collateral relational orientation rather than a Western individualistic one.

3) The Problem Census

All development programmes must start from the farmers' own goals. Thus programme planning of extension projects should be based on goal setting by farmer groups. The understanding of what the farmers goals really are is a major problem for any extension worker as it depends on his interpretation, but it is submitted that a grounding in sociological principles will assist. The use of the problem census technique is also a useful tool to establish what the farmers see as their major problems and thereby setting a starting point.

4) Extension as Problem Solving

Extension can now be understood as teaching for problem solving and the resultant application of the solutions in practice. The teaching of problem solving demands higher-level skills on the part of extension officers than the basic technical knowledge currently accepted as qualifications for such tasks. It requires a grounding in the social sciences in addition to traditional agricultural training and it requires a personality capable of handling the complex interactions arising in group teaching methods. Everyday approaches to individual farmers and follow-up on meeting decisions is properly the task of lower-level technical support staff.

5) Social Support

Attitude change and the application of new knowledge requires social support. Thus learning should take place in the social environment that the farmer encounters in his everyday life. This requires group extension techniques, preferably in the village itself.

6) A Teaching Model

The success of group extension techniques depends on the ability of the supervisor to structure the meeting in such a way that the group can constantly move toward their goal and satisfy system maintenance functions. Parsons' functional imperatives are suggested as a model outline viz:

a) Adaption.

The provision of technical information is a function of better adaption to the environment. However, every farm is unique and a specific adaption for one farm may not be relevant to its neighbour. Thus extension should not offer the farmer solutions in the form of recommendations but should teach the farmer problem solving techniques (see Tully 1971).

The problems brought forward at a problem census usually result from the need for adaptations which will better enable the group to attain their goals. Thus if the goal is to attain prestige through ownership of cattle then problems pertaining to obtaining cattle will be expressed. Once the people have cattle they typically express problems in adapting cattle to their environment such as the inadequacy of their garden fences.

Once the major problems as seen by the farmers have been pinpointed, the task of the extension officer is to teach the farmers how they might arrive at a practical solution. A full exploration of the problem is undertaken, based wherever possible on the farmers' own information and experience. The role of the extension officer is to pose the questions which will bring forth the type of information required; to structure this information in terms of the most important variables; which in turn brings forth more information, shows where information is lacking, motivates a seeking of this information which can be inserted and seen as relevant; provides a basis for analysis of the problem; and leads to understanding of possible solutions.

The Numuyargobo people are currently expressing fears over large loan repayments which they are required to make. To the extension officer the solution requires a higher productivity from the projects

which are at present overstocked. The temptation is to tell the farmers about your solution and ask them to carry it out. This is likely to arouse ego defensive attitudes.

A full exploration of the problem as suggested may seem long and drawn out but it will result in a solution accounting for the experience of the farmers themselves and all variables. It is likely to lead to the adoption of new practices and it will teach the farmers how they may more effectively cope with their own problems in the future.

Psychologically, the process of problem exploration serves to increase the perceived likelihood of success of a project. In terms of McClelland work on need for achievement (nAch) this increases the likelihood that the task will be approached by those with a high nAch score and decreases the likelihood of a reckless approach to the task by those with a high fear of failure.

b) Goal Attainment

As the perceived likelihood of success is increased through problem exploration a decision by the group on a solution can be made. The goal is set by the group. The greater the involvement of the farmers themselves in undertaking the analysis and testing of possible solutions, the greater will be the commitment by individual farmers to apply the solutions.

If the solutions are arrived at by individuals out of their social environment there will be little support for these "new ideas" when brought back to the village and adoption is less likely. This was a weakness of the Numuyargobo project - group extension techniques were used but this was at the Co-operative level. When cattle owners returned to the village with "new ideas" they frequently didn't receive the support to adopt them.

Once the goals have been achieved the action cycle is completed. For continued progress the problems created by the solutions to the previous action cycle must be explored and new goals set.

c) Pattern Maintenance

Any change in the external system will bring tensions within the social system. Management of these tensions is necessary for system survival. If the extension officer works with a basic reference group, such as a clan, and uses the farmer's own knowledge in exploring a problem, the model he builds is a standard against which individual farmers can measure their self-ego. In this way group problem solving serves as a basis for self-study. As it starts with exploration of the farmer's own knowledge it works within the norms of the group. As the group sets new goals their achievement may result in new norms for the group. This is especially so when increased contact with outside groups is

required in order to achieve more ambitious goals. The group becomes increasingly reliant on the opinion of outsiders or, in McClelland's terms, there is an increase in "other directedness". Kinship ties should be looked upon not as barriers to progress, but as the building blocks providing the security to individual members necessary for them to attain the level of public awareness required for a modern national economy.

d) Integration

By conducting extension programmes with the whole reference group the pattern maintenance and tension management function is allowed to operate normally. Thus an integrated social system is maintained which provides the social support and security necessary for the individuals to undertake changes.

For the Numuyargobo people the original introduction of cattle was on a range-grazing basis. Cattle were thus able to stray into food gardens which caused considerable tension within the group. Social integration was maintained by building large fences on clan lands. In recent years, however, extension efforts have concentrated more on selected individuals and technical aspects. This approach has built up tensions within the groups which have been solved so far by a withdrawal from further development of cattle projects rather than a positive adaption to overcome the problems facing the projects.

7) Individual Extension Follow-up.

Decisions at extension meetings may require follow-up action by the extension service to individual farmers such as assistance with cattle marketing, veterinary treatment and development loan supervision. For these tasks an effective service requires a number of technical support staff capable of these tasks, thus leaving the skilled extension officer free to supervise group extension work.

E. CONCLUSION

Much has been written on the problems facing underdeveloped countries and on the search for an elusive key to economic advancement. The conclusion of this paper is that there is no magical key to increasing economic advancement. Rather economic development involves all variables affecting the technical systems and especially, the social systems with which we work. However, a knowledge of these variables and of the interaction process can lead to a better understanding of the variables which are important to economic achievement. With this understanding a strategy can be developed which will mobilise the motivational forces leading to economic development. This strategy should allow for the examination of problems in terms of all variables and available knowledge leading to a search for information which is lacking. As solutions are developed by the group the perceived likelihood of success in attaining their goals will be increased and the individual group members will undertake the activity necessary to achieve these goals, thus initiating economic development.

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