THE TRANSFER OF AGRICULTURAL INFORMATION TO RURAL COMMUNITIES

BY

HESTER WILHELMINA JACOBA MEYER

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Department of Information Science

University of Pretoria

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ABSTRACT

Agriculture has always been part and parcel of people in rural communities. As far as South Africa is concerned it is estimated that about one third of the people in rural communities have access to land for farming practices. Unfortunately land available for farming is not used optimally despite efforts from governmental authorities and developing agencies to introduce farming practices which could enhance the development of rural agriculture. Simultaneously information exists which could be applied to help small-scale farmers to improve farming practices. However, the transfer of information to rural communities without considering the information usage behaviour of target groups proved to be ineffective. This study is essentially an investigation to establish how information from the developed world can contribute to improve rural agriculture which in turn can contribute to the upliftment of people in rural communities.

To address the problem eight objectives were set. That is, to determine the value of information in rural agriculture, determine how information is communicated in rural communities, determine the information usage behaviour of small-scale farmers, explore the existing information systems which could support access to information, identify factors which could influence the transfer process at grassroots level, identify mechanisms which could enhance the effective transfer of required information and develop a model which can serve as a guideline for the development of an effective transfer strategy.

In order to obtain background information of the circumstances under which information is to be transferred an extensive literature study has been carried out regarding, development in rural communities, including the impact of the oral tradition still prevailing in rural communities, the existing state of rural agriculture in South Africa, the value of information as a resource, the information transfer process as it manifests in rural communities, including information systems at the disposal of target groups in rural areas, transfer techniques and mechanisms appropriate, as well as factors impacting the transfer process. The Phokoane Case provided a real-life situation where the practical application of information transfer to small-scale farmers could be investigated in depth.

The outcome of this investigation proved that information as a resource is imperative for the development of rural agriculture. Although not tangible, it acts as a dynamic force which can empower recipients to take informed decisions. The transfer of information to small-scale farmers (and rural people in general) differs markedly from transfer practices in the developed world. Due to an unawareness of what information entails and a lack of background to modern farming practices, there will be no demand for information. Therefore, a deliberate transfer effort is required. Information from the information resource system of the developed world can best be transferred when transfer techniques and mechanisms from the indigenous information system are applied. The service of a facilitator who is knowledgeable of both worlds and who knows how to coordinate and manage information, is imperative. A model has been developed which can serve as a guideline for the design of effective information transfer strategies to be used in development programmes.

SAMEVATTING

Landbou het nog altyd 'n inherente deel van mense in landelike gemeenskappe uitgemaak. Wat Suid-Afrika betref, word dit bereken dat ongeveer een derde van die grond van ontwikkelingsgebiede vir boerderydoeleindes toeganklik is. Ten spyte van pogings van die owerhede en ontwikkelingsagentskappe om verbeterde boerderypraktyke bekend te stel, word grond ongelukkig nie optimaal daarvoor benut nie. Terselfdertyd bestaan daar inligting wat aangewend kan word om kleinboere te help om hul boerderypraktyke te verbeter. Die oordrag van inligting blyk egter ondoeltreffend te wees sonder inagneming van die inligtinggebruikgedrag van die teikengroepe. Hierdie ondersoek is juis daarop gerig om vas te stel hoe inligting van die ontwikkelde wêreld kan bydra om bestaansboerdery in ontwikkelende gemeenskappe te verbeter, wat dan weer kan bydra to die opheffing van mense in landelike gemeenskappe.

Ten einde die probleem aan te spreek is agt doelwitte gestel. Dit sluit in: die bepaling van die waarde van inligting vir ontwikkelende landbou, bepaling van hoe inligting in landelike gemeenskappe gekommunikeer word, bepaling van die inligtinggebruikgedrag van kleinboere, verkenning van bestaande inligtingstelsels wat toegang tot inligting kan verleen, identiifisering van faktore wat inligtingoordrag op voetsoolvlak kan beïnvloed, identifisering van meganismes wat inligtingoordrag doeltreffend kan bevorder en die ontwikkeling van 'n model wat as 'n riglyn vir die ontwikkeling van 'n doeltreffende strategie vir die oordrag van inligting kan dien.

'n Omvattende literatuurstudie is uitgevoer om agtergrondinligting in te samel oor die omstandighede waaronder inligting in landelike gemeenskappe oorgedra word - insluitende 'n studie van die impak van die mondeling tradisie wat nog steends in landelike gemeenskappe bestaan, die huidige stand van bestaansboerdery in Suid-Afrika, die waarde van inligting as 'n hulpbron, die inligtingoordragproses soos wat dit in landelike gebiede manifesteer - insluitende inligtingstelsels tot die beskikking van teikengroepe in hierdie gebiede, toepaslike oordrag tegnieke en meganismes, sowel as faktore wat die oordragproses beïnvloed. Die Phokoane-gevallestudie is 'n praktiese voorbeeld waar die inligtingoordrag na kleinboere in die werklike lewe in diepte ondersoek kon word.

Die uitslag van hierdie ondersoek het bewys dat inligting 'n noodsaaklike hulpbron vir die ontwikkeling van bestaanslandbou is. Alhoewel inligting nie tasbaar is nie, is dit 'n dinamiese krag wat ontvangers in staat stel om ingeligte besluite te neem. Die oordrag van inligting aan bestaansboere (en landelike mense in die algemeen) verskil aansiienlik van inligtingoordrag in die ontwikkelde wêreld. As gevolg van onkunde oor wat inligting behels en 'n gebrek aan agtergrondinligting van moderne boerderypraktyke, is daar geen vraag na inligting nie. Gevolglik moet inligting doelbewus oorgdera word. Inligting van die ontwikkelde wêreld se inligtinghulpbronstelsel kan die beste oorgedra word met behulp van tegnieke en meganismes van die inheemse inligtinghulpbronstelsel. Die diens van 'n fasiliteerder wat kundig is omtrent beide inligtingstelsels en weet hoe om inligting te bestuur, is 'n noodsaaklike vereiste. 'n Model, wat as 'n riglyn kan dien by die ontwerp van 'n doeltreffende inligtingoordragstrategie vir ontwikkelingsprogramme, is ontwikkel.

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CHAPTER 1

BACKGROUND AND PROBLEM STATEMENT

1.1 INTRODUCTION

The aim of this investigation is to determine how the transfer of information can enhance the usefulness of information as a resource in the upliftment of small-scale farmers, or help small-scale farmers to contribute to their own food security. In order to clarify the parameters of this investigation it will be necessary to address the issues of development and agriculture in rural communities to a certain extent. However, the main focus will be on information as a resource and its dependency on the transfer process.

To set the scene, the purpose of this chapter is to

- sketch the background against which information as a resource will be operative, that is, agricultural practices in rural communities
- consider information provision in rural communities, the information systems available and the contribution Information Science can make to improve the transfer of information to rural communities
- define the research problem
- provide the aim and objective of this study
- set the boundaries of the topic
- provide a list of concepts to be understood
- explain the structure of this study

1.1.1 Agriculture in rural communities in South Africa

As far as South Africa is concerned, it is estimated that there are about 1,3 million small farmers operative in rural areas (Rural Survey, Statistics SA, 1997). It is estimated that about six people (per household) are dependent on one farmer. This implies that almost 7 million people are dependent on small farmers in rural communities.

Many of the people in rural areas practise farming on communal lands to which they have access. It is estimated that about one third of the population in black rural communities practise farming. Their aim is not necessarily to profit from their yields. Their yields seem to be mainly supplementary to remittances from male members of the family who earn a living in industrialised areas of the country. In the absence of male members of a family, it is usually elderly people and women who cultivate the lands, or care for livestock to the best of their abilities. They still apply traditional farming practices as inherited from their ancestors. Partly because they are unfamiliar with

modern farming practices and partly because they cannot afford the input or implements for modern farming practices. According to Todaro (1994) these conditions do not differ much from similar farming practices in other developing countries.

In the past the development of small farmers in rural areas in South Africa was mainly the responsibility of development agencies such as Bantu Development Corporation, the Economic Development Corporation and the South African Development Trust Corporation. Through these corporations a great deal of capital has been invested in agricultural development in the rural areas. Yet these areas were unable to produce enough food to meet the basic requirements of the rural population. During the 1970s a great deal of capital was invested in homelands in South Africa. Despite large scale extension services to teach farmers better agricultural methods, it is recorded that the production of maize, for example, increased very little if at all (Homelands 1970). In this regard researchers came to the conclusion that one of the major problems in developing African territories is probably the fact that development projects are usually planned and launched *for* the black peoples and they are not actively involved in these projects themselves (Homelands 1970:65).

Since then, the development approaches followed with regard to agricultural development in rural communities have changed. More is being done to involve small-scale farmers directly in the introduction of improved farming practices. One example is the Farmer Support Programme (FSP) approach (Van Rooyen 1995, Van Rooyen & Nene1996). In fact the White Paper on agriculture of 1995 (South Africa. Department of Agriculture 1995) envisaged that more attention should be given to the development of agriculture in rural communities. Provision for extension services too is not in short supply as far as rural communities in South Africa are concerned. It is estimated that approximately 10 000 extension officers are currently working for the Provincial Departments of Agriculture (which are responsible for extension services to rural communities). Direct expenditure on extension has been estimated at R515 million per annum (*Agricultural policy in South Africa* 1998:44). Yet it is acknowledged that these extension workers – of whom most were previously employed by the homeland governments – were not trained well enough to comply with the requirements of rural agriculture and, as a result, do not have much of an impact. So, it seems that one of the main channels available for information transfer is not functioning well, despite high expenditures. The question is whether this situation can be reversed with the help of more effective transfer strategies and efficient utilisation of information resources.

Evidence from the literature reveals that small-scale farmers in rural communities in other African countries have suffered more or less the same fate. That is, they are unable to become socio-economically self-reliant, despite various development efforts. In fact it seems that most efforts by developing agencies were unsuccessful in narrowing the gap between the industrialised sector on the one hand and the less developed communities on the other. According to Camble (1994:99) it seems that the quality of life of people in the rural areas continues to deteriorate from one rural development programme to the next.

Considering the fact that financial support and the provision of technical know-how were not in short supply during development endeavours, there must have been other

underlying reasons why the well-meant efforts failed. Looking at the situation from an Information Science point of view, it may well be that a lack of understanding on the small-scale farmers' side, and the method of introducing effective farming practices on the developers' side could cause some of the obstacles, and merits further investigation.

From the above, it is clear that there are at least three information related issues that can cause problems in rural agriculture. These are: absence of small-scale farmers in planning development programmes for rural agriculture, lack of knowledge of modern farming practices by the small farmers, and a lack of appropriate methods to transfer modern practices to small-scale farmers.

1.1.2 Information for rural communities in South Africa

It is believed that one way of promoting development in agriculture is by transferring technology and developing appropriate skills. Although it is seldom recognised by developers, information forms an integral part of technology and is inevitably transferred with the physical part of technology to give meaning to the latter. It is only recently that rural development experts, planners and information scientists identified information as an important input resource in rural development programmes (Camble 1994:100).

Information is an abstract perception and people seldom realise that what causes their problems is a lack of information to either increase their understanding of a problem or issue, to apply in solving a problem, or to enable them to take effective decisions. They do not realise that information manifests itself in things like technology, or ideas and facts they can apply either to solve problems or to help them take decisions, or perhaps even to change negative attitudes that were based on unqualified assumptions.

Sometimes information on the latest technology is introduced to small-scale farmers to solve particular problems that they experience. This is because developers would like people from the developing world to share in the advantages gained from results of the latest research endeavours in a particular research field. For example, the use of bio-gas to solve the problem of fuel wood shortages among communities that cannot afford any other kind of energy for cooking, et cetera. Disappointment sets in when the well-meant information or technology is not accepted or used by the target group as anticipated. Developers are often puzzled by this apparently irrational behaviour. This could be because they do not reckon with the absence of basic knowledge which is needed to form a basis for new incoming information on the part of the target group. It seems that not all new information is appropriate for all circumstances. So, the random transfer of information is not always the solution to a problem.

The above then proves the importance of considering the type of information and the manner in which it should be provided. Zaaiman (1985:135) for example cautions that we should not lose sight of the fact that the illiterate and rural folk, who form the majority of Africa's population, need information of a type that will suit their particular needs, which often lie at survival level.

1.1.3 Appropriateness of information systems

Considering the views on the importance of information for development, one should also look into the capabilities of current information systems responsible for transferring information to rural communities of developing areas. Underlying most of the modern information transfer systems is information which is made available through printed or electronic media through a variety of channels, such as book shops, library and information services, the mass media, radio, television and whatever the modern information and communication technology can offer. Whoever has access to these media and channels and knows how to utilise them, will either request information from these systems, or will eventually be exposed to the information they carry. Users of information in the developed world are well acquainted with this practice and know how to benefit from these systems.

However, in the developing world it can be a different story, where these information systems prove to be inappropriate to provide for the information needs of the rural people. This is partly because, until recently, the majority of the rural population were either illiterate, or only functionally literate, which means that these information systems are not accessible to them. Apart from this problem, rural people originate from an oral culture where they are used to exchanging information informally by word of mouth and by demonstrations.

Despite the inappropriateness of modern information systems from the developed world, they are still used for developing communities. In this regard Shillinglaw (1986:40) points out that "the library system, like other western instruments of development or modernisation, was transposed unadapted into a context for which it was unsuited and in which its potential is failing to be realised."

Apart from libraries as information systems, there are also other systems that transfer information to rural communities. In this regard we can mention a few such as extension services and facilitation through development efforts of multinational corporations or nongovernmental organisations (NGOs). However, here too problems are experienced. Mchombu (1992b:17) points out that the responsibility of information provision to rural communities is fragmented among several government ministries, nongovernmental agencies and parastatals. Apart from libraries (whose sole concern is the provision of information to its user groups), most developing agencies supply information as part of a service to the community. For example: technology transfer in agriculture, or health care services. These services then serve as information systems to rural communities apart from their main purposes. Apart from these community services, development programmes also serve as information systems through which information is transferred to rural communities. However, there seems to be a need for proper planning, management and implementation of rural development programmes which require the use of quality information at all levels. Camble (1994:105) is of the opinion that developing agencies through their development programmes are responsible for the availability and use of quality information by rural development workers and rural people.

In rural agriculture, extension is probably the most important information system by which agricultural information is transferred to small farmers. With regard to rural developing areas in South Africa, Bembridge (1991a:24) for instance points out that the important task of an extension service is to provide information and skills, and to bring about favourable attitudes in farmers and their families with the ultimate aim of raising their efficiency and helping them to achieve higher standards of living. Unfortunately though, Hayward and Botha (1995:195) found little or no coordination between departments of agriculture and agricultural corporations with regard to the rural developing areas in South Africa. As a result, in the past, extension supervision to these areas was misguided.

Apart from the poor coordination of information transfer activities in rural areas, Faaland and Parkinson (1991:252) point out that on the receiving side, governments of developing countries often seem to be ill-organised and to have only limited capacity for supporting agricultural development. The situation is also exacerbated by the fact that rural people are often unaware that they need information to solve a problem. Furthermore, they are not used to using modern information systems to obtain the required information. They would much rather approach a person who could advise them on solving the problem. So, it seems that information systems originating from the developed world will have little effect in disseminating information of a technical nature to potential users unfamiliar with their functioning. Especially when the information system disseminates information to which the potential user has not been exposed before, or information that cannot be related to knowledge the person already possesses. So, it seems that there are two types of information systems from which rural people can benefit, but these systems are not compatible.

Looking back at the situation sketched so far, it seems that much is being done in South Africa regarding the transfer of information and technology which can help small-scale farmers to grow food to support their dependents. However, it seems that factors in different areas result in the under-utilisation of information as a resource for the upliftment of small-scale farmers.

The following is an attempt to give an interpretive summary of what has been learnt from the discussion so far, and of the areas where problems are experienced:

Table 1.1 Problem areas

Development approaches	Information systems	Small-scale farmers
1. Inability of consecutive development approaches to narrow the gap between developed and developing communities	1. Poor performance of information systems 2. Fragmentation of services 3. Incompatibility of systems	1. Lack of appropriate knowledge 2. Ill-organised support 3. Limited capacity

- **Development**. Developing agencies seem to be unable to narrow the gap between the industrialised sector and the less developed communities despite the fact that financial support and technical know-how were not in short supply

in the past. The fact that development projects used to be planned (by outsiders) for black peoples (including small-scale farmers) is pointed out as a possible reason for failure. So it seems that the development approaches followed in the past could have contributed to the problem. It also seems that development agencies are not fully aware of the manner in which rural people exchange information and, therefore, do not exploit the potential of the latter's indigenous information system.

- **Information systems.** Evidence shows that information systems which provide well for the needs of users in the developed world are transposed unadapted to provide for the needs of developing people.

  Extension services and development programmes prove to be a major information system which provide for the information needs of small-scale farmers. Unfortunately extension services appear to be fragmented and there is poor coordination of decision making between national and provincial levels of extension. So, it seems that inappropriateness and malfunctioning of information systems in use, could contribute to the under-usage of information as a resource for development of small-scale farmers.

- **Target group.** Small-scale farmers as the receivers of information in developing communities seem to be unaware that appropriate information can help them to solve their food security problems. Information is an abstract perception and is not experienced as something tangible which they can apply to improve a farming practice.

  There are also indications that governing bodies in developing countries are ill-organised, or they have a limited capacity to support agricultural development.

On the whole it seems that information can play an important role in the development of small-scale farmers, but that there are definite problem areas that need further investigation to address the problem of the information exchange process between the small-scale farmer, who lacks understanding of new concepts of farming, and the developing agents' inability to apply a method to transfer appropriate information to small-scale farmers.

1.1.4 Contribution of Information Science

Considering the efforts and costs being undertaken by development agencies and funding institutions to improve the quality of life in rural areas through the transfer of technology, it is alarming that the results are so disappointing in terms of progress. Despite all the input and efforts, it seems as if the plight of rural farmers does not improve very much, if at all. Surely there should be a way to get out of this deadlock, where rural people can come to a point where outside information is understood, accepted and implemented, and where development agencies' inputs are made more cost-effective and rewarding for field workers who have to build the bridge between the developed world and developing communities.

Since Information Science is the field of study where the information phenomenon is investigated in its entirety, it is only natural that it should show an interest in problems that are experienced by development agencies in their endeavours to help developing people to improve their livelihood. In fact, it is widely accepted that information is a valuable resource for development (Camble 1994, Menou 1993).

However, it seems that efforts undertaken in the field of Information Science to contribute to the provision of information to developing countries focus mainly on the provision of infrastructure and information technology to provide for the information needs of those in developing countries familiar with accessing modern information systems. That is, literate people who can read and write and know how to use recorded information. Much work is being done in African countries in this regard. However, these endeavours do not provide for the access and use of information by people at grassroots level who originate from oral cultures where the ability to read and write in order to access recorded information is not a prerequisite.

Considering the role that can be played by information in development, addressing this problem lies squarely in the field of Information Science. Information Science is the discipline that studies the information phenomenon, retrieval of information, packaging of information, transfer activities, information systems and people's information usage behaviour. These are but a few among many other information related issues dealt with by Information Science.

To summarise: it seems that the problem addressed by this investigation is multifaceted. For example: Rural agriculture seems to have problems introducing appropriate information and technology to small-scale farmers due to a weak link which manifests itself in extension services. Development approaches show that there is a slow realisation that involvement of target groups can help to make appropriate information more acceptable to rural people, but there is still an unawareness of rural people's information usage behaviour. As far as Information Science is concerned there seems to be realisation of the need for information provision, but little is done to accommodate individuals and groups at grassroots level. The need for an appropriate information system has as yet not been addressed.

1.2 RESEARCH PROBLEM

From the discussion above it seems that agriculture can play a prominent role regarding food security in rural communities. However, it seems that valuable agricultural information from the developed world, made available through information systems (such as extension services or development programmes) is not used by small-scale farmers to their own advantage and upliftment. The appropriate transfer of information seems to lie at the heart of this problem.

To address this problem it will be necessary to

- investigate the entire process of agricultural information flow as it manifests itself in rural communities

- determine how small-scale farmers go about exchanging information, that is, establishing their information usage behaviour
- establish underlying factors that could impact their information behaviour
- determine how outside information can be made more acceptable to small-scale farmers

Over the years, Information Science has developed, among other things, a fairly good knowledge base in the fields of information systems, user behaviour, and dissemination processes. Therefore, it can be postulated that Information Science can contribute to better utilisation of existing agricultural information by small-scale farmers to improve their farming practices.

Due to the fact that the field of investigation is relatively unknown, this study will be of an exploratory nature where a real life situation in a rural community will be studied in depth. Apart from an empirical study, part of this investigation will be to carry out a literature study with regard to

- development approaches and their impact with regard to the upliftment of rural communities
- the nature of rural people originating from an oral culture with special reference to their manner of storage, usage and transfer of information
- the nature of small-scale farmers and their agricultural practices with special reference to the situation in South Africa in the recent past
- the nature of information and its value as a resource in development
- information as a process, models of information transfer and information systems operative in both the developed and developing world

The main value of the study will be to gain insight into the information usage behaviour of small-scale farmers in rural communities, which may lead to the development of a guideline for transferring appropriate information more effectively to small-scale farmers to help them make their own decisions in solving problems regarding food security.

1.3 AIM AND OBJECTIVES OF THE STUDY

The aim of this study is twofold. That is, to establish whether information is a valuable and important resource for development, and if so, what are the most suitable means to enhance the effective transfer of information to small-scale farmers.

In order to comply with the aim of this study, the following objectives have been set:

- Define the small-scale farmers as potential users of agricultural information
- Determine the information usage behaviour of small-scale farmers
- Determine the value of information regarding rural agriculture
- Determine what the transfer process entails in rural communities
- Explore the existing information systems which could be used to transfer information to the target group (including media and channels operative in these systems)
- Identify the factors which could influence the transfer process
- Identify appropriate mechanisms suitable to transfer information from the developed world to developing small-scale farmers
- Develop a model which represents the transfer of agricultural information in rural communities

1.4 BOUNDARIES OF THE RESEARCH TOPIC

Since this research topic has to do with the application of a part of the knowledge and know-how of Information Science across the boundaries of other subject fields (ie agriculture, sociology and development), it is necessary to identify the parameters in which the research will be conducted. These parameters will be identified as follows:

- **Development.** The transfer of information is closely related to the process of development. To enhance development of a group of people, information is required to bring about change with the purpose of improving circumstances. For the purpose of this study the group of people identified is the small-scale farmers in rural communities which are in a process of development as far as their farming practices are concerned. Therefore, the issue of development covered in this research topic will be limited to a discussion of the development approaches followed by developing agencies in the recent past, and the impact they had on rural people's perceptions and responses toward any development efforts.

- **Agriculture.** Broadly speaking agriculture has to do with the production of food. The production of food can be practised either on a commercial level to provide food security and to make a profit, or on a subsistence level (noncommercial) by those who have access to land and other inputs and practise farming only to supplement food supplies for survival. Thus, for the purpose of this study the discussion of agriculture will be limited to farming practices of small-scale farmers who have access to land but do not practise farming for commercial purposes or to secure an income.

- **Target group.** The target group of interest to this study is the small-scale farmer in rural areas. Small-scale farmers may vary from people who practise farming for survival, earning an income by being hired by individuals or companies to work their lands in rural communities, or those who practise small-scale farming for profit. Of particular interest to this study is the small-scale farmer who comprises the elderly people and women whose spouses left to work as paid labourers in industrialised areas. Most of these farmers originate from an oral culture and they practise farming according to the traditional methods passed down by previous generations. They do not practise farming for profit, but mainly to supplement their meagre food supplies bought with either old age pensions or other remittances. Most of these farmers seem to be illiterate or, at best, functionally literate. They obtain most of their information informally by word-of-mouth, observation and visual demonstrations.

- **Information Science.** Information Science comprises a number of sub-fields which study the information phenomenon with regard to the creation of information, its storage, organisation and retrieval, dissemination, users information usage behaviour, information as a resource, and the management of information. Of particular interest to this study are the sub-fields that focus on information as a resource, information usage behaviour and dissemination of information. Studying of these sub-fields will be limited to their application to agricultural practices of small-scale farmers, using information as a resource for development and studying the preferences and information usage behaviour of small-scale farmers who originate from an oral culture.

- **Transfer process.** The information transfer process involves the linking of potential users with appropriate information: to raise awareness of the existence of a particular type of information, to broaden understanding of a particular concept, to carry out a task, to take a decision, or to solve a problem. The transfer of information can be either a diffusion process where information is directed at a potential user group, or it can be a deliberate act where information is directed at an identified user group with the intention to bring about change in perception as well as acceptance and implementation of the newly obtained information. If a potential user group is unaware of the existence of information that can solve a problem, or improve a situation, they will not search for that information. In such a case deliberate transfer of information will help to bring awareness, broaden understanding and eventually give rise to acceptance and implementation of this newly obtained information.

  Given the existing state of small-scale farmers' knowledge of modern farming practices, this study will be limited to the deliberate transfer of information through training with the intention of bringing about change in perception of farming practices of small-scale farmers, and also with the intention of making it acceptable for the potential users to implement it to their own advantage.

  It is presumed that the information systems used in the developed world differ markedly from the information systems of people originating from an oral culture. Therefore, this study will focus in particular on the transfer process as it evolves

between the two types of information systems. Particular emphasis will be placed on factors present in the rural environment that may influence the transfer process, and the techniques and other means applied to enhance the deliberate transfer of information originating from the developed world.

It should be stated explicitly that this study deals with the transfer of information outside the conventional library and information services whose purpose is the handling of information in its published format.

1.5 JUSTIFICATION FOR THE APPROACH ADOPTED

The approach adopted for this study is exploratory in nature where the transfer process is studied in depth. Justification for the approach adopted is twofold:

- Very little is known of the information flow in rural communities among people who originate from an oral culture where information is exchanged differently from the way this occurs in the developed world, where systems for information exchange are based on literacy.

- Information could be a valuable resource for development, but its nature differs from other tangible resources for development. Therefore, it seems that government authorities and agencies involved with development are unaware of its potential.

The developed world disposes of a vast store of knowledge that could be applied for the upliftment of rural people in developing areas, but there seem to be underlying variables that retard the linking of the target group(s) with the appropriate information that could bring about the required change in these people's lives.

Information Science possesses the knowledge base that can help policy makers to harness information as a valuable resource for development purposes, by designing appropriate information transfer strategies for their development programmes.

1.6 OUTCOME OF THE STUDY

It is hoped that the outcome of this investigation will contribute in the following ways:

1.6.1 Theoretical outcomes

It is hoped that more light will be shed on:

- the usefulness of information as a resource for development

- how the information transfer process can be adapted to enhance the usefulness of information as a resource for development

- the information usage behaviour of illiterate small-scale farmers

- underlying factors that can retard the information transfer process among small-scale farmers in developing communities

- how a change of attitude among small-scale farmers can be brought about so that they will accept outside information

- the techniques and mechanisms appropriate for transfer of agricultural information to small-scale farmers in rural communities

From the insight gained from the above it is hoped that a theory can be developed regarding the flow of information from an information resource in the developed world to users of an oral culture in the developing world

1.6.2 Practical outcomes

It is hoped that the results from this investigation will

- convince government authorities, developing agents and other policy makers involved in the upliftment or rural communities, that information is a valuable and important resource for development - that its impact cannot be ignored in development programmes

- make authorities and developing agents aware of the information usage behaviour of people originating from an oral culture, and their indigenous information system, which operates differently from the information systems of the developed world, which are taken for granted, and are often transposed unadapted for use by rural people

- prove that the method of transferring information to rural communities needs to be adapted to fit the target group's (small-scale farmers') method of and preferences for communicating information

- set guidelines for potential developers to follow when planning development programmes to prevent uncoordinated attempts, which can create confusion and distrust among would-be beneficiaries of the development programme(s)

- convince policy makers involved in development programmes to approach information scientists to assist them in planning an appropriate strategy to introduce information or technology from the developed world to their target groups in the developing world

1.7 STRUCTURE OF THE STUDY

In this section an explanation is given of the contents covered in each chapter of this report. The structure comprises two parts. Part A covers the literature study and theory of information transfer with regard to rural agriculture. Part B covers the empirical investigation, outcomes and recommendations.

PART A LITERATURE STUDY AND THEORY

Chapter 1: Introduction and statement of the problem

The purpose of this chapter is twofold. That is, to give some background on the current state of rural agriculture and its inability to provide food security despite consecutive development efforts over a long period. Secondly, the reader is introduced to the provision of information for rural agriculture and the viability of current information resource systems to ensure small-scale farmers access to information. The problem to be addressed revolves around the fact that despite all efforts modern information – which can help to uplift livelihoods – is not utilised by small-scale farmers.

The objectives of the study, as well as the boundaries of the research topic are explained. The justification for the research approach adopted is also covered in this chapter.

Chapter 2: Development in rural communities

In this chapter the reader is introduced to what development entails within a rural community, as well as a discussion of outstanding features of developing communities to point out how rural agriculture fits into such a community. Consecutive development approaches that were followed in the recent past are also covered to point out how they impacted on the lives of current inhabitants of rural communities. The environment for the transfer of information is also under discussion.

Chapter 3: Agriculture in rural communities

In this chapter a background to the development of rural agriculture in the South African context is sketched with a discussion on the role of agriculture in rural development. The nature and current status of information provision to support rural agriculture is also discussed to shed light on the role played by information.

Chapter 4: Information for development

In this chapter the importance and usefulness of information as a useful resource for development is debated. Attributes of information are discussed to identify which contribute to information's value as a resource and which tend to be restrictive. Furthermore, the different factors in the environment of rural communities that can restrict information to contribute to development are also covered.

Chapter 5: Transfer of information in rural agriculture

The role of information transfer in the development of rural agriculture is addressed in this chapter. The transfer process as it manifests in rural agriculture is covered in detail. Different models appropriate for transfer of agricultural information to rural communities are compared. Linkage mechanisms originating from the indigenous and modern information resource systems are identified and compared to determine their appropriateness for transferring information to small-scale farmers. Finally barriers that may constrain the transfer process are identified and discussed.

PART B EMPIRICAL INVESTIGATION, OUTCOMES AND RECOMMENDATIONS

Chapter 6: Methodology

The reason for selecting a qualitative research design is explained in this chapter. The components, characteristics, disadvantages and benefits as a method of investigation are debated. The researcher's role as well as the data collecting procedures, analysis, data recording, verification and reporting are covered in this chapter.

Chapter 7: Successful information transfer: the Phokoane Case

In this chapter the case history of a successful transfer effort is introduced, with a detailed analysis and interpretation of the transfer strategy that was followed. How small-scale farmers, as well as rural agriculture, benefit from this particular case is evaluated. How information as a resource manifested during the transfer process, as well as the reasons why the particular case was considered successful are explained from an Information Science point of view.

Chapter 8: Transfer of agricultural information to rural communities

In this chapter a discussion and development of a proposed model suitable for information transfer to rural communities is offered. Variables that need to be considered when designing a transfer strategy are identified and discussed. The importance of a facilitator in the transfer of modern information to rural communities is emphasised.

Chapter 9: Conclusions and recommendations

In this chapter the problem statement and questions posed regarding information as a resource and the transfer process are revisited to highlight the outcomes of this investigation. Recommendations are made as to how the transfer of information should be approached in order to ensure that information contributes effectively to the upliftment of people in rural communities.

1.8 EXPLANATION OF TERMS

The purpose of this section is to highlight some of the terms or concepts that are used frequently in discussions of various issues of this study. The idea is not to provide detailed definitions of terms, or to debate certain concepts. The idea is rather to provide an explanation on how the terms are used within the context of this investigation. Although an alphabetical approach is followed for entries, those with similar meanings are often clustered under one term used predominantly. In the list below the terms are entered alphabetically in the left hand column with an explanation on the right.

Table 1.2 Explanation of terms

Terms	Explanation
Communities Developing communities Rural communities	These areas are often in rural areas of a country which is still in a state of development. So, the terms developing communities and rural communities are used interchangeably.
Culture Literate culture Oral culture Primary oral culture Residual oral culture	The term culture is mainly used to distinguish between oral culture (which is still evident among rural communities) and literate culture (which is evident of developed societies). We further distinguish between primary oral culture (where people had no previous contact with literate cultures) and residual oral culture (where people had contact with literate cultures, but where the influence of the oral culture remains dominant).
Developers Development agencies	Within the context of this study these terms are used to refer to authorities, agencies, policy makers involved in development endeavours in rural areas.
Human capacity	The term is applied in connection with the development of human potential among small-scale farmers.
Information systems Indigenous information system Modern information system	Information systems in this study refers to the information resource bases which provide potential information for application in rural areas. The two main information systems of concern are the indigenous information (knowledge) system present among rural people of an oral origin, and the modern information system of the developed world.
Information usage behaviour	This concept refers to the behaviour of people regarding the creation, collecting, storing, usage, dissemination or communication of information.
Intermediary Extension officer Facilitator Field worker Linker Trainer	This cluster of terms is used interchangeably to refer to the person(s) responsible for the transfer of information from the developed world to users (small-scale farmers) in rural communities of the developing world.
Merging model	This model is a visual representation of the transfer of information between the developed world and developing communities.

Small farmer small-scale farmer small holder	These terms are used interchangeably to refer to those people in rural communities involved in farming practices.
Participant Target group Receiver End user	These terms are used interchangeably in connection with people from rural communities who participate in development programmes where information or technology is deliberately transferred from the developed world with the intention to improve living conditions in rural communities. These participants are receivers of information and often they are the end users of the information of a development programme.
Receptivity Absorptivity	Within the context of this study these two concepts are used to refer to the intellectual ability of individuals in target groups to understand and accept new concepts or ideas regarding farming practices.
Rural agriculture Subsistence farming	These terms are used interchangeably to refer to the type of farming practices which occur in rural communities where farming is practised mainly for food security - not for commercial purposes.
Transfer of information	Within the context of this study this term means the deliberate transfer of (adapted) information to a target group instead of dissemination of information where potential receivers are exposed to information unadapted for their needs.
User profile	Within the context of this study this term represents an outline of the attributes of small-scale farmers regarding their use of agricultural information.

CHAPTER 2

DEVELOPMENT IN RURAL COMMUNITIES

2.1 INTRODUCTION

In this investigation we are concerned with how small-scale farmers can benefit from information to which they are exposed as a result of development activities. Therefore we need to know more about the environment – the rural communities – in which the small-scale farmers operate. We also need to understand what role development plays in rural communities and how information features within the development process as applied in rural communities.

Therefore, the purpose of this chapter will be to

- establish what the development process in rural communities entails
- identify some features typical of rural communities
- consider a number of consecutive development approaches that have evolved over the past few decades
- reflect on the environment in which information is to be transferred in a rural community

2.2 WHAT IS DEVELOPMENT?

From the outset it should be made clear that the intention of this discussion of the concept of development is by no means to give an authoritative view of the theory of development, how it should be implemented, or who should implement it. However, note has been made of the views of authors such as Chambers (1997), Esteva (1992), Rahnema (1992), Sachs (1992), Webster (1990) and Wisner 1988), who are prominent in the debate on development and will be referred to in the course of the discussion.

The concept of development is very complex and means different things to different observers. However, as far as livelihoods of people in social groups or societies are concerned, its seems that an urge to change or adapt evolves the moment the status quo no longer complies with the requirements or needs of the group. Members of such a group will then try to improve their quality of life with whatever means are at their disposal to solve their problems. In this regard Sethi (1993:142) postulates that each society has a unique configuration or gestalt, consisting of a distinctive value system; an artistic or aesthetic sensibility; and a propensity to transform itself according to the needs of the times. These elements have existed in societies down the ages, ever adapting, adjusting and reorganising. The societies that exist today are the product of this process. Those that did not follow it have disappeared into oblivion. So, it seems that change is essential for survival, progress and prosperity.

The description above refers to development that takes place within a society. However, development in the sense of natural change does not always evolve within a society. Often the initiative for development originates outside society. Within the current context, development has much to do with the availability of resources and their distribution (or unequal distribution) to solve problems of food security, health, education and poverty. Tisch and Wallace (1994) state that the world's wealth is unevenly distributed among countries, among ethnic groups within countries, among urban and rural dwellers, and among men and women. These inequalities provoke both private and public response.

It seems that few would argue that development is wrong, but how to develop, who should pay for development, and who should implement development projects remain open questions. The causes of poverty among and within nations and states are debated by scientists and government officials, who try to find solutions to alleviate poverty and to stimulate growth. Obviously most people want development, but no one knows exactly how to achieve it. Dilemmas arise when circumstances require that choices be made among undesirable alternatives. Hence the different views and criticism concerning the concept of development.

Apart from the different points of view, the literature reveals certain subprocesses that manifest during the process of development. These include change, intervention, participation and the introduction of information and are discussed below.

2.2.1 Change

Probably the most prominent feature of the development process is that it has to do with change, which takes place in any dynamic society from time to time. Unless a society responds with change or adaptation to solve problems, stagnation will set in, as suggested by Sethi (1993). Change is thus necessary to ensure improvement and progress in the standard of living and to help people to cope with problems. It is believed that change can arise out of natural circumstances within a community, or a society that demands adaptation to improve or lead to desired results (Rogers 1992:84). In such a case natural development takes place.

2.2.2 Intervention

According to Boon (1992:229) development depends to a large extent on the internal, innovative capabilities of individuals and the community, within a context of established norms, opinions and values. However, Gassol de Horowitz (1993:172) is of the opinion that in the history of the social processes of humankind, there are few cases of spontaneous development. Therefore, the widespread conclusion is that in order for rapid development to take place, the process must be directed, facilitated and funded by external communities and individuals. Rogers (1992) too admits that development can also be a deliberate act of intervention to alter the direction of change with the intention of improving a certain situation. If this is the case, then development is a planned activity in an ongoing process of change (Rogers 1992:84).

Intervention can also be seen as the desire of outsiders to assist poor people by providing resources to improve their standard of living. In the case of deliberate transfer of information, it can also be regarded as intervention – especially where receivers in rural areas are not aware that information can help them to gain a better understanding of something that can help them to improve their lives.

2.2.3 Continuation

The idea that development is an ongoing process is emphasised by various authors such as Rogers (1992), Gassol de Horowitz (1993) and Schoenhoff (1993). It seems that continuation has to do with our desire to improve our present situation by adapting according to the requirements of changing circumstances. Thus, the moment set goals have been met, new goals become evident. In this way development is continually going on.

This feature has certain implications for development projects, which are usually funded and introduced as isolated events in the lives of rural communities. In such cases the development project is seen as an end in itself. In many areas, this often causes conflict at the local, national, regional and international levels, between those who have benefited from the process and those who have not.

2.2.4 Participation

Another distinctive feature of development is the involvement of the target group in need of change. It seems that the success of the development process is determined by the extent to which target groups take part in development activities. For authors like Bhasin (1991), Mchombu (1992a), Rogers (1992), Ayodhya and Papa (1993), and Van Zyl (1993) development not only entails change, but also the full involvement of people affected by development projects. For them development means the extent of control people have over their own lives and no longer having to be at the mercy of external forces. It seems that participation is of special importance in cases where the development is not a spontaneous process sprung from the community itself, but is a deliberate act of intervention from outsiders to support a community in need of change.

2.2.5 Information

Considering the fact that development takes place where there is an awareness of some kind of deficiency, the very first input needed will be information to help people understand either what causes the problem, or how to solve the problem. The perception of information is much better concretised when innovations are introduced that can be applied to solve the problem. Where these innovations do not emerge from within individuals or communities, they need to be introduced from an external source. The moment innovations from outside are introduced, information is needed to explain their characteristics and functions in order for recipients to understand, accept and apply them for the desired improvements. Obviously the information needed should be appropriate for the need, circumstances and environment in which it is to be applied.

So, it seems that information (although very subtle) always forms an integral part of any innovation introduced for development purposes. In fact, it is believed that a lack of information can retard development in general, which in turn may have a negative effect on human development (Boon 1992). Ozowa (1995:17) for example, attributes the low level of adoption of agricultural production technology among small-scale farmers, to a lack of information. So, it seems there is a definite correlation between the impact of information and the outcome of a development programme.

It is generally acknowledged that defining development – that is, socio-economic development – is fraught with difficulties (Tisch & Wallace 1994). It is a complex process – particularly the interaction between economic and social dimensions and physical and human factors, which is still not understood despite heavy investments in development programmes.

Although it is difficult to define exactly what development means, it is possible to determine that perceptions such as change, intervention, continuation, participation and information are ubiquitous in any development process. Thus, whenever development projects are considered, one should realise that there will be an intention to bring about change, and to intervene with the purpose of improving. Developers should realise that development is an ongoing process and that a single project can only contribute to development, but is not an end in itself. Without the participation of recipients the development process will be less successful, and without appropriate information the development process could be retarded.

2.3 FEATURES OF DEVELOPING COMMUNITIES

For purposes of this investigation it is also important to understand how rural communities – viewed as developing communities from a First World viewpoint – function. The term rural community has been defined by various authors from various perspectives without reaching an overall accepted definition. Since the focus of this investigation is mainly on small scale farming in rural areas, our particular interest will be to understand how information is used or exchanged in farming activities within rural communities. This can serve as an indication of how the transfer of information from an external source could be affected by the way of life in rural communities.

One should, however, keep in mind that developing rural communities are not all alike. Different circumstances may impact on communities that result in their unique characteristics, and yet they may still have certain characteristics in common. Gassol de Horowitz (1993:170) points out that it has become customary when dealing with so-called "developing countries" to warn about the dangers of generalising about nations that are often far apart geographically and have totally different historical and cultural backgrounds. Although these countries – or developing communities within rural areas of these countries – have some characteristics in common, they also have marked differences which influence their pattern of development. There are ethnic as well as cultural and social differences, and there are also different political alignments. It is equally evident, however, that developing countries suffer from problems and conditions that are strikingly similar and all too often familiar.

Although not exhaustive, the views of a number of authors from various subject fields such as Hill and Still (1980), Havelock (1986), Saeed (1987), Sturges and Neill (1990), Mchombu (1992a; 1993), Nwagha (1992), Rogers (1992), Ayodhya and Papa (1993), Madu (1992), Moshoeshoe-Chadzwingwa (1994), Todaro (1994) and Zaman (1995) enable us to enumerate some of the most outstanding features of people in developing communities.

For the transfer of information in particular, a categorisation of such features is important since we presume that development cannot take place without the transfer of information to bring about change. Each of the categories discussed below houses variables that have an impact on the information usage behaviour of people in rural communities in particular. It is important that developers consider this information when they undertake to design an appropriate strategy for transferring either information or technology.

2.3.1 Community structure

It seems that in most developing communities in rural areas the traditional community structure prevails, where the headman is in charge of a particular family group. Usually the headman is assisted by a small group of advisers, consisting of senior male relatives, or important elders of different family groups. Social rankings are based on heredity and security. The headman usually succeeds to office automatically by right of birth. The headman is often the channel through whom all official information is transferred to other members of the group or village (Ayee 1993:221). From an Information Science point of view, the headman serves as a channel for raising awareness of outside information.

Although relationships based on blood and kinship ties remain beneath the surface, it appears that some communities become divided – especially where contact is made with Western values introduced by neighbouring industrialised societies. Often the influences of neighbouring industrial societies cause social disruption and result in the disintegration of traditional norms and value systems. In turn this often leads to rejection of old values, loss of emotional security, and a feeling of powerlessness for not being able to compete for skilled jobs. Due to these circumstances, social disorders such as alcoholism, vandalism and drug addiction are rife in rural communities. Often people living under these circumstances accept their situation as their fate – a situation which Freire (1972) referred to as "the culture of silence."

The above paints a bleak picture of circumstances in rural communities where there is a need for development in many areas to improve living conditions, but it also reveals a lack of appropriate knowledge regarding certain skills.

2.3.2 Family structure

The extended family (comprising grandparents, their sons, daughters, spouses and children) is still evident in rural communities. However, due to the migration phenomenon, family patterns have changed to such an extent that rural areas are mainly populated with elderly people, women and children. They are largely dependent on remittances from relatives living in towns (Sturges and Neill 1990:45).

In the absence of men, women play an ever more important role in farming in rural areas. It is estimated that women account for 60 to 80% of the work force in rural areas – most of it in crop production (Nwagha 1992:76). Farm households are increasingly managed by women, who must cope with a range of uncertain factors, including weather, commodity prices and government policies (Dixon et al 1994:3). As far as agriculture is concerned, both men and women are often ill-equipped regarding working methods, skills and appropriate tools. This is even worse in the case of women where the assumption in the past was that whatever [information] women need to know about agricultural technologies, will reach them through their male relatives (Sen 1993:503). One could assume that such attitudes will also retard the transfer of agricultural information offered during development projects, unless developers are aware of these conditions.

2.3.3 Economic structure

It is often stated in the literature that in developing countries there are enormous gaps between existing needs and the resources available to meet them. The average person is usually very poor and often hungry.

High unemployment rates are a prominent feature of developing countries. Due to a lack of industrial activities in rural areas, there are few employment opportunities in the formal sector of the economy. The situation is exacerbated by rapid population growth, which causes a surplus of unskilled labour, which is often poorly organised, if at all. As a result, developing communities in rural areas are known for their low productivity, low income and low wages.

According to Madu (1992:18), productivity in most developing countries is low and it may not be easily improved by the transfer of technology. Lack of complementary factors such as a lack of physical capital and/or experienced management are reasons for low productivity. Todaro (1994) notes that low standards of living and low productivity are self-reinforcing social and economic phenomena in developing countries, and as such contribute to their underdevelopment.

People in rural communities are known for their subsistence economy. Compared to the Western way of life, activities in rural communities are conducted at a leisurely pace. This is in stark contrast to the attitude which prevails in developed societies where punctuality is an important requirement in an efficiency oriented system geared for profit making and where a skilled labour force is required for successful progress.

Compared to developed or industrialised areas, the infrastructure and modern amenities provided in rural areas are often neglected. People in rural areas live in scattered and isolated communities which complicate the economic provision of electricity, potable water, good roads, hospitals and schools in an already poverty stricken society, and certainly the dissemination of information regarding new technologies or ideas that can improve living conditions.

From the discussion above, it seems evident that the economic structure of developing communities – especially in rural areas – is of such a nature that development of such communities is unlikely without outside intervention.

2.3.4 Farming

Farming seems to play an important role in rural communities as far as food security is concerned. However, not everyone is occupied with farming, or has access to agricultural land. It is estimated that roughly about one third of a rural community has access to agricultural land. With reference to South and Southern Africa, farms are fairly small. An average small-holding comprises two to four hectares (Bembridge 1991b). The practice of the different land tenure systems seems to be widespread in developing countries (Cross & Haines 1988). Land is not owned by small-scale farmers, but allocated to them for cultivation or stock breeding (De Beer & Bembridge 1987, Legoupil 1994). As a result it is unlikely that small-scale farmers will make investments for the improvement of land that they do not own. Since rural people do not own land, they do not have collateral to borrow money (Todaro 1994). Yet, small-scale farming seems to be an integral part of life for people in rural communities.

Small-scale farmers often operate without modern technology, because they often lack knowledge of modern technology, or they cannot afford the technology or its support services. They prefer to cultivate in the traditional way with a cutlass and a hoe (Nwagha 1992, Todaro 1994). As a result their productivity is low and their income insufficient to provide for their own needs and those of their families. A lack of knowledge and input might be some of the reasons why rural communities are known for chronic food deficits.

Considering the fact that information needed for farming is technical in nature, it seems possible that this type of outside information could be better absorbed by target groups than, for example, information needed to change an attitude. Technology can easily be demonstrated and the participants can learn from what they can observe (rural people are well known for their ability to observe accurately (Fuglesang & Chandler 1987)). From this perspective it seems quite possible that small-scale farming is an area where development projects could be more effective. However, development approaches followed in the past where it was believed that new practices would trickle down through the entire community, did not prove to be very successful (Rogers 1992). The moment outside intervention and facilitation were withdrawn, the development projects seem to have petered out or ceased altogether. The question of agriculture in developing areas and how technical information is introduced, is addressed in more detail in chapter 3.

2.3.5 Education

It seems that large numbers of the rural population of developing countries are poorly educated. Illiteracy is widespread, and it seems that people are heavily dependent on their oral tradition for the transfer of knowledge from one generation to the next. It is well known that illiteracy figures among rural people are higher for women than for men. This is partly because of past practices by parents who were more willing to send their sons to school, but kept their daughters at home to assist with domestic duties (Nwagha 1992:77).

The state of literacy and education in general has serious implications for information transferred from industrialised countries to rural communities for development

purposes. Considering that much of the recorded information from industrialised countries requires a certain level of literacy in the target group before they can receive it, one realises that a different approach is needed when transferring information or technology to these communities.

2.3.6 Reflection on features of developing communities

Although a discussion of the features of a rural community does not pertinently reveal the value of information as a resource, or how it is used or transferred, it does give us some insight into the status quo of information in rural communities. A careful look at the discussion above will reveal that within each of these sections there is some or other variable that could influence the transfer of information needed for development in rural communities. These variables manifest themselves as follows:

(i) Community and family structures

The strong hierarchical structure prevalent in communities and family circles requires that information regarding decision making and planning are channelled through the headmen to the community, or through the male head of a household. For example (as recorded above), it is believed that all information that women need for crop production will be passed on by the male members who have contact with development agencies or governmental authorities. However, owing to the migration phenomenon, the men are often absent from the household. So this channel for information transfer becomes nonexistent. As far as information channelled through the headmen is concerned, it could be argued that this channel is mainly used for awareness raising, unless the headmen have a good enough grounding to interpret and explain correctly all information received to those in the community. How effective this channel will be for the flow of information, will depend on to what extent information is controlled or sanctioned by the headman. There are indications that information can be controlled when one considers the use of information as a public good or information as a proprietary good, as reported by Mchombu (1992a). So, perhaps neither one of these channels is ideal for the transfer of technical information as required for modern farming practices.

(ii) Existing knowledge base

Contact with neighbouring industrialised societies (such as the mining industry in South Africa) resulted in a need among rural people for new knowledge and skills for which the existing body of indigenous knowledge is no longer required – at least not to compete in the new job market created by neighbouring industries. As a result of these changes, rural people experience a knowledge base that is insufficient for modern day requirements. Therefore, it seems that as a result of change in the rural people's environment, indigenous knowledge has become somewhat superfluous, because there is no longer a demand for it as there was in the past. Knowledge from the indigenous knowledge base is less often passed on as information to younger generations. It is well known among Information Scientists that information that is not transferred or used has very little value.

We also learnt about overpopulation which resulted in a surplus of unskilled labour that is poorly organised. This too points to the insufficient knowledge base which cannot provide for the requirements of its users. In addition, the fact that the unskilled labour force is poorly organised is not conducive to the transfer of outside information that could help in the provision of newly needed skills. Therefore, there seems to be a need to enlarge the existing knowledge base with outside information on technologies and skills required for current demands.

(iii) Communication channels

It seems that oral channels of communication are the most popular among people of the oral tradition in rural communities. These are mainly headmen, the elderly, family members et cetera (Mchombu 1993).

We have also learnt that people in rural areas often live in scattered and isolated communities, which makes it difficult for outside information to be transferred (by word of mouth) from one community to the next. Infrastructure – although this has been improved lately – is poor compared to urban areas. This too hampers the successful transfer of information. Information infrastructure has recently been provided to developing countries – including rural areas. However, these comprise modern technology which is hardly accessible to rural people of an oral tradition, who are not familiar with modern communication technology (Broadbent 1990b).

(iv) Oral tradition and literacy

Closely related to the isolation aspect that retards the flow of information, is the fact that rural people still operate according to traditional methods, where information is transferred orally. This means that the existing communication channels are not really compatible with communication channels for information from the industrialised world.

In order to obtain recorded information as we usually do in the industrialised world, literacy is essential. We know that most people from an oral tradition – especially the older generation – are not literate because that skill was not required in the past. In addition, most of the rural inhabitants are not used to information packaged in written or electronic format. So, it is doubtful that they will use information or technology that is not explained or demonstrated to them.

To summarise: it seems that as far as the transfer of information is concerned, people in rural areas have come to a crossroad. On one hand they do have an existing knowledge base and appropriate communication channels to serve their resource of indigenous knowledge. However, to survive in a changed environment with different requirements they need outside information, and their existing communication channels seem to be incompatible with the process of absorbing and transferring this outside information.

2.4 DEVELOPMENT APPROACHES AND THEIR IMPACT

From the discussion of the features of rural communities it seems apparent that there is a need for development to improve living conditions. From the literature it is evident that development agencies concerned with the upliftment of developing nations

followed certain approaches in an attempt to tackle the problem of dependency among groups that were unable to develop from within.

From the literature it seems that several development approaches have emerged since the World War II that have had a profound impact on people in rural areas as we know them today. These development approaches were not always applied by developers at the same time. For the purpose of this investigation we follow a categorisation that was compiled by Rogers (1992) to explain what the goals of developers were at a given time, what tools they used to achieve their goals and what gave rise to the failure or phasing out of a particular approach. Where possible the views of others such as Bouyer (1995), Debouvry (1995), Webster (1990) and Wisner (1988) are incorporated.

Of interest to this investigation is insight into the developers' level of awareness of the importance of information as a resource in development programmes. This will be highlighted as the discussion progresses.

The categorisation of development approaches according to Rogers (1992) is summarised in the box below, followed by a more detailed discussion.

Table 2.1 Development approaches

Deprivation and needs theories	Exclusion theories
1 Overcoming poverty 1a Growth and modernisation 1b Social planning 1c Human resource development 1d Community organisation	1 Dependency
2 Meeting basic human needs	2 Liberation
	3 Participation

2.4.1 Need based approaches: Overcoming poverty

(i) Growth and Modernisation

In this category development programmes have from the start been dominated by the "overcoming of poverty" school of thought. To most people, development is bound up with economic rather than social concepts. It is argued that poverty is the cause of "backwardness" which can be overcome by the increase in economic activity and production. It was thought that the gap of 150 years between the industrialised world and developing countries could be narrowed by financial and technical aid from the West.

Economic growth models' main features are: central planning to provide inputs such as capital and investment; technical innovations; modern forms of communication and transport; power supplies; water; fertilisers; better farming practices and crop varieties that will hopefully lead to an increased gross national product and increased foreign earning in order to relieve foreign debts. It is believed that the process of accumulation will eventually lead to greater wealth – which seems to be an end in itself.

This approach is based on modern scientific processes and attitudes in the sense that science is seen as the saviour of the poorer nations.

For many years it was believed that the process of economic growth through national planning would trickle down and spread throughout needy communities. Programmes were directed at stimulating the national economy of a country.

When the trickling down did not happen, it was replaced by a bottom-up approach. The idea was to build "islands of modernism in a sea of traditionalism" through integrated development schemes based on demand stimulating production, using indigenous knowledge and skills and allowing scope for locally determined goals. For both approaches the goal was increased economic growth and the tool to achieve it was central planning.

(ii) Social planning

The basis for planned economic growth was a healthy population for production; controlled rate of population increase; a limit on the exploitation of natural resources; a contented and trained work force to survive in a fiercely competitive world. This was the ideal, but most of these were lacking in the developing world, so developing countries could not live up to these expectations.

Problems encountered with the economic growth approaches led to the inclusion of two dimensions. These were adding social goals to the economic goals, and attempting to de-link developing countries from a world economy that was believed to be working to the disadvantage of developing countries. So economic policy makers moved toward "comprehensive development planning" and health and family planning. The goal was still economic growth, but the tool now became "social planning".

To achieve economic growth, the full needs of the workforce had to be met. This resulted in the emergence of two separate routes, namely, human resources development and community development.

(a) Human resource development

The concern for a well-trained labour force (human capital) to achieve economic growth, led to the birth of the concept of human resource development. It was believed that the investment in human resources would help to alleviate the lack of skills and knowledge, and change attitudes.

Human resource development was directed at three main objectives, namely, securing employment through vocational training; increasing productivity; and achieving economic self-reliance by equipping participants with the necessary knowledge, skills and linkages to enable them to take advantage of the available resources.

It later turned out that the problem with this approach is that people were only seen as a resource – a means to achieve an end. Thus people served the economy rather than the economy serving the people. This can be seen as one set of people using another set of people to achieve the goal of economic growth.

Another problem with this approach is that it became a slogan. Many agencies saw it as a sure way of securing accreditation and financial resources. Every activity of government ministries or voluntary agencies could be presented as human resource development. As a result the phrase "human resource development" fast became meaningless. And as Rogers (1992) indicated, when a phrase comes to mean everything, it ceases to mean anything.

(b) Community development

The second route that sprang from the social planning was community development. It was believed that the community as a whole should become involved in self-reliant economic activities. In developing countries, community development sought to turn its back on Western concepts of industrialised and urban communities and, instead, stressed the values inherent in a balanced rural economy. It aimed at enabling local communities to take control of their own production processes.

The community based development movement also failed for several reasons. For example, governments found the need to direct production nationally, especially in the light of growing internationalism in economic and power structures. Thus, a clash developed between central planning and local community self-determination. For example, during the 1950s colonial administrations in many Anglophone countries in Africa had attempted to mobilise local communities through an approach of community development, encouraging locals to work together to construct facilities (Basu 1990). This approach turned out to be unsuccessful because organisers did not know how to integrate community development projects into the social, cultural, economic and agricultural structures of the local community (Sturges & Neill 1990:42). What was lacking was sufficient knowledge of, and sensitivity to local institutional patterns. What was needed was a successful and systematic acquisition and use of local knowledge.

Simultaneously, effective media increasingly brought local communities into contact with Western values, with the result that they started to build their ideals around towns and consumer goods. This resulted in a desire to leave their communities. An increase in cash markets, contact with the ideas of international aid agencies and the growing indebtedness of developing countries further undermined the community development movement.

2.4.2 Need based approaches: Quality of life

(i) Basic human needs

Since the 1960s a new drive in development has emerged, namely, the idea that an increase in wealth is needed not as an end in itself, but to improve the quality of life. The main goal for development became the improvement of quality of life and the guideline to help achieve this goal was human needs. However, this too has become something of a slogan to be attached to project proposals without thinking clearly about the meaning. It was argued that people come first and not the economy. Development schemes were judged by their contribution to meeting the needs of the people. What these needs are, is a matter of argument. Some suggested life sustenance, self-esteem and freedom. Other listed needs relate to the environment, water, clothing, food,

housing, health care, communication, fuel, education and spiritual and structural needs, and also the need for local community to exploit its own potential to the full (self-actualisation).

According to Wisner (1988) we can distinguish between a strong basic needs approach (BNA) and a weak basic needs approach. Most often the strong BNA encourages people to understand the social origins of their poverty somewhat better, and to struggle to change them. By contrast the weak BNA either imposes a set of needs on the poor from the outside and/or limits the radical potential of participation. Usually the weak BNA involves the delivery of goods and services from outside such as school lunches, clean water, housing sites and health care. Another typical weak BNA is the provision of skills and technology that are supposed to allow a family to produce or earn an income. The problem with this type of approach is that the target group of such an approach become passive recipients, who do not learn or understand how to apply this type of aid to their advantage.

From the above it seems that the basic human needs concept establishes a wide range of goals, instead of economic growth and modernisation of industrial processes and social structures. However, there is never consensus on these needs. What some people see as basic needs are regarded as relative by others.

So although the basic human needs approach sounds good, certain problems are experienced. The main reason seems to be the idea of aid-giving by which the rich give to the poor and expect economic results in return. The underlying assumption remains economic, which will affect the way programmes are run, the manner in which intervention will take place – and which will end up as a welfare economics approach.

A second problem is that the concept of a need is essentially defined by outsiders and not by the community itself. Often it is the developers who judge a community's needs according to external standards. A community can seldom distinguish between wants and needs.

The word "basic" in the term "basic human needs" implies physical needs – a minimum level of subsistence and services needed to ensure that people can work efficiently. Spiritual and cultural needs which are also necessary to ensure respectable livelihoods are not even mentioned. Although unintended, this can result in the attitude that a community's basic human needs must be met by outsiders (developers). Under these circumstances the BHN approach will do little to promote self-reliance and in a certain sense can be seen as patronising. Unless carefully implemented it can create dependency.

Another problem is that the perception of meeting identified needs can be taken as the end of the development process, but by definition development is a never-ending process. The moment set goals have been met, new goals will be set.

2.4.3 Exclusion based approaches

The exclusion based approaches mark a major change in perceptions of development. Now the emphasis shifts from development of the deprived, needy, lacking in resources

to development of the oppressed, the denied or those excluded from sources of power. Development is no longer a tool of government and/or agencies to initiate change, but it becomes an instrument of the people themselves – a way of changing society fundamentally, a means of disturbing the status quo. Development is no longer a tool to reinforce or to modify contemporary social structures. It now contains a formal challenge to existing structures. In contrast to the evolutionary nature of the approaches in the economic growth category, the exclusion based approaches take on a more revolutionary attitude. The main views are now focused on self-reliance, liberation and empowerment through participation.

(i) Dependency or appropriate self-reliance

The proponents of self-reliance approaches argue that developing countries have experienced colonialism for long periods. During this period they were treated as dependent economies and dependent peoples. Western values were held up as the ideal for which they should strive. Not much changed after independence. Leaders continued to accept Western values as a reality and saw their own countries as dependent on industrialised economies, structures and attitudes.

The problem that development now sought to solve was dependency, and the goal shifted to national self-reliance, that is, building up what is appropriate within the country itself, using indigenous rather than external knowledge, structures and practices. Development should take place according to the particular community's own terms instead of their being beneficiaries of outside agencies' perceptions. In this approach development is seen as a community's mastery over its own destiny.

It is now being realised that self-reliance cannot be "given" or "granted" by the West in the same sense as independence. Instead it has to be built by action of the participants themselves. Thus, the goal is to become self-reliant and the tool is the action taken by the developing nations themselves using help and resources from the West as they feel appropriate.

(ii) Oppression, or liberation

This approach sees the process of development as one of assisting the oppressed to take action for themselves and sees the goal in liberation – freedom from hunger, from want, from poverty, from ignorance. Supporters of this approach argue that people are oppressed by other people – by multi-national companies, capitalists, entrepreneurs, educated elites and political cliques. Individuals, groups and classes were exploiting each other. The language is that of power – the target groups are deprived of power. The term "oppressed" does not only mean physical oppression, but also denial of access to resources by other people. The poor are kept poor by the rich. Oppression, therefore, is pushing people to one side, keeping groups of people out – by structures leading to the exploitation of the poor by the wealthy as well as by nonrecognition of the abilities and power of the oppressed.

The oppressed see underdevelopment as caused by the oppressors. Development then is seen as the process of liberating the oppressed by the process of conscientisation. That is, to help the oppressed to become aware of what is going on, and to act upon

this situation in a way that will change it radically. Development is seen as a process of changing values as much as changing structures.

It seems that much of the oppression is unconscious on the part of both the oppressor and the oppressed, but oppression is inherent in the structure of society today.

This liberation view of development suffers from a number of problems similar to those of the basic human needs approach: It may come to be seen as a terminal rather than a continuing process – an end in itself – whereas true development is seen as planning and controlling change, which never ceases. Furthermore, the liberation process seems to depend on outsider help to begin the process of raising awareness.

(iii) Empowerment for participation

At present the view of participation as the goal of development is emphasised more and more – that is, participation in decision making, planning, choosing, criticising and controlling those who carry out the programmes. The intention is to achieve the goal through the process of empowerment, people gaining an understanding of and control over social, economic and/or political forces in order to improve their standing in society.

This is then a real revolution in development thinking. Instead of thinking of people in negative terms, they can be viewed in positive terms, as marginalised potential participants. Development as a process of empowerment is to help people to identify and maximise their own potential, to contribute to society by participating more fully in activities. All people in developing communities should be convinced that they are already contributing something to society – such as the richness and diversity of its culture, or to its tradition. All parts of society could go to make the whole, but equally all parts of society could contribute more and participate more in order to make society richer, more rounded, more whole (Oakely in Rogers 1992:24).

The aim of development is to help all people to enhance their own contribution by identifying, developing and harnessing their potential. This becomes a continuous process, for if individuals or groups develop the ability and the confidence to see their own power more fully, the process of development becomes self-generating.

Development in this model does not stress need, rather, it emphasises the richness more than the poverty of the poor, the potential for action rather than the helplessness of the powerless. It is a process of helping people to join in helping others to develop – directing and controlling the processes of change which they are themselves helping to bring about.

Such a view is less directly economic in emphasis. Instead, it stresses the development of the potential of individuals or groups to decide for themselves.

2.4.4 Reflection on development approaches

Looking back on the discussion of the different development approaches, what struck one is the awareness by developers that developing communities were in need, and

therefore they introduced ideas, attitudes, perceptions, methods, skills, technology, equipment, economic aid and more – what they thought may relieve the plight of poor people. In other words all these forms of aid were transferred from outside to target groups in developing communities – things they did not have contact with before.

Translated into Information Science terms, this implies the transfer of aid in whatever form to a group of recipients. However, it seems no thought was given to how these recipients would make sense out of phenomena they were not familiar with – things that were not part and parcel of their daily existence in the past. How did it fit in with what they already knew of the context in which it would be used?

A second thought that springs to mind is the way in which this transfer action took place during the development process. One wonders whether developers were ever familiar with, or even aware of the manner in which information is exchanged among communities of oral origin. It is possible that developers did not think that the manner of transfer would matter much – especially when one considers the assumption that economic input would result in economic growth, or that outside ideas introduced to a few would "trickle down" through a community.

Looking at development approaches from this perspective, it seems that the views on development can be divided between two basic approaches: one sees participants as deprived with the goal of development being to satisfy needs, and the other sees participants as potential partners who are prevented from developing partly as a result of others and partly as a result of their own negative view of themselves and their potential.

2.5 ENVIRONMENT FOR INFORMATION TRANSFER IN RURAL COMMUNITIES

The discussion so far has revealed a host of interesting variables that could be considered in establishing the nature of the environment for the transfer of information within developing communities. Most of these variables are to be found in the way of life in developing communities and circumstances – such as the effect of development approaches – which cause these communities to function the way they do. Together, all these variables create a certain environment, which determines how information is handled in these communities.

Knowledge of the information environment of rural communities is important for this investigation, because it can provide valuable insight that could be very useful in the effective planning and developing of information transfer strategies for development projects. Subsequently variables that could be influential in the transfer process will now be discussed.

2.5.1 Hierarchical structure

The flow of information in rural communities depends in large part on the headman, or authority figures taking informed decisions. Individuals are not used to making decisions on their own. This has certain implications for the transfer of information to target groups who might want to hear their leaders' viewpoint before accepting any outside information.

2.5.2 Oral tradition and information systems

The discussion on the features of the rural community has revealed that the oral tradition is still prevalent in rural communities. From the literature (Brokensha 1980) it is well known that communities of the oral tradition have a vast store of indigenous knowledge handed down from one generation to the next. However, the current environment of this information system changed somewhat as a result of the requirements of neighbouring industrialised societies which offer job opportunities. Unfortunately the rural community's information system does not provide the type of information needed for technical skills that is required in the industrialised world. This resulted in an information gap in the information system of rural communities that is difficult to bridge.

The needed information can be provided by the information resources of the developed world. However, the information of the developed world is packaged in written and electronic format, which are not easily accessible for people of an oral tradition who have little knowledge of reading and writing. In this regard Mchombu refers to the disconnectedness of the indigenous and exogenous knowledge systems (1993:164).

As a result of the differences between the information systems of the oral tradition and the Western world, there seems to be an incompatibility that is responsible for the current information gap between the two societies.

2.5.3 Effect of various development approaches

From the literature consulted on the different development approaches it is not clear whether developers were either aware of the role of information as a resource, or the role that information systems can play in the transfer of technology, or the execution of development projects in general. Development approaches that evolved later on – such as exclusion based approaches – proved that developers could have been either ignorant of, or insensitive toward indigenous knowledge in the past. That is probably why the value of indigenous information and empowerment were emphasised in current approaches.

Another point of concern is that the different development approaches created certain expectations among target groups in developing communities. It seems that they believe that the solution to their problems lies in an outside source since they cannot solve them themselves. This has certain implications for transferred information. Because people wait for somebody else to make decisions on their behalf, whether that be to accept or reject any newly introduced programmes or processes.

2.5.4 Migration

Contact with neighbouring industrialised societies lured men away from their households but demanded knowledge of certain skills they had not practised before and were thus not trained for. So the traditional knowledge base does not possess that kind of knowledge to support their users. As a result, migrants from rural communities are in need of information regarding new vocations – information that cannot be provided by their indigenous information system.

2.5.5 Women in need of information

Due to migration patterns prevalent in rural communities, women are often left behind to produce food or earn a living. As a result women comprise a substantial part of the potentially economic active population in rural communities. Since men are traditionally the decision makers in a traditional society, the women left behind had never learnt about management of funds and now had to manage without such knowledge. In addition, most of the time women are poorly educated, not only in basic literacy matters but in vocational training as well as reading and writing. This also poses a problem for the transfer of information which must first be adapted to a different format (such as verbal explanations and demonstrations) before it will be understood and accepted.

2.6 SUMMARY AND CONCLUSION

From the various viewpoints of what development entails, it is clear that where governments are confronted with sectors of its inhabitants that lag behind in development, intervention (with the intention to change for the better) is inevitable. However, there seems to be an awareness that the target groups affected by the change efforts, should be fully involved in order to make them more self-reliant, creative and productive.

Considering the discussion of characteristics typical of rural dwellers in developing countries, as well as the efforts of developers over past decades, it is obvious that the two sides approached each other with different mind-sets. The different models of development that succeeded each other are perhaps testimony of the good intentions on the side of developers. However, they failed because some important variables were not considered.

Probably the most important variable not considered in the past was the involvement of the target group in various stages of development plans. Plans were mostly executed in a top-down manner on behalf of the beneficiaries.

Furthermore, it seems that many development efforts were built on assumptions instead of taking real-life situations into account. For example, it seems that it was often assumed that target groups had the required background knowledge for new technological devices or programmes that could make the difference in their sorry plight. Only later it was recognised that developed countries had built up their technology knowledge base gradually since the days of the industrial revolution. Somehow, it was assumed that people in developing countries also possessed this same knowledge base. Further, it seems that developers are slowly becoming aware of the possibility of using indigenous knowledge as a base to which outside knowledge can be added. This aspect will be discussed in more detail in chapters 4 and 5.

An overview of the discussion of farming practices in rural communities also shows that, to a certain extent, agriculture plays an important role in rural communities since so many of the inhabitants are dependent on agriculture for survival. However, it seems that rural agriculture has failed to contribute to the upliftment of rural communities – probably due to the fact that the target groups lacked a knowledge base for the modern day agriculture that was introduced and developers were ignorant of this fact.

The apparent reason for failure could be divided into two categories. That is, factors related to the target groups and factors related to developers. Factors relating to target groups in developing communities were, for example, ignorance of industrialised technology, poverty, communal land for farming, small farms, a lack of skills and over-population.

On the side of developers, factors that could have contributed to the failure of development efforts include: underlying assumptions that rural people in developing communities possess the required background knowledge and know-how of the technology introduced during development programmes; lack of appreciation for indigenous knowledge and abilities of rural people; an underlying assumption that the provision of funds will enable rural communities to be more effective and will make economic progress possible; development programmes were often seen as an end in themselves; development programmes were undertaken to secure funds for agencies involved in development activities – in other words, own interest also played a role.

Considering the fact that development is a never-ending process, it is evident that development efforts of the past viewed as the ultimate solution to development problems have proved to be unsuccessful, since circumstances change, which results in new challenges that were not encountered before. Currently there seems to be a growing awareness among developers that the beneficiaries of development efforts should participate in endeavours aimed at upliftment of their way of life, and help individuals to take responsibility for themselves and stimulate creativity.

For the purpose of this study, questions that remain to be answered are

- Can development of rural communities in general contribute to the development of rural agriculture?
- Can information as a resource enhance the development of rural communities and also the development of rural agriculture?
- Is the merging of technical know-how and indigenous knowledge possible in the development of rural communities, and will rural agriculture benefit from it?

These questions will be dealt with in the following chapters on agriculture and development, and information for development.

CHAPTER 3

AGRICULTURE IN RURAL COMMUNITIES

3.1 INTRODUCTION

From the previous chapter it seems evident that agriculture plays an important role in rural development. Although it is not the purpose of this study to discuss the full spectrum of agricultural development, it is necessary to focus on specific aspects that have contributed to the current state of rural agriculture and which might have a profound impact on the transfer of agricultural information in rural areas. Therefore the purpose of this chapter is to determine the following:

- The nature of rural agriculture in South Africa; including distinctive phases of development approaches that were followed in the past, and features typical of rural agriculture, which should be considered in information transfer strategies
- Role of agriculture in rural development
- Provision of information in rural agriculture

Although the emphasis in this chapter is mainly on the South African scene, evidence from the literature suggests that – except for local historical and political issues – the South African experience is not necessarily different from that which is generally observed internationally in developing communities.

3.2 RURAL AGRICULTURE IN SOUTH AFRICA

It seems that there is some controversy over what exactly rural agriculture entails. Within the context of South Africa, rural agriculture is associated with agricultural practices in the previous homeland areas (Van Rooyen & Nene 1996:325 ; *Agricultural policy in South Africa* 1998:8). This is also known as black agriculture, where development was initiated by governmental authorities. Therefore, the concept has been associated with nonproductive and noncommercially viable agriculture. Seen from a different perspective, rural agriculture also has to do with traditional farming practices, which are primarily aimed at subsistence farming to produce food for own consumption by individual households. Usually this type of farming is practised on a fairly small unit or holding compared to farming practices in commercial agriculture. The name "small-scale" farming or "small" farming is derived from this. In Francophone countries in Africa small-scale farmers are also known as peasant farmers, which probably refers to the more traditional methods of farming practised by these small-holders.

In order to understand how the transfer of information can contribute to the development of rural agriculture, it is necessary to establish what development approaches were followed in the recent past, and also to determine what the typical features of rural agriculture are – with reference to the South African scene. These two aspects will be dealt with in the following two subsections.

3.2.1 Development phases of rural agriculture in South Africa

Due to historical and political events in South Africa, the development of rural agriculture reflects different phases which surely had an impact on current small-scale farmers' attitudes toward development projects. This impact will be an important variable to be considered for the development of effective information transfer strategies in future.

The phases of development of rural agriculture in South Africa are inter alia: the phase promoted by the Tomlinson Commission; followed by the "homeland era" prompted by the Agricultural Division of the Bantu Investment Corporation (BIC) in the 1970s; succeeded by more modern practices of the Farmer Support Programme (FSP) introduced by the Development Bank of Southern Africa (DBSA); and currently the new dispensation where the concept of small-scale farming is based on a research development approach following a "learning by doing" methodology (Van Rooyen & Nene 1996:325-327).

The box below depicts the four dominant phases, which are discussed in more detail below.

Table 3.1 Development phases of rural agriculture in South Africa

RURAL AGRICULTURE IN SOUTH AFRICA				
Phase:	Betterment planning (1950s)	Homeland era (1970s)	Farmer Support Programme (FSP) (1980s)	Rural development imperative (1990s -)
Initiator:	Tomlinson Commission	Bantu Investment Corporation	Development Bank of Southern Africa	New governmental dispensation
Approach:	Small economic units for household production	Large-scale farming approach	Farmer support Programme (FSP) (Demand driven approach)	Research-development approach
Nature:	Provision of infrastructure (rural land use planning, fencing etc)	Large centrally managed farms and introduction of modern technology	Recognised need for local participation and capacity building	Farmer participation

(i) Betterment planning

As far as South Africa is concerned, the concept of small-scale farming as a major development strategy was first seriously promoted by the Tomlinson Commission in the mid-fifties of the previous century (Van Rooyen & Nene 1996:325). It was based on the

assumption that an "economic unit" farm size would enable a rural household to produce a livable income through full-time farming.

However, the Tomlinson recommendations were not fully accepted by the government of the day. As a result these early attempts at rural development in South Africa were concerned with land rehabilitation – the so-called "betterment" planning proposed by the Tomlinson Commission. The aim was to improve agricultural production, conserving natural resources and protecting water catchment areas (Kotzé & Swanepoel 1987:7). Planning was accompanied by the provision of veterinary and other extension services aimed at helping rural people to improve their farming practices, thereby increasing production and income (De Beer & Bembridge 1987:24-25).

Despite the government's intentions, there is overwhelming evidence that this betterment programme had little impact on agricultural production or stabilising the land. It seemed that rural people did not fully understand the original aim of betterment. Farming in rural areas therefore remained a "subsistence" and "residual" type of production system under resource-poor conditions (Kirsten, Van Zyl & Sartorius von Bach 1993).

A survey by Bembridge showed that betterment was seen by tribal leaders as fencing to control grazing areas and construction of conservation works on arable land (De Beer & Bembridge 1987:25). Similar attitudes were observed regarding other development projects too. Rural people regarded development as a government matter imposed on them, which they had to accept without much of a choice (Kotzé & Swanepoel 1987:7). This evidence reflects a condition of a poor relationship and misunderstanding of intentions and expectations between the authorities and the target group. Naturally, such conditions are not conducive to the acceptance of outside information, which could contribute to the improvement of living conditions in rural communities. From an Information Science point of view, the manner of transferring the government's ideas to the target group could have contributed to much of the misunderstanding.

(ii) Homeland era

The "Homeland era" phase was prompted by the establishment of the Agricultural Division of the Bantu Investment Corporation (BIC) in the early1970s. This phase was known for its large-scale farming project approach with the intention of modernising farming in the homelands. This approach, introduced by the BIC, seems typical of the "input/growth model" followed at that time for developing countries worldwide (Rogers 1992) as discussed in chapter 2. This approach was known for its introduction of modern technology to developing areas. The major objective was to guide selected farmers toward small-scale commercial production and assumed that the others would follow suit – the so-called "trickle down" of ideas and innovations introduced.

In this type of scheme, farmers were supported by a service unit or cooperative responsible for the management and delivery of support such as input supply, mechanisation, credit and marketing. According to Van Rooyen and Nene (1996) in some cases production in homelands was centrally managed and in others cases more flexible arrangements were applied.

It seems that in most of the agriculture related development projects, overriding attention was given to technical aspects of production. Specialised agricultural institutions – often responsible for the transfer of technology to rural communities – were modernistic in outlook and favoured high technology farming methods and encouraged production of cash crops (Kotzé & Swanepoel 1987:10). Political and social considerations were seldom taken into account. Similar observations were made by investigators in French-speaking countries in Africa (Debouvry 1995), which is an indication of the same approach followed in other developing countries at that time.

Unfortunately the strategies followed during this phase in the homelands largely failed to involve individual small-scale farmers: their investment costs were high and their returns were relatively low. The assumption that small-scale farmers would benefit from the examples set, did not materialise – most probably because the target groups were unfamiliar with most of the innovations and concepts and had no background knowledge to build on. From an Information Science perspective this proves how important an appropriate knowledge base is for the acceptance of newly introduced outside information and that this should be taken into consideration by developers.

(iii) Farmer support programme

The Farmer Support Programme (FSP) brought a change in perception to the previously followed strategy for agricultural development in the homeland areas. Solutions were sought for the costly and management-intensive, large-scale agricultural schemes introduced in homeland areas during the previous phase. So the strategy of a supply-driven project approach changed to that of demand-driven support programmes (Singini & Van Rooyen 1995).

The farmer support programme was introduced by the Development Bank of Southern Africa (DBSA) during the 1980s, and included comprehensive support services that were directed toward the farming problems and needs of small-scale farmers. Farmers could participate in activities aimed at the solution of problems they experienced. The assumption was that small-scale farmers would become more successful when supported with the necessary services such as extension, training, research, inputs, financial services, mechanisation and marketing services. The FSP approach did not require central management as in the project approach applied in the previous phase. It broke away from the full-time farmer concept. Part-time farming was accommodated instead. The need for local participation and capacity building was recognised and provided for (Van Rooyen & Nene 1996:326). For the transfer of information this approach implied that the transfer activities were focused on the target group and that the farmers in this group were involved.

Although there is evidence of the positive impact of the FSP approach to small-scale farming it is constrained by many factors. For example, De Beer and Bembridge (1987:30) report that although most governments recognised the need for participation, few made effective provision for participation in their policies.

(iv) Rural development imperative

With the new dispensation in South Africa since 1994, restructuring of agriculture in rural areas was once again inevitable (*South Africa's nine provinces* 1994:33). In the *White Paper on Agriculture* (1995) much emphasis is placed on the support for the development of small-scale farming. The situation has changed dramatically as the small farmer concept is now viewed as relevant within various government policies. It is believed that new policies will create the opportunity for reforms that will enable agriculture to make a much larger contribution to poverty alleviation and enhanced national and household food security in future (*Agricultural policy in South Africa* 1998:7). According to Van Rooyen and Nene (1996:327) provincial government departments, the national department for agriculture and institutions such as LANOK (a company for rural development) and the New Farmers Development Company are already in the process of promoting small-scale farmers, and pilot schemes are in the process of implementation. The Agricultural Research Council (ARC) is currently in the process of implementing small farmer systems research projects. The concept is based on a research development approach and is following a "learning-by-doing" methodology, which in effect implies that the small-scale farmers can be involved in development projects from which they can benefit personally – intellectually and economically. For Information Science this implies that the individual farmers or groups are directly exposed to newly introduced information.

Although the new approach allows for participation and empowerment of small-scale farmers, practical implementation of the approach is not without problems of its own. According to McIntosh (1995:417-422) there seems to be concern about the general weaknesses of the transition process and its consequences for an already weak local government. There also seems to be an indecisiveness regarding rural development.

As far as information provision is concerned, the results of a research project (by Mollel and Ralebipi in Ben Fouché & Associates 1999:100-102) on the information needs, availability and usage in selected rural small farming communities in the Northern Province, revealed that many of the information needs are not addressed, and access to information sources, such as extension officers, is a problem (due to transport problems!). In the case of documentation, access to information is hampered by language (Afrikaans and English) which the local people cannot read or write. Sometimes the sources of information (officials) are experienced as unreliable (Ben Fouché & Associates 1999:100-102).

Considering the discussion of the four phases above, they seem markedly similar to the sequence of development approaches discussed in chapter 2. From this one can deduce that governments follow the most recent development approaches to keep abreast with views on development in the developing world at large. As far as this investigation is concerned, the use of information and technology for development and the manner in which it is being transferred are followed with interest. There is no doubt that new ideas and concepts together with more concrete input supplies are introduced to target groups. However, the question remains whether the manner in which the target groups are approached is acceptable to those target groups. Is information on related aspects provided in an integrated fashion? In other words, if training on food production

is introduced, is the target group simultaneously informed about financing and marketing issues regarding food production? The importance of the manner in which information is transferred will be discussed in more detail in chapter 5.

3.2.2 Features of rural agriculture

From the discussion above, it seems clear that the different approaches had a distinct impact on the current state of rural agriculture. However, history, socio-economic conditions, traditions, norms and values have also contributed to the distinctive features reflected by rural agriculture. Whatever these features may be, all of them may have an impact on the need for information and the manner in which it is exchanged and implemented. In order to develop a more effective strategy for the transfer of agricultural information, we need to understand how features of rural agriculture may impact the transfer process. The most outstanding features of rural agriculture can be classified in categories such as socio-economic conditions, institutional structures, and a resource base. In the box below, these categories are identified with a subdivision of features within each category.

Table 3.2 Features of rural agriculture

Socio-economic conditions	Institutional structures	Resource base
• Poverty • Subsistence farming • Population growth • Low productivity • Education and skills • Migration • Women in agriculture	• Land ownership • Management and Administration	• Natural resources • Infrastructure • Financial resources • Technological resources • Information resources

(i) Socio-economic conditions

Features of rural agriculture reflecting the socio-economic conditions have much to do with the impact of forces within the environment of rural communities and the manner in which small-scale farmers cope with these conditions in order to survive. These include inter alia:

(a) Poverty

Some of the outstanding socio-economic features of rural communities in most Third World countries are poverty and underdevelopment, landlessness, food insecurity and a high population growth (Bembridge 1987:667). It is estimated that 72 percent of poor people in South Africa live in rural areas with its incidence highest among female-headed households (*Agricultural policy in South Africa* 1998:7).

To understand the role that agriculture plays in rural areas, it is necessary to understand how people in these areas create livelihoods. There seems to be growing evidence that nonfarm employment is becoming an increasingly important source of rural household incomes. Rural households combine their sources of income in various

ways in order to maintain a minimum standard of living. These strategies include agricultural production, off-farm wage labour, small and enterprise activities, pensions and reliance on social networks (Bembridge 1988:216; *Sources and implications* 1993:17; *Agricultural policy in South Africa* 1998:7).

(b) Subsistence farming

Subsistence farming is a way of life for most of the people in African countries. This is also the case in rural areas in South Africa – especially in rural communities of the previous homelands where a high proportion of farming families operate at subsistence level and even below that level (Hayward & Botha 1995:189). The average farm usually consists of one or two hectares of arable land (Lipton 1977:15). That is about how much one farm household can manage when using traditional tools such as the axe and hoe. Due to these circumstances, small areas are intensively cultivated without replenishing nutrients which eventually results in diminishing returns. For most farmers a viable method of solving this problem is the implementation of shifting cultivation – that is, clearing of new land to ensure a better crop.

Apart from the situation in South Africa, Todaro (1994) confirms that agriculture is still in a subsistence stage throughout the Third World. As long as the population size remains stable, subsistence farming and shifting cultivation enable rural people to meet their food requirements. However, rapid population growth has compounded problems and subsistence agricultural practices are no longer viable. According to Lipton (1977:15), poor families cause their own difficulties, whether by rapid population growth, or by a lack of drive. Their basic concern is survival. Todaro (1994:282) warns that if development is to take place and become self-sustaining, it will have to start in the rural communities in general, and in the agricultural sector in particular.

Shepherd (1994:84) on the other hand reports that small-scale farmers cannot afford to enter or remain in the high cash input system demanded by technologically advanced agricultural practices. They have too many demands on limited cash supplies. Children need to be financed through school, medication has to be bought and rents have to be paid. This argument is endorsed by Bembridge (1988:217). Although it seems true that small-scale farming is supported by nonfarm employment, agriculture is still the main source of employment for most residents in rural areas (Panin et al. 1993:18l).

Despite the fact that farming remains the main source of employment, it seems to be a part-time occupation – especially for women who are burdened with other household chores such as wood gathering, water drawing and child rearing. In 1993 it was estimated that only 26 percent of rural households had access to land for cultivation (*Agricultural policy in South Africa* 1998:7). Therefore it seems that the main challenge for agriculture in rural areas is poverty alleviation and food security to improve livelihoods and employment.

(c) Low productivity

Low productivity is a well known feature of small-scale farming. Todaro (1994:51) states that agricultural productivity is low, not only because of the large number of people in

relation to available land, but also because rural agriculture is often characterised by primitive technologies, poor organisation and limited physical and human inputs.

Subsistence farmers often appear to resist change despite all economic incentives and opportunities to introduce new technologies. Todaro (1994:305) attributes this phenomenon to the fact that the approach of introducing new technological innovations is often based on the crucial assumption that farmers possess "perfect knowledge" of all input-output relationships in the form of a stable technological production function for their crop. However, circumstances such as lack of cash, uncertainties of variable rainfall patterns, droughts and crop failure make farmers reluctant to shift from a traditional technology and crop pattern that they have come to know and understand over the years, to a new approach which they are not familiar with and which cannot guarantee safe returns on their expenditure.

More or less in line with Todaro's explanation of rural farmers' resistance to change, Rogers (1992:174-177) identifies two categories of barriers among target groups in developing areas, that is, contextual barriers which have to do with local values and norms not considered by development agencies, and attitudinal barriers resulting from previous experiences with development programmes that did not deliver on promises made. The latter could be ascribed to disillusionment with developers due to unrealistic planning and/or poor design of programmes, inefficient execution of programmes, or corruption.

(d) Population growth

Rural areas tend to be overpopulated and badly managed. Regarding South Africa, as long ago as the 1950s Erskine (in Van Niekerk 1990) reported that the homelands are continually deteriorating with an ever-increasing population and dwindling resources. The people are trapped in a vicious circle that perpetuates low productivity in subsistence agriculture.

Kotzé and Swanepoel (1987:11) report that overpopulation in rural areas in South Africa is exacerbated by resettlement policies and droughts experienced on commercial farms in predominantly white areas. The rural people saw their problem as a lack of sufficient land, while the white people in turn viewed the problem as an irresponsible attitude toward population control and farming practices (Wellington in Van Niekerk 1990).

It is estimated that about 16 million South Africans are living in poverty. About 72 percent of these people live in rural areas and about 70 percent of people living in rural areas are poor (*Agricultural policy in South Africa* 1998:7). Some of the main features characterising the demographic profile of rural areas are the high population growth and the unequal distribution of age and sex. Most of the rural dwellers are elderly people and women with children. An average household comprises six people – often an extended family.

(e) Education and skills

To cope with all the skills and technology needed for farming, a certain amount of

training is required. Although rural agriculture is practised at a completely different level from commercial farming and with a different goal in mind, some form of education and training is needed to produce food for own consumption.

According to Röling (1990:5) successful agricultural development requires a mix of conditions including good infrastructure, access to credit, water, land, markets, input delivery, social organisation, relevant technology, as well as extension and training where applicable. It is estimated that the better these requirements are met, the more control farmers will have over their environment. To retain this control, farmers need more knowledge and technology (Röling 1990:5). Röling comes to the conclusion that technology development increasingly drives agricultural development. The effect of technology-driven development is felt through market prices. Unless new technology is adopted, farmers who cannot keep up are eventually squeezed out. At least this is the way it is in commercial farming.

People in rural areas often have low levels of education. They are often illiterate. Women – who comprise about 60 percent to 80 percent of rural farmers – are often prevented from participating in agricultural development due to a lack of education, knowledge and skills and traditional proscriptions against women exercising leadership or playing major decision-making roles (Bembridge 1987:681).

As stated earlier in this study, the majority of inhabitants in rural areas in South Africa consist of elderly people and women with children. Most of these adults are illiterate and poor. These are factors that complicate the attendance of conventional education and skill training courses necessary for the improvement of agricultural practices. For most rural adults, education and training are provided by extension services. However, Bembridge (1987:681) reports that these services were often poorly organised and generally uncoordinated. In addition, extension workers are often unmotivated and untrained in communicating ideas, knowledge and skills.

De Beer and Bembridge (1987:25) report that the provision of schools in the rural areas has had a considerable impact on the general level of education. However, the present education system does not equip people for rural living. Training facilities for rural skills seem to be completely inadequate and certainly do not contribute to engendering favourable attitudes to agricultural and rural development (Bembridge 1987:682). The type of education provided is strongly urban-oriented (Tapson 1990:569; Bekker, Cross & Bromberger 1992:57). As mentioned earlier, it seems that even literacy can contribute to people's dissociation from agricultural and rural development. Schofield (1989:83) reports that the literate person with a rural background often learns to despise manual labour. In this sense literacy often drives a wedge between the manual labourer and the pen-pusher.

In rural areas in South Africa in the past, the Department of Agriculture, agricultural corporations (an arm of the development corporations of the different provinces) and management teams of special agricultural projects, were the major institutions involved in agricultural education and training. Kotzé (1987b:37) reports that the cooperation between project managements and the relevant departments of agriculture vary. In the past agricultural corporations provided management skills during special farming

projects. Agricultural consultancy companies were also employed to provide management skills for the special farming projects. Most of these institutions provided education and training through extension services.

(f) Migration

Migration is one of the outstanding features of rural communities that has profound implications for rural agriculture. Although subsistence farming is typical of rural areas, it is well known that farmers cannot support themselves and have to seek employment outside agriculture (Panin et al. 1993:178; *Kenya's rural development* 1994:30). Tapson (1985:240) also confirms that the urban drift was enhanced by lucrative employment in the mining industries which have made a tremendous contribution to South Africa's economic growth.

Panin et al (1993:178) report that a substantial portion of household labour seek employment in nonagricultural sectors in urban areas and from their incomes remit cash to support household members who remain in rural areas. This view is endorsed by Bekker, Cross and Bromberger (1992:56), and Van Zyl (1993:48) The seasonal nature of farming itself plays an important role. It allows family members to optimise their allocation of labour throughout the year by engaging in off-farm activities during the lean periods of agricultural production.

Seen from this perspective, it seems that agriculture continues to serve more as an emergency backstop to household wages than as a sole source of income.

Usually it is the rural men who leave their small-holdings in the care of their women folk and the elderly. The latter have to produce whatever they can with whatever tools, skills and labour available – usually of a traditional nature. Understandably this results in a form of subsistence farming, supplemented by a remittances from wages and pensions (Bembridge 1988:216). Often rural farming is below the subsistence level because the women responsible are also burdened with other household chores such as wood gathering, water drawing and child rearing (Bembridge 1988:216).

Another interesting cause for migration is offered by Schofield (1989:83). That is, literacy that becomes an impeller to urbanisation. Literacy all too often leads to the alienation of the literate youth from their illiterate parents. The literates often view manual labour as beneath their dignity and go off to the overcrowded towns and cities in search of appropriate work.

Apart from migration as a result of the urban drift, rural areas also experience migration due to resettlement of laid-off farm workers from commercial farming areas as a result of droughts or poor economic conditions (Kotzé & Swanepoel 1987:1). Many low skilled labourers from urban areas who either lost their jobs as a result of economic conditions, or retirement, also return to the rural areas. This type of migration places a heavy burden on scarce agricultural land which is now in demand for housing purposes.

(g) Women in agriculture

Women as farmers are also one of the outstanding features of rural agriculture. Probably the main reason for this is the migration phenomenon as a result of males leaving in search of work in urban areas (as discussed under (f) above). The crucial role played by women in rural agricultural activities is extensively discussed in the literature (Bembridge 1991, Mchombu 1999, Nwagha 1992, Rogers 1992, Garforth 1993b, Sen 1993, Moshoeshoe-Chadzingwa 1994, Glass 1995, Hayward & Botha 1995, Zaman 1995).

With regard to rural development in KwaZulu-Natal, Glass (1995:120) reports that most good agriculture is done by women. Other than the businessmen, contractors and commercial farmers, men are not committed farmers. Young men usually leave the area at an early age to look for work, as agriculture is not seen as a man's work. Migration of adult males then is one of the main reasons for women farmers being the majority in rural areas (*South Africa's nine provinces* 1994:36).

A major problem facing African rural women is their lack of access to land ownership. Traditionally land is owned and controlled by the male head of a household (Sadie & van Aardt 1995:86). So, although women play the principal role in farming, they must still get the consent and support of their husbands for whatever they do. They must get permission even if their husbands are migrants or living in towns. In fact, it seems that the fate of these women is tied to that of their husbands. At a recent conference for Women in Agriculture, one of the farmers said: "We are forever working in the shadow of our male counterparts and are at their mercy for whatever material or financial support we may need" (*Women in Agriculture* 1996:4).

Apart from being subordinate to male relatives, women are also denied access to valuable information transferred through extension services, because extension programmes are aimed exclusively at men. Added to this, the vast majority of extension officers seem to be men. Experience in other countries suggests that, in general, women farmers are less often visited by extension staff than male farmers (*Agricultural policy in South Africa* 1998:45). Agricultural input and training are rarely provided to women. Government sponsored programmes continue to exclude women, often because women lack collateral for loans (Todaro 1994:302-303).

There also seems to be disparity in development programmes for men and women. For example, Todaro (1994:303) maintains that men are taught techniques to increase productivity, while women are taught to perform low-productivity tasks – which are assumed to be compatible with their traditional roles. This situation is probably exacerbated by rural women's lack of education as a result of parents who sent boys to attend school, but kept girls at home to assist with domestic duties (Nwagha 1992:77, Sadie & Van Aardt 1995:86).

Often women's projects are little more than welfare programmes, which fail to improve economic well-being (Fry 1994:184, Todaro 1994:303). In instances where women were the vast majority in development projects, such as the Grameen Bank project, Bangladesh, which offered small loans to poor rural entrepreneurs (Fuglesang & Chandler 1987) and the training programme for maize production at Phokoane, Lebowa

(Fischer & Vink 1995:135), the results were overwhelmingly positive. This is an indication that when women are provided with the necessary information, which is transferred in an appropriate manner, they can contribute to economic progress in their community.

Considering that women make up between 60 to 80 percent of small-scale farmers in rural areas in Africa (Nwagha 1992:76), it is alarming that so little has been done in the past to provide them with appropriate information and technology to generate much needed income.

From an Information Science point of view this situation can have serious implications for the effective transfer of agricultural information to enhance farming practices. Hayward and Botha (1995:93) emphasise that women are important as target groups and they are not catered for by extension services, except where group extension is a strategy. Garforth (1993a:8) also refers to the important role of women as environmental managers in rural communities and that this should be considered in extension. Extension should develop approaches that build on women's environmental knowledge and tasks within the rural community.

With the new dispensation in South Africa it seems that the problem of women being excluded from extension will be addressed to ensure that women at least have equal access and that programmes are targeted at them (*Agricultural policy in South Africa* 1998:7).

(ii) Institutional structures

Features of rural agriculture derived from institutional structures reflect to a certain extent the impact of human intervention in order to address the problem of agricultural practices in rural communities. These include inter alia:

(a) Land ownership

Land tenure, landlessness, unequal access to land and under-utilisation of existing land are some of the sensitive issues in rural areas. Many of the rural development problems and, particularly of agricultural development are blamed on the communal system of land tenure (Kotzé 1987a:32).

Within the indigenous system (that is, in the African rural context) land belongs to the community as a whole and the chief-in-council exercises control over it and acts on behalf of the whole group (Kotzé 1987a:32; Lyne & Niewoudt 1991:194; Legoupil 1994:39). According to Holleman (in Kotzé 1987a) community members originally had a threefold right to land. Firstly each household had a right of occupation for the purpose of adequate housing. Secondly, there was a right to cultivation where the head of the family was entitled to provide sufficient food for himself and his family. Thirdly the group had the right to use the commonage which included the right to grazing, drawing water, cutting grass and gathering wood. Thus apart from agricultural and residential holdings, the remainder of the land is kept in trust by the chief on behalf of the people for communal use.

Much of the common land tenure system, which is still in use, is based on the traditional system. An important point to keep in mind is that the concept of individual title to land was unknown in indigenous law (Kotzé 1987a:32). At the end of the nineteenth century the quit-rent system (closely related to the communal system) was introduced. Quit-rent refers to land held under individual perpetual lease by means of payment of a nominal rent to the government (*South Africa's nine provinces* 1994:31).

An interesting point raised by Kotzé(1987a:33) and Legoupil (1994:41) is that land is not necessarily occupied for agricultural purposes, but also for social security as a support for women and children, the aged and the infirm. The mere fact that people have access to land does not make farmers of them. De Beer (1987:20) also points out that not all rural people wish to be farmers, nor is there any country in the world that has so much land that all its inhabitants can make a decent living from agriculture. However, according to Tapson (1985:239), and McIntosh and Vaughan (1994:57), land offers a security system, deeply imbedded in the culture of the people who live on it, and is an essential component of their physical and psychological well-being.

According to Kotzé (1987a:57) the main thrust on land tenure reform today is toward individual tenure and commercialisation, despite evidence that individual tenure as such does not lead to increased agricultural production. Increased agricultural production was achieved in instances where usage and availability of management skills occurred.

Despite an outcry for more land in the less-developed areas of South Africa, there is evidence of under-utilisation of arable land. One of the causes for under-utilisation of arable land is population growth in the less-developed areas which has effectively reduced average farm size and quality, because rural households have an incentive to retain their land rights. Another reason is that many rural households do not have an incentive to farm their arable land intensively because the opportunity cost of non-use is zero (Lyne & Nieuwoudt 1991:195). Yet another reason for under-utilisation is that the aggregate farm output is not responsive to price incentives in less-developed countries.

Still another reason offered for under-utilisation for agricultural purposes is the domestic terms of trade, which are unfavourable for agricultural production. More produce has to be sold in exchange for the same value of goods from the commercial sector (Kenya's rural development 1994:30).

It seems that there are numerous factors influencing landownership or the lack thereof. Whatever the case may be, the inability to access land could discourage small-scale farmers from accepting or implementing information regarding practices conducive for improvement of livelihood. Seeing the problem from this angle, the information transfer process in rural communities can be retarded by the sensitive issue of land tenure.

(b) Management and administration

Most governments of countries with less-developed areas, such as South Africa, feel they have a responsibility toward rural development. The traditional approach to rural development planning was that the impetus for rural development must come from

government (Bembridge 1987:675). Usually sincere efforts were made to formulate development policies and to devise structures to facilitate their implementation. In the past, the national government appointed a National Development Planning Unit which in turn convened a Development Corporation which was responsible for rural development policy decisions. Planning and implementation of rural development policy took place at the head office of the Development Corporation – an example of centralised planning and decision making. The Development Corporation in turn had head offices – which were responsible for the implementation of the policy – in each of the development areas (previously called homelands). The different head offices also accommodated representatives of various government departments, voluntary groups and the private sector involved in development activities.

In the main region of the area, the Head Office of each homeland had regional offices consisting of chiefs and regional authorities, who in turn delegated instructions to the District Offices which were responsible for the village/area level within their districts. In turn the local authorities (comprising the local headmen, traditional chiefs and local organisations) were subordinate to the village level. The local authorities were the last link between the central government and the rural population. This was probably the most crucial link, but for various reasons it was often the weakest link for the exchange of information on farming practice between the authorities as development agent and the target group in the rural areas.

Poor management and lack of training have brought little benefit to the masses of rural farmers. A lack of coordination and fragmentation of responsibilities among a number of government departments, agencies and other organisations failed to provide the necessary incentives and support for small-scale farmers and rural families (Bembridge 1987:677). It is reported that the head office of a government department is very seldom in touch with the intended beneficiaries of rural development projects.

Another problem was that central government's rural development policies did not always have clear objectives and goals. Kotzé and Swanepoel (1987:7-8) reported that many of these attempts were often of an experimental nature, which were continually reorganised and revised. As a result policies and structures for development in rural areas were in a state of flux, which made it extremely difficult for officials and target groups to understand and implement. This in turn resulted in administration problems. Probably the most widely cited reason for the failure of rural development projects (including agricultural projects) is poor administration – a combination of lack of administration skills and maladministration (Bembridge 1987:677). Understandably, poor administration had a negative effect on extension services. Ill-defined policies resulted in poor communication between extension officers and project management. Extension officers were unsure of their job objectives and were not sufficiently trained and are poorly motivated for their specific mission (De Beer & Bembridge 1987:30; Kotzé 1987b:37).

Due to the legacy of extension in the past, the current number of publicly paid extension staff in South Africa – including extension officers previously employed by homeland governments and now working for the provincial Departments of Agriculture – is approximately 10 000 (*Agricultural policy in South Africa* 1998:44). Extension workers

impact they have on agriculture. Besides poor training, factors such as the heterogeneity of the small-scale farmers, lack of communication between senior and junior staff and the urban background of many extension officers and the lack of accountability to farmers, contribute to a situation that is not conducive for the transfer of information in rural areas.

(iii) Resource base

Apart from features that are related to the people and infrastructure, there are also features that are related to the natural resources and infrastructure available for small-scale farming. The discussion below reflects on the nature or absence of these and how this affects small-scale farming.

(a) Natural resources

South Africa covers a total surface area of 1 223 201 km^2. Farmland occupies more than 84.5 percent of the total area. Agriculturally speaking South Africa is poorly endowed. Only 13 percent of the surface area consists of potentially arable land and 71.6 percent grazing land. The remaining area is comprised of nature conservation land, forestry and other land. The commercial farming sector utilises 84.6 million ha, while the rural sector occupies nearly 14.4 million ha (*South Africa's nine provinces* 1994:28).

The type of agriculture practised in any given area is to a large extent dependent on climatic conditions, together with other factors such as altitude, rainfall, soil and vegetation. Rainfall is a prime determinant of land capability and in South Africa dryland crop production is held to be sustainable only where rainfall exceeds 500 mm per annum. Despite the good rainfall distribution, suitable soil conditions and vegetation for agricultural purposes, these areas – as the rest of South Africa – are often subject to prolonged droughts and also devastating floods (Tapson 1985:236).

As far as other sources of water for agriculture are concerned, rural areas are dependent on springs, boreholes, dams and rivers. Most of these rivers only flow during the rainy season. In fact, most of the latter sources are unreliable for cultivation purposes, except for irrigation schemes or other water provision schemes under control of the government or private enterprises. These are probably too expensive for small-scale farmers to afford – due to a lack of capital – or they are self-managed without the help of the authorities. From an Information Science point of view these conditions demand introduction of experts' insight and skills to cope with a fragile resource base in the best way possible. It is assumed that small farmers lack this type of information.

(b) Infrastructure

Physical infrastructure in the form of roads, domestic and stock water supplies, fencing, schools, clinics, soil conservation works and electricity all contribute indirectly to rural productivity and social development. Bembridge (1987:678) reports that physical infrastructure in South Africa's rural areas compares more than favourably with other parts of Africa. However, it is still insufficient. Sources of water and energy are often

inadequate and are located far from homesteads. Health indicators such as infant mortality and malnutrition consistently score worse in rural communities (Bekker, Cross & Bromberger 1992:54). Brand (1991:80) also refers to the backlogs in transport and other forms of infrastructure for the less-developed areas that have to be overcome.

According to Tapson (1990:569) rural areas simply do not have the vital infrastructure to support any major increase in economic activity. As far as roads are concerned, that is, all-weather trunk roads, feeder roads, even access from village to fields are all deficient. Although physical development of rural areas in South Africa are better than their counterparts in Africa, infrastructure such as electricity, communications, fencing, schools, clinics and water supplies are either absent or undersupplied.

Regarding socio-economic infrastructure, the supply of agricultural inputs from both public and private sectors, financial and credit institutions, marketing – all held to be essential for development – are weak or nonexistent. Despite major advances, available education gives little support for the development process. The type of education provided is not appropriate to meet the rural need since it is strongly urban-oriented (Tapson 1990:569).

(c) Financial resources

From the literature it seems clear that small-scale farmers have limited financial resources at their disposal – mostly remittances from family members who are earning a living in industrialised areas (Panin et al. 1993). Further more, it is reported that loans are not very often offered to poor rural entrepreneurs which include small-scale farmers (Fuglesang & Chandler 1987). Due to the traditional social structure women – who comprise up to 80 percent of rural farmers – are dependent on the male head of the household for financial resources (Sadie & Van Aardt 1995; *Women in agriculture* 1996).

(d) Technological resources

As far as technological resources are concerned small-scale farmers in general are dependent on traditional tools (Lipton 1977; Bembridge 1988; Todaro 1994; Shepherd 1994). Often rural farming is below subsistence level due to the inability of small-scale farmers to afford or to use modern technology. They never had training in handling modern technology. Todaro (1994) also reports that modern agricultural technology is rarely provided to women, neither are they taught techniques to increase their productivity.

(e) Information resources

Small-scale farmers' information resources can be divided in two categories. These are, information deriving from the indigenous knowledge system delivered from one generation to the next, and information deriving from the developed world. Both these categories tend to provide insufficiently in the information needs of small-scale farmers. For example: the indigenous information is best understood by rural people originating from an oral tradition. Methods to transfer comply with the requirements of the oral

tradition, that is, person-to-person and demonstrations. However, this resource cannot provide for the needs caused by the use of modern technology or methods. On the other hand rural people are exposed to modern information and technology delivered through extension services or mass communication media such as printed matter, radio and television to name but a few methods of transfer. Unfortunately, modern information comes in packaged formats, which are unfamiliar to rural people (Bell 1986b; Broadbent 1990b; Querre 1992). They are also not used to obtain information from formats other than in personal conversation and in demonstrations. In fact they often do not realise that they use information as a resource (Rosenberg 1993; Lor 1996). So, it seems that the information resources at the disposal of small-scale farmers need to be either extended or adapted to a level that makes sense before their information could be used optimally.

To summarise: the features of rural agriculture reveal that small-scale farmers have to contend with poverty, overpopulation, lack of food security, a fragile resource base, unstable climatic conditions, low productivity, lack of appropriate education and training, a gender issue and indecisiveness and a lack of vision as far as extension services are concerned. In fact, these features prove to be challenges for agricultural development in rural areas. The very nature of these features also has consequences for the transfer of information. Considering what the provision of information in developed societies entails, it seems inevitable that the value of information for, and the manner in which information for developing purposes is introduced, need to be reconsidered. The features of rural agriculture certainly challenge the transfer of information to rural communities and will have to be met to support developing endeavours.

3.3 ROLE OF AGRICULTURE IN RURAL DEVELOPMENT

From the features of rural agriculture that were discussed in the previous section a fairly bleak picture evolves, leaving the impression that farming is perhaps not a viable option for the development of rural communities. However, considering that some of the people in rural areas have access to land for cultivation, agricultural development can contribute to the reduction of poverty and improve food security. Van Rooyen (1997:190) argues that in areas where the resource base is favourable for agricultural activity and where large numbers depend on farming activities for household income and food security, rural agricultural development should become a focal point. It is argued that it is unlikely that household incomes will go up sufficiently outside agriculture to permit the purchase and importation of sufficient food (Rukuni 1995). The rate and extent of development in a more diversified farming sector – especially in small-scale farming – will determine growth (*Agricultural policy in South Africa* 1998:8)

Although the natural resource base is fragile, it is argued that the challenge of farming in such an environment is achievable provided that policies and investment in research and extension and support services are geared to meet this challenge (Van Rooyen 1997). The reference to research and extension in this regard imply the importance of appropriate information and effective transfer strategies.

In the past, the small-scale farmer was not exploited to his or her full potential to provide food for rural markets; in particular, the central position of women in the household was

largely ignored. The challenge will be to give special attention to the design and implementation of research and extension programmes (Van Rooyen 1997; *Agricultural policy in South Africa* 1998).

It should also be kept in mind that small-scale farmers tend to make different crop choices from those made by commercial farmers. They tend to allocate more of their land to staple foods, vegetables, and drought resistant crops that are less risky and also more labour intensive (*Agricultural policy in South Africa* 1998). This implies that small-scale farming can provide potential employment for people outside the farming sector in rural areas.

Small-scale farming is indirectly labour creating, because it results in income flows to low-income rural dwellers who tend to purchase services, building materials and consumer goods from local small-scale rural services and industries. In addition, many of the rural people are not in a position to purchase most of their consumer goods, such as food, outside the rural communities, and any surplus from rural agriculture will provide for this demand.

So it seems that agriculture does have a role to play in the development of rural communities. While the natural resource base does have the potential to increase agricultural productivity, the human potential still needs to be developed to its full potential. Van Rooyen (1997) argues that without proper resource management and technological innovation there is a serious danger that less than optimal land use will lead to environmental degradation. Underlying this, there is proof that information in whatever form it manifests itself, will be needed to bring about the required change that is envisaged. However, the manner in which the potential target group(s) are approached when introducing the required information from outside resources, remains important.

3.4 PROVISION OF INFORMATION IN RURAL AGRICULTURE

Based on the discussions of the development phases that rural agriculture experienced in the past, the features of rural agriculture, and the role of agriculture in developing communities, it is clear that information has a role to play in the whole development process. Also apparent is the chronic lack of information, the inappropriate manner in which outside information was introduced in the past, and also the insensitivity toward the use of local knowledge. With this in mind it is important to take a closer look at the state of information provision in rural agriculture. (This matter will also be discussed in chapter 5.)

3.4.1 Information Systems

From the previous chapter it became apparent that the most people in rural communities originate from a traditional culture where oral exchange of information takes place. Due to the fact that, for various reasons, most rural people are not well educated – especially the elderly and women – they are in large part dependent on their indigenous knowledge system which developed over a very long period and which resides mainly in people's memories. We also learnt that this information system does not always meet the

challenges resulting from changes in the rural environment and contact with industrialised neighbouring societies.

It is obvious that developing agents active in rural areas introduced rural people to the information system of the Western world, which makes use of different types of media and channels not always too familiar to them. Thus, as indicated earlier, rural farmers are exposed to two types of information systems – the indigenous system and the modern system, which are not compatible.

For the purpose of this investigation it is important to establish what type of information is required by people in rural agriculture and what types of media and channels are provided to transfer this information. These aspects are addressed again in chapter 5.

3.4.2 Types of information

The type of information most important for introducing farming practices is obviously technical in nature, such as methods for cultivation, and information on fertiliser or pest control. From the discussion on the development phases of rural agriculture we learnt how people were introduced to information regarding fencing, land use, et cetera. In the homeland era they were introduced to technical information regarding mechanisation. The channels used were mainly extension officers and demonstrations. In later phases, research results were introduced through the Farming Support Programme (FSP) where farmers could participate and help to make their own decisions.

During these development endeavours the main focus was on the transfer of technical information. However, in order to implement this technical information, rural farmers also needed other types of information that could help them to understand better, or add value to the technical information. This type of information had to do with marketing of produce, or how loans function in order to obtain money to buy input supplies, et cetera. It seems, however, that these needs were not always recognised by development agents. That is why Todaro (1994) said that technology was often introduced with the assumption that the rural farmers had the perfect knowledge of how to go about using and managing their newly obtained technology.

Apart from being farmers, small-scale farmers are also part of a particular community where other types of information are also required, such as information on health, the judiciary, economics and the politics of the day. The availability as well as the lack of these types of information help to form certain attitudes which could be either advantageous or detrimental to the development process. In other words, rural farmers not only need technical information, but also all sorts of other information which could help them develop and cope with challenges. The issue of information other than technical information will be addressed in chapter 7.

3.4.3 Media and channels

Due to the nature of rural farmers it is obvious that the media preferred best are people who can transfer information orally on a one-to-one basis or in a group setting. Thus, the types of people favoured most for the transfer of agricultural information seem to be extension officers (Mchombu 1993).

In the past many problems were experienced with this type of "media". Due to poor administration, extension officers did not have a clear vision of what the extension service was trying to do and for whom they were doing it. The public extension service in the homelands was generally neither focussed, nor targeted. Besides this it is also well known that extension staff in the homelands were generally not well trained (*Agricultural policy of South Africa* 1998:44). On the other hand extension officers found illiterate farmers difficult to deal with and also retired civil servant 'who think they know everything already' (Mchombu 1993:167). As a result, this very important channel proved to be the weakest link in the transfer process for rural agriculture.

Other important channels that are specifically geared for the transfer of agriculture related information are farmers' organisations such as the National African Farmers' Union (NAFU), the Agricultural Research Council (ARC) and the National Department of Agriculture (Carney & Van Rooyen 1996).

The National Department of Agriculture (NDA) is responsible for the dissemination of numerous agriculture related publications among which are a number of publications specifically aimed at rural farmers who are not familiar with text-based information sources. One of them, which is known as the "look and do" series on farming practices, provides information in pictures with very little text.

Apart from the extension services (mostly provided by provincial agricultural departments), which form an important channel for the transfer of information, other channels include: government departments operative in rural areas, local government councils, traditional leaders, nongovernmental organisations (NGOs), farmer cooperatives, ANC's Women's League and Youth leagues, garden clubs, civics, development forums and training centres, such as Boskop training centres (Carney & Van Rooyen 1996). These channels were not specifically developed for the transfer of agricultural information, but they can also convey agriculture related information.

From research conducted by the University of the North on information needs and the provision of information for small farmers in rural communities, it seems that accessibility of information measured in terms of the cost and affordability of the information sources, the distances to be covered to obtain them, the formats and the languages in which the information is presented are not always positive. Similar views were offered regarding television and radio programmes offered by NDA. It seems that only limited numbers of farmers knew about the latter. It also seemed that farmers' needs were not taken into consideration when the programmes were developed (Ben Fouché & Associates 1999:102).

From the discussion above it seems clear that much is being done to provide agriculture related information to rural farmers. However, not all the media and channels seem equally appropriate for this task.

3.5 SUMMARY AND CONCLUSION

The objective of this chapter was to determine the role of agriculture in rural development in South Africa. Evaluating the different features discussed, it seems that,

despite rural agriculture's potential and the sincere efforts of developers, there are quite a number of constraints preventing it from complying with its expected role – that role being to contribute to the social and economic well-being of rural people and to ensure food security for rural households.

The constraints can be grouped in two categories of factors, which Tapson (1985:238) refers to as exogenous and endogenous factors. Most of the exogenous factors originate outside the rural community, mainly through intervention of the central government and related institutions. These are inter alia: land tenure; small-scale farms; inadequate infrastructure; provision of highly sophisticated technology requiring skills and funds not possessed by rural farmers; inappropriate education and training for rural agricultural conditions, and working with illiterate, orally oriented farmers; research and extension services that are not geared for rural agriculture; and a lack of contact between government officials and the intended beneficiaries – the farmers. There seems to be a communication gap that needs to be addressed.

Among the endogenous factors the following seem to contribute to the poor performance of rural agriculture: absence of male farmers; women as the majority of rural farmers, who can hardly cope with subsistence farming; low productivity; high population growth rate threatening already scarce arable land; indifference of many small-holders toward farming – very few have the ambition to farm, most have cash incomes from urban areas and view farming only as a backstop; use of farmland as security for the extended family instead of farming activities; lack of knowledge and appropriate know-how; use of traditional methods, which are no longer viable; resistance to change in fear of losing that which they are used to; and a high level of poverty. All of these in turn pose a threat to sustainable agriculture, which is imperative for the social well-being of future generations.

This summary paints a bleak picture regarding the importance of agriculture for rural development. It is clear from the literature consulted that investigators commenting on agricultural conditions in rural areas are well aware of the structural, administrative, technical and socio-economical problems facing rural farmers, which leave agricultural production in a precarious state. However, from the literature consulted, markedly little is said about the farmers' level of knowledge and ability to absorb all the strategies proposed by development planners. Even less is said about the developers' perception of the way in which rural people operate to cope with everyday problems, or their traditional knowledge and skills regarding farming practices and how new knowledge can be implemented to enhance rural agriculture.

Considering the above, the following questions remain to be answered:

- Do rural farmers have the absorptive capacity and willingness to receive and accept the provided know-how in the form and manner in which it is being presented?

- Do development planners have the appropriate methods to transfer existing and dearly needed information effectively to these target groups?

- Could a sound information transfer strategy translate development policy into action?

- Can the transfer of information contribute to improve agriculture's role in rural development?

These questions will be addressed in the next two chapters on information and the transfer of information.

CHAPTER 4

INFORMATION FOR DEVELOPMENT

4.1 INTRODUCTION

The purpose of this chapter is to establish whether information can serve as a useful resource for small-scale farmers in developing communities. Simultaneously it is also necessary to establish why the introduction of technical information regarding agriculture did not contribute to the development of rural communities as anticipated.

In order to gain insight into the question of information's usefulness as a resource for development, it is necessary to discuss

- the concept of information as a resource
- the attributes of information
- the factors preventing information from serving effectively as a resource

4.2 INFORMATION AS A RESOURCE

The literature on information as a resource reflects the viewpoints of academics and practitioners from different subject fields – especially in the field of economics. Economists such as Machlup, Porat and Bell pioneered the ideas of the information economy with information as the transforming resource for the post-industrial society. Writers such as Horton (Marchand & Horton 1986) have pioneered the view of information as a corporate resource which, like other resources such as people, money, raw materials, equipment and energy must be managed and that it should give one the competitive edge. They helped to develop both the idea of information as a resource and the idea of information resources management (Badendoch et al 1994:26). However, none of these are necessarily requirements for development in rural communities when it comes down to the basic survival of people. Under these circumstance economic growth has to take a back seat. This immediately raises the question of what prerequisites a resource should comply with in order to be useful for development purposes.

In the development of rural communities there are specific prerequisites that will determine whether information is a useful resource for the cause of development. When we look at a definition of the development concept, it is clear that the objective of development is to bring about change to improve people's lives (Rogers 1992). Within this context it seems that information must have a positive effect on the lives of groups or individuals who apply it for a particular purpose, before it can be acknowledged as a useful resource.

There are of course many other resources needed in the development of small-scale farmers that must comply with the prerequisites, and with which information as a resource must compare favourably. These are, for instance, input resources (seed, fertiliser), farming implements (tractors, ploughs), credit, markets, infra structure, natural

resources (soil, water, climatic conditions). At first glance when comparing information to these resources, it seems that most of them are tangible while information is not. And yet many (Sturges & Neill 1990; Boon 1992; Van Rooyen 1995) view information as one of the most important resources conducive to rural development.

Although none of the authors above distinguish clearly why information is one of the most important resources, to a certain extent the following opinions reflect people's concern about the absence of information, and also why they think information is an important resource for development.

Some authors hold the view that enough information is available, but that it needs to be processed and packaged and managed in order to have meaning for a particular user group (Welsky & Butorin 1990; Cronin 1995). In conjunction with this, Neelameghan (1980) found a direct relationship between the availability and the ability to handle and use information and the ability to generate wealth.

Although the importance of information as a resource has been recognised, it seems that it is still not perceived to be as important as other resources. There is concern that a lack of information can retard development in general, which in turn may have a negative effect on human development (Boon 1992). Despite so much information being available, a lack of information can arise when information is restricted to certain formats – such as printed media, which is inaccessible to people of an oral tradition. For example, Ozowa (1995:17) is of the opinion that a general lack of awareness among small-scale farmers can be attributed to their high level of illiteracy, which in turn contributes to the low level of adoption of agricultural production technology.

Under-utilisation of information as a resource in developing countries is often blamed on failures in information management (Dedijer & Jequier 1987, Camble 1994:105, Cronin 1995:28). Cronin (1995) sees this mismanagement as opportunities wasted because of a structural inability to mobilise indigenous technological capacity. There seems to be an ineffective, or very poor connection between the environments and mind sets of both the suppliers and receivers of information. This observation in itself is very important for the investigation of information transfer from the developed world to people in a developing setting.

The opinions above give rise to a suspicion that features of the information phenomenon can to a certain extent determine information's usefulness as a resource. In order to find out to what extent they determine information's usefulness, the following discussion focuses on some of the most outstanding attributes of information.

4.3 ATTRIBUTES OF INFORMATION

The fact that information is recognised as an important resource for development, but is still underutilised, urges one to look critically at the idea of information as a resource. If it is a resource, what kind of resource is it? In the search for an answer the natural approach would be to compare characteristics of information with those of other resources to find some commonality. In such an attempt Burk and Horton (in Eaton & Bawden 1991) list nine basic similarities between information and other "traditional" resources to fit in a resource management framework. These are:

- Information is acquired at a definite measurable cost
- Information possesses a definite value, which may be quantified and treated as an accountable asset
- Information consumption can be quantified
- Cost accounting techniques can be applied to help control the costs of information
- Information has a clear life-cycle: definition of requirements, collection, transmission, processing, storage, dissemination, use, disposal
- Information may be processed and refined, so that raw materials (eg databases) are converted into finished products (eg published directories)
- Substitutes for any specific item or collection of information are available, and may be quantified as more expensive or less expensive
- Choices are available to management in making trade-offs between different grades, types and costs of information

From the above it is clear that Burk and Horton felt that information should be seen as something tangible, physical and concrete, while viewpoints from within the information profession emphasised the intangibility of information. Counter-arguments from authors such as Vickers (1985), White (1985), Cleveland (1985), Boulding (1968), Repo (1986), Cronin and Gudim (1986) show that information differs from tangible things generally thought of as valuable resources. Added to these are the viewpoints of Boulding (1955) and Langlois (1983) that information should be seen as a dynamic force, which constantly alters and extends a store of knowledge (Eaton & Bawden 1991).

In an attempt to identify those attributes of information that focus on its intangibility, Eaton and Bawden (1991) combine the viewpoints of different authors to provide the following key distinctions:

4.3.1 Value of information

Unlike other tangible resources, information is not readily quantifiable. Information has no intrinsic value. Its value depends on its context and its use by particular users on particular occasions. The value of information to its users is impossible to determine in advance. Furthermore the value of information does not change over time in any predictable way.

4.3.2 Multiplicative quality of information

The results from using information are quite different from the results produced by using other resources. For instance, information is not lost when it is given to others. Neither does it diminish when "consumed". Sharing it will almost always cause it to increase. In other words, it has a self-multiplicative quality.

4.3.3 Dynamics of information

Information cannot be regarded as a static resource to be accumulated and stored within the confines of a static system. It is a dynamic force for change to the system within which it operates. It adds value to an organisation through encouraging innovation and change without being tangible.

4.3.4 Life-cycle of information

Information seems to have an unpredictable life-cycle. Ideas come into, go out of and finally come back into fashion.

4.3.5 Individuality of information

Information comes in many different forms and is expressed in many different ways. Information can take on any value in the context of an individual situation. This proves that, as a resource, information is different from most other resources.

Many of the resources with which information is compared for economic purposes are also relevant in a developmental context. However, the developmental context requires its own peculiar resources to which we must compare information as a resource. Usually resources are required for development programmes to raise productivity, promote economic growth, or improve the quality of life. Taking a close look at the distinctions listed above, the idea springs to mind that these particular attributes might make information an ideal resource for development. The very fact that information is characterised as a dynamic force, "constantly altering and extending a store of knowledge", complies with situations in development where outside information is offered to target groups to alter their understanding of certain practices, which in turn can help them to solve problems (eg improving food security).

Apart from the attributes identified by Eaton and Bawden (1991), the following attributes which also reveal features of intangibility can be added to the list:

4.3.6 Interdependence

Another attribute of information is that it always forms part of technology – the so-called "soft" part (Röling 1990:12). Whenever technology is offered to potential users for the first time, they need to be informed how to operate the technology in order to benefit from it. So, during this act of transfer, information about the technology becomes an important resource.

A rather distinctive attribute of information is that it has no intrinsic value. Its value depends upon the context in which it manifests and its use by particular users on particular occasions (Eaton and Bawden 1991:162). On the other hand, the same applies to technology. Without its information component, technology has little value as a resource for potential users who are not familiar with its workings. So, it seems there is an interdependency between information and more tangible resources such as technology. Perhaps it is this interdependency that renders information an important resource for development. It seems that many resources or activities are dependent on information for their full potential. For example: the introduction of loans to small-scale farmers will have little impact unless the farmers are informed of what loans entail and what one's responsibilities are when money is borrowed.

4.3.7 Enhance economic growth

The complaint is frequently made that information is often denied its role as a resource (Neelemeghan 1980; Boon 1992; Badendoch et al 1994). The fact that information forms the soft, or "hidden" component of technology and other input resources, might be one of the reasons why developers or planners are often unaware of the importance of information in a technical environment. However, it seems there is an underlying awareness of its importance when one looks at the effect of information in development situations. Kaimowitz, Snyder and Engel (1990:238) refer to the impact of new technology (including information as the hidden component) in agriculture on the basis of such aspects as

- increased farm income
- reduced risk
- resource conservation
- improved health
- better [food] security
- overall economic growth

With regard to developing rural communities, one should bear in mind that it is not necessarily new technology that brings about these achievements. All outside technology applied for the first time could be viewed as "new" to the user group or that particular situation and could have similar effects.

4.3.8 Extending the knowledge base

In a development situation, outside technology is often introduced with the help of education, training and visual demonstrations. During the training process, trainers draw on their information resources to convey the necessary messages. Once again, here is a case of interdependency between information and the training act. Without appropriate information, training will have little value, and without training as a means of transfer, information will have little value.

Still, with the impact of other resources, we should keep in mind that from an economic point of view the use of resources should result in economic growth. From a development point of view the emphasis is more on the improvement of people's lives socially and only secondly on economic improvement. Therefore, we can argue that the social effect on people will be a requirement for resources in a development context. Rogers (1992:137) provides us with a good example of the social effects of information on rural people. He states that training helps people in rural communities to

- expand horizons
- increase perceptions
- enhance competencies
- enlarge sense of perspective
- enhance self-esteem

In a similar vein, Adendorff (1991) observes that, after the successful introduction of maize production techniques (which was essentially the transfer of outside information regarding production techniques), individuals from the different training groups showed

- more self-confidence
- more motivation
- increased willingness to take responsibility for themselves

The above-mentioned examples reflect on the social and also emotional effects of information on people's lives. These seem proof of the impact of the dynamic force of information, where the "extension or altering of people's stores of knowledge" had positive effects on their social well-being. Thus, although information is an intangible entity it has the ability to bring about change for the better – which is the ultimate goal of development.

4.3.9 Content dependent

Difference in contents is another feature of information that distinguishes it from other resources. It can differ in content depending on the situation where it needs to be applied. For example: one could argue that agriculture related information is mostly technical in nature. However, in the development of small-scale farmers in rural communities there are so many related issues farmers need to know about, that the content of the information resource should comprise more than technical information. For example, Ozowa (1995:17) identified certain types of basic information needed for the development of crop production by small-scale farmers. These are inter alia information about

- agricultural input – seeds, fertiliser, etc
- extension
- technology (farming equipment, etc)
- implementation techniques (ploughing, sowing, pest and weed control)
- soil, water and climatic conditions
- conservation
- credit, marketing and infrastructure

The example above is probably testimony of the areas in which extension of the small-scale farmer's store of knowledge is needed before the technical information, regarding crop production, could be implemented effectively. Depending on the type of farming practice, the content of the information resource may differ.

4.3.10 Culture dependent

Another feature of information that can influence its usefulness as a resource for development is that it is culture dependent – involving conceptual and cognitive differentiation (Pickering 1996:451). Pickering is of the opinion that since information is culture specific, it is consequently incommunicable unless it has been acculturated – that is, adapted for the cultural environment or the cultural mind-set of the recipient group. In this regard Shields and Servaes (1989:49) also point out that information is

not totally value-free, but is socially conditioned and shaped by the social structures that apply it. This aspect has serious implications for developers' efforts to transfer information to the rural communities of developing countries.

4.3.11 Medium dependent

Apart from information's culture dependency, it is also medium dependent. Information as a building block of knowledge has to be transferred in order to be useful. To be transferred, messages must be carried by a medium. In order to be carried by a particular medium, information messages must be structured or altered to be presented in a particular way (ie print, images, sound, electronic digits, etc). To get the most out of the messages, users need to know how to use the medium. If the potential user is unfamiliar with the functioning of a particular medium, the information carried will remain inaccessible and rendered useless. For example: an electronic medium, when used for information that is directed at users who are unfamiliar with such facilities can impede access to available information.

Thus, medium dependency of information can have serious implications for quite a number of rural people who are dependent on oral communication, due to their oral tradition and the fact that many of them are not literate. This feature could cause information to be a less useful resource when compared to other resources needed for development purposes.

4.3.12 Conversion dependent

It is well known that information is not only used in the original form offered by its creator. Often it needs to be adapted to suit a particular situation or specific circumstances. It can also happen that only a small chunk of the original information is used together with other chunks of information to form a new information package needed for a particular situation. In this way more value can be added in the appropriateness of information. Particularly in a situation where outside information from the industrialised world is used to improve a practice in rural development, the information content needs to be adapted to bring it to the level of understanding of the potential recipients. Often this is also true of the technology in which the information is embedded.

From the discussion of this section, it is evident that information differs phenomenally from other resources needed for development – especially since it is intangible. Although some of its features make it an appropriate resource for development – such as its ability to act as a dynamic force, other features render it less suitable – such as its inaccessibility due to its dependency on culture and on media. The exhibit below summarises the two categories of attributes – those appropriate for development and those that could actually retard development if not attended to:

Table 4.1 Comparison of the attributes of information

Attributes suitable for development	Attributes less suitable for development
• Dynamic force • Extending knowledge base • Increase perceptions • Enhance competencies • Enhance self-esteem • Enhance growth • Multiplicative quality • Versatility	• Intangibility • Interdependence • Culture dependent • Medium dependent • Content dependent • Conversion dependent

When comparing the attributes of information listed above with other resources also required for development, it seems that information is not a "ready-made" resource. In order for it to become a useful resource, the negative effects of the less suitable attributes must be addressed either through adaptation or repackaging – especially where information from the developed world is applied to rural communities in the developing world. An awareness of these effects could prepare potential developing agents and help them to avoid subtle and often unforseen pitfalls.

4.4 FACTORS PREVENTING INFORMATION FROM SERVING AS A RESOURCE

Apart from the contradictions prevalent in the characteristics of information, which could influence its usefulness as a resource, the literature also reflects a variety of other factors that could also hamper information's ability to serve as a valuable resource in the development of rural communities. These factors can be classified within three distinctive categories as summarised in **Table 4.2** below and discussed in the following section.

4.4.1 Impact of culture on handling of information

Traditional communities make up a large part of the South African society. Typical of these communities is their oral tradition. Large numbers of people living in rural communities originate from an oral tradition. As a result of emigration to the cities those who are left behind are mainly elderly people who operate within subsistence economies and have their own particular information requirements. Unfortunately members of traditional communities are largely unaware of what information entails and that it can be applied to solve problems relating to upliftment and survival.

Because the way of life of the average person or the group as a whole did not accommodate modern or sophisticated methods of transferring and storing information, the oral tradition prevailed. So, although most rural communities have some contact with reading and writing and are aware that it exists, they still transfer and store information orally. Due to their unfamiliarity with reading and writing, most information in print is inaccessible to them. Written texts as carriers of factual information have only marginal influence on their lives, unless the information they contain is explained verbally, or demonstrated visually by someone who can read. This in effect means that a vast store of information in printed format is virtually inaccessible to rural people.

Table 4.2 Restricting factors within the rural environment

Cultural related issues		Role players		Information systems	
Oral culture	Literate culture	Recipient group	Sender group	Indigenous information system	Modern information system
Storing: memory through repetition **Interpret:** do not distinguish clearly between facts and fiction **Transfer:** personal: verbal, demon-stration **Accessing:** in person, selective	**Recording**: outside human memory **Interpret:** objective, based on facts **Transfer**: use variety of personal, mechanical and electronic mechanisms **Access:** requires skills and access tools	Local authorities, headmen, target groups	Govern-mental authorities, NGOs, donors, developing agents, intermediaries facilitators, fieldworkers	Comprises a base of **indigenous knowledge** accumulated and passed on from one generation to the next **Media and channels** are mainly people and activities such as storytelling, song, dance, poetry, etc.	Comprises a base of **modern knowledge**. Accumulation of experience, research results, innovations to cope with problems of modern society **Media and channels** based on literacy. Include personal, print, electronic and audio-visual media

The rural communities we are concerned with are not completely isolated from modern cultures based on reading and writing. In fact many of the rural communities are governed according to Westernised customs where the way of thinking and organising knowledge is mainly influenced by reading and writing. We can thus assume that people in rural communities are exposed to local or indigenous information, as well as information originating from industrialised or developed countries. So, strictly speaking, people in rural communities no longer possess a primary oral culture, but rather a **residual oral culture** (Ong 1982:31).

For developers it should be important to know what types of indigenous knowledge already exist in a rural community and how they could be put to use for development purposes. Mchombu (1992a:67) identified the following areas of indigenous knowledge subjects that are prominent in rural communities. These are inter alia: medicine, veterinary medicine, environment control, agriculture, technology, social organisation, culture and family life, oral literature, oratory and law, defence and security.

With regard to development endeavours where we are concerned with the deliberate transfer of information from a literate environment to a basically oral environment, it is important to be aware of the nature of the orality-literacy contrasts that exist. Botha

(1991) is of the opinion that cross-cultural communication can be immensely enriched by orality-literacy studies. They not only allow one to empathise with the state of consciousness of other people, but also enable one to introduce valuable information for development in a way that is more acceptable to target groups in rural communities. Ignorance of these orality-literacy contrasts results in constraints on the value of information as a resource for development.

There are many dynamics within a particular culture that will determine how information as an entity will be created, manipulated, stored, applied, or exchanged among members of a particular community. In a development situation, rural communities originating from a traditional culture are exposed to indigenous information as well as outside information. In the following discussion, the impact of culture on both categories of information will be discussed.

(i) Oral culture

As far as the creation, storage and transfer of information is concerned, the invention of the written and printed word seems to have been a major watershed between the development of traditional cultures – where the spoken word and the collective memory remained the means of transferring and storing information – and the modern or later industrialised cultures, where print and later multimedia dictated the creation, storage and transfer of information.

To understand how the oral, or a residual oral culture can act as a constraint on information as a resource, it is important to be aware of the characteristics of orally based thought. From research conducted by people such as Goody and Watt (1963), Lauria (in Ong 1982), Ong (1982), and Olson (1994) we can identify some characteristics that can be divided into three categories. These have to do with how information or knowledge is concretised and stored, how it is interpreted, and how it is communicated in an oral culture.

(a) Concretising and storing of knowledge

According to Ong (1982:31) you know what you can recall. In literate cultures knowledge has been concretised through writing. Knowledge then can be recalled from texts. But oral cultures have no text to recall from. We therefore discuss a number of features regarding methods of storing knowledge in the oral tradition.

(1) Sustained thought is tied to communication and memory, which plays a cardinal role in storing information in oral cultures. Information is remembered through preserving ideas via mnemonic patterns, which should facilitate recall. Patterns such as formulas (stereotyped expressions), repetition, alliterations, assonances, epithets, proverbs and riddles are some of the mechanisms used to concretise and store knowledge.

Oral cultures do not preserve information according to the exact wording as in writing (Olson 1994:104-105). As a result oral societies do not have faithful historical records of the past. This can have implications for interpretation of

newly introduced information from a literate culture. It can also have implications in disputes where an appeal to wording as a means of proof is likely to be replaced by an appeal to the authority of wise men, poets or even the muses (Olson 1994).

(2) Another form of storing information is to add on with "and". This provides lengthy reports such as the genealogical list used to reveal social relationships. Literate cultures have developed more elaborate grammatical and linguistic structures to preserve factual information.

(3) Aggregation is also a way of facilitating the storage of information in the memory. Fixed expressions, such as "the brave soldier", "the beautiful princess", or "the sturdy oak" are used to make information more memorable (Ong 1982:37). Oral expressions carry loads of epithets which literate people experience as cumbersome and redundant. Clichés, such as "rainbow nation", "crime against humanity", "enemy of the people" are often used in political talk to emphasise ideas to be stored in the mind, because there is nowhere outside the mind to store them.

(4) Repetition of statements just made is another way of reinforcing memory. Ong (1982:39) reports that in literate cultures written concepts can be memorised by rereading – back looping. In oral cultures the spoken word vanishes the moment it has been spoken and cannot be recalled. Redundancy – repetition of the just said – keeps both speaker and listener safely on track. It is often used in addressing large audiences where the same thing is said two or three times to let the ideas sink in. One can imagine that redundancy can be applied successfully by extension officers in cases where agricultural related information on farming practices is introduced to a target group in a face-to-face setting.

(5) Observation and practice play an important role in preserving knowledge about skills. Since oral cultures lack a mechanism to list information about skills in a type of how-to-do-it manual, all their knowledge must be verbalised with close reference to the human life-world (Ong 1982:40). Skills are learnt by apprenticeship, which means observation and practice with minimal verbal explanation. Traditional people seem to be less concerned with preserving knowledge of skills in an abstract form to be recalled when needed. This feature of oral cultures should be taken into account by developers who wish to introduce methods or techniques to improve or streamline operations of a development programme.

(6) Riddles and proverbs are also mechanisms to keep knowledge embedded in the human life-world. However, riddles and proverbs are not simply used to store knowledge, but to serve as an intellectual challenge to others to top it with something more apposite or contradictory (Ong 1982:43). Applying this practice over a long period of time probably helps to develop a remarkably sharp memory, which is evident of people in traditional societies (Fuglesang 1987).

(7) Homeostasis is another remarkable feature of oral cultures regarding storage of information. Goody and Watt (1968:31-34) found that oral societies have to keep themselves in equilibrium by dropping memories that are no longer relevant. In this way what is kept in the memory is constantly readjusted. This implies that when generations pass and the object or institution referred to by a certain word is no longer part of the present, its meaning is commonly altered or it simply vanishes. That which is no longer called for is dropped from the repertoire and eventually disappears (Ong 1982:47,48). The genealogical lists which serve as a mnemonic aid for systems of social relations are a good example of a means of maintaining equilibrium. What ceases to be of contemporary relevance is likely to be eliminated by the process of forgetting. This is what Barnes (cited in Goody & Watt 1963:309) term "structural amnesia."

Homeostasis can have serious implications for issues such as land claims which have to be settled by government authorities. This was indeed proved in Nigeria where the British carefully recorded the genealogies of the Tiv people regarding a court dispute. Forty years later the Tiv claimed that the earlier written record was wrong. According to the researchers Bohannan, Peters and Godfrey, and Monica Wilson (cited in Goody & Watt 1968:31-33), what had happened was that the later genealogies had been adjusted to the changed social relations among the Tiv. The integrity of the past was subordinate to the integrity of the present. This is an important result of homeostasis which shows that individuals in an oral culture have little perception of the past except in terms of the present (Goody & Watt 1963:310).

(b) Interpretation of information and knowledge

Understanding how information, provided through technology transfer, is received and interpreted in oral cultures is just as important as understanding how information is concretised and stored. Knowing how incoming information is judged in oral cultures might enable developers to make a better assessment of a target group's response to the contents of development programmes.

In literate cultures, interpretation tends to focus on the precise wording and grammar of texts as well as the author's bias and intention with a view to developing explicit rules and procedures. This has to do with the permanence of writing. The interpreter can always refer to the preserved text. The precise wording serves as a kind of evidence in the formation of a judgment. In oral cultures, information cannot be preserved according to precise wording, and judgment relies more heavily upon authority and the opinion of the majority (Olson 1994:107). It is well known that in traditional societies in Africa, older people receive the greatest respect as it is believed that elderly people have accumulated wisdom and knowledge over the years. They act as knowledge stores for the society. So, in disputes an appeal to wording as a means for resolving disputes regarding meaning is likely to be replaced by an appeal to the authority of wise men. This is very different indeed from the approach followed in a literate society.

Acceptance of the opinion of an authoritative figure in contrast to the evidence of written information has serious implications for the transfer of technical information for

development purposes. First of all, knowledge in print is experienced as downgrading the figures of wisdom (Ong 1982:42). However, technical information, originating in literate societies, is assumed by the latter to be correct and tested. Often the authoritative figure in the oral society does not have the background knowledge to give judgment on such information's validity. On the other hand, the mediator from the literate society, offering such information as a resource in development, does not necessarily have credibility in the oral society, or the text from which that information originates. This could mean that unless the mediator (eg extension officer) has credibility among a target group, information could be rejected or negated. Therefore, it seems that literacy creates a dilemma in authority structures with regard to the transfer of information for development. In a certain sense literacy erodes various forms of authority in oral societies and fosters new forms of authority (Botha 1991:11). In the end it seems that both literacy and the credibility of authority structures become the constraints that prevent information from serving as a useful resource.

The opinion of the group or the majority also plays an important role in the acceptance of outside information. Due to the vagaries of human memory, orality encourages homogeneity and group consumption of innovations (Botha 1991:12). Information that might not be so well understood by the individual could be explained by members of the group and consensus can be reached. In this way the group is used as a sounding board to sort out uncertainties. One can also assume that group opinion has certain advantages, because if decisions taken prove to be wrong, the group has to accept collective responsibility and no single individual can be blamed.

It also seems that individuals are hesitant to express a personal opinion. Individuals rely on the judgment of the group. Lauria (cited in Ong 1982:54) found that illiterates had difficulty in articulating self-analysis. To the question: "What do you think of yourself?" the interviewee replied: "We behave well. If we were bad people no one would respect us." This quotation indicates that more weight is given to what the group will interpret as acceptable. In literate cultures, people are inclined to diversity in interpretation and to depend on their personal opinion. The divergence arises from idiosyncratic readings of particular texts with more attention to particular wordings and less attention to context and nonverbal indications of how it was originally intended to be taken (Olson 1994:141).

Ong (1982:49) suggests that oral cultures tend to use concepts in situational frames of reference that are minimally abstract in the sense that they remain close to real-life situations. Research by Lauria (cited in Ong 1982:51) shows that illiterates tend to identify geometrical figures, like circles and squares, by assigning them the names of familiar objects. For example: a circle would be related to a plate, a bucket, a watch or the moon, whereas a square would be related to items such as a door or a house. To work out a problem for themselves they would revert to situational rather then categorical thinking. This feature could be used favourably by developers in transferring information within a particular situation (eg techniques to grow maize properly in rain-fed areas, or techniques to grow cotton under irrigation).

Closely related to situational thinking is also the manner in which outside information is perceived within their existing frame of reference. Röling (1990:13) refers to an incident

where the introduction of fertilizer was rejected because it caused considerable discord among villagers. Apparently the people believed that fertilizer was a "medicine" which could pull fertility from neighbouring fields to the one in which the fertilizer was applied. The underlying assumption was that fertility is a "limited good", so that if one person gets more of it, another must necessarily get less. In this case information regarding fertilizers stood a good chance of being rejected.

In the absence of literacy, traditional people did not develop the ability to organise elaborate chains of thought in the analytical kind of linear sequences which can only be set up with the help of texts. For this very reason an oral culture does not deal in issues such as geometrical figures, abstract categorisation, formal logical reasoning, definitions, comprehensive descriptions, or articulated self-analysis all of which derive from text-formed thought (Ong 1982:55).

(c) Communication in the oral tradition

Verbal communication is the most important media for transferring messages in an oral culture. All forms of knowledge are communicated between individuals in a face-to-face manner. This form of communication results in a limited flow of information – usually within the parameters of a particular community. Literate cultures overcame this constraint by devising media and channels that could span space and time, and which are important for developers to take into account.

In verbal communication the receiver is dependent on the message interpretation of the speaker – which could be subjective. This is different from literate cultures where recorded text separates the knower from the known and thus sets up conditions for objectivity – an issue important to literates but not so important in the oral tradition.

The advantage of oral communication is that it allows for interaction. Possible confusion or misunderstanding can easily be cleared up by questions and answers. Body language and also demonstrations can contribute to the meaning within a particular situation.

This is not the case with written information, where the sender could be separated from the audience across space and time. The speaker can also vary his or her speech so that it is appropriate to a particular situation or audience (Goody & Watt 1963:328; Ong 1982:49). This also seems to be common practice among individuals who act as interpreters for developing agents where the content of a message is presented in a manner which is approved by the audience, but could easily lose the intended meaning (Meyer 1998 personal observation).

In oral communication, transmission of cultural tradition is typically homeostatic. The past is not faithfully recorded, but adjusted to existing social relations (Goody & Watt 1963:308). What is perceived as of social relevance is transmitted, while the rest is omitted and forgotten over a period of time. This can be seen as a form of controlling access to information.

Mchombu (1992a:67) refers to another form of controlling access to information. He refers to two categories of information: one in which it is decided what information is regarded as appropriate for the public goods domain – free to every member of the community; the other in the domain of a proprietary good – held by the experts in the rural community, but available to ordinary members for a small fee. Unfortunately Mchombu does not identify clearly the nature of these two categories of information.

In oral tradition, metaphorical speech and oblique references are often used to convey messages for a specific purpose. For example: when raising issues of dispute, the message is conveyed in such a manner that the person(s) for whom it is meant should not feel offended. Olson (1994:137) reports that a particular form of language is used in a special way. The message is presented in metaphorical or ambiguous speech characterised by oblique reference without seriously offending the listener. Similarly, expressions of praise – such as African praise poems – are conveyed through metaphorical and ambiguous speech. According to Ong (1982:45) these are viewed by high literacy cultures as insincere, flatulent and comically pretentious. Unfamiliarity with this type of practice might be viewed by outsiders as a constraint to the flow of information.

In the oral tradition, story telling and various other forms of verbal and ritual expression are used to transfer information regarding norms, values and traditions. Dances, acting and role play are often used to convey messages to change attitudes. Skilled oral narrators are used to convey messages. Ong (1982:49) reports that these narrators deliberately vary their presentations, because part of their skill is their ability to adjust to new audiences and new situations or simply to show off. A personal observation (Meyer 1998) showed how effectively a narrator with natural abilities could be applied to inform small-scale farmers about applying the correct type of fertiliser to maize plants during different phases of growth. All the elements, mentioned by Ong above, were unwittingly part of the presentation and drew the required response from the audience. Unawareness of these methods of communication in the oral tradition can serve as constraints on the proper use of information as a resource.

Visual demonstrations play an important part in communicating technical information in an oral tradition and demand close observation from the target group. Observation seems closely related to situational thinking where the operation of a tool or technology within a particular situation can be observed. This probably has to do with the illiterates' inability to deal with abstract categorisation and the formally logical reasoning process that derived from text-formed thought (Ong 1982:55). On the contrary, it seems that people from an oral tradition have developed a remarkably sharp observation ability. An incident in Lesotho is proof of the importance of demonstrations during the transfer of technology. The need for practical demonstrations was revealed during a training session on seedbed preparations and correct methods of ploughing by the Development Support Commission Branch of the Food and Agricultural Organisation of the United Nations (FAO 1990:13). Near the end of the session one of the training group members jumped up and ran off. Everybody thought he was agitated for some or other reason. Minutes later he returned with a plough asking for more specific instructions on correct settings apart from the audio-cassette play-back offered during the training session.

(d) Accessibility of indigenous information

As far as accessibility of indigenous information is concerned, Mchombu (1992a:67) reports that two components can be identified; that of the public goods domain where everyone has free access, and a proprietary goods domain which is held by experts and can be accessed for a small fee. This characteristic is probably the result of the power relationship prevalent in traditional cultures (Awa 1980, Pickering 1996).

Apart from the impact of the power structure of a traditional society, the family structure also influences individuals' or groups' information behaviour. Pickering (1996:452) reports that the family is strongly influential in most social structures, and that individuals respond to beliefs and customs around them. Traditional values passed down to them are very important and they tend to cling to them. The traditional belief systems exert a great influence over their thinking and action (Manzvanzvike 1993:129). This is quite understandable when considering agricultural practices in rural communities. Subsistence agriculture which is at best a highly risky and uncertain venture is practised by rural communities not so much to maximise income than for survival purposes. Where risk and uncertainty is high, rural farmers may be reluctant to shift from a traditional technology and crop pattern that they have come to know and understand over the years, to a new one that promises higher yields but may entail greater risks (Todaro 1994:306).

Indigenous information encompasses both technical and nontechnical knowledge including world-view, social and religious customs and taboos. It can be both objective or subjective (Awa 1980:309). Considering the previous statement, it seems doubtful whether indigenous knowledge enables its users to distinguish clearly between factual information and traditional beliefs (which are of a more subjective nature).

An outstanding feature of many developing societies – especially in Africa (Manzvanzvike 1993:125) – is their deeply rooted oral tradition. The indigenous knowledge system is heavily reliant on this word-of-mouth form of communication for its continued existence. However, in providing close physical and psychological contact between message sources and receivers, it has the ability to bring about a free flow of information to the grassroots (Ozowa 1995:8).

A major drawback of indigenous knowledge seems to be its inability to absorb the technological improvements needed to keep in step with a rapidly changing world. Todaro (1994:289) reports that traditional methods have changed relatively slowly over time. There is, however, an awareness that to transform the traditional way of life, profound changes, which will affect the entire social, political and institutional structure of rural societies, will be necessary.

Considering the above, it seems clear that indigenous knowledge can make a major contribution to information as a resource, but cultural constraints such as resistance to change, poor ability to absorb outside information, oral tradition, illiteracy and language constraints prevent it from being a "perfect knowledge".

(ii) Modern society

For the purpose of this study the term "modern information" will be used to refer to scientific and technical information originating in developed countries and which form part of the technology used by developers to bring about change in rural communities of developing countries. As far as traditional communities are concerned, this type of information is viewed as "outside" or exogenous information.

Similar to the gradual development of indigenous information, modern information is derived from insights, experiences, research and the development of innovations to solve problems experienced in the industrialised or developed world. As far as agricultural production is concerned, Todaro (1994:289) reports that there has been a steady growth in the knowledge output since the mid-18th century. This growth has been spurred on by technological and biological improvements.

Much of modern information is built on previous experience and background knowledge. It is therefore self-evident that modern information will reflect the norms and values of the society where it originates. For this reason Shields and Servaes (1989) claim that technical information which originated in Western culture is not value free. Obviously these features can cause problems for the application of modern information in a traditional setting such as a rural community where the environment in which the modern information was created, is unfamiliar.

Another outstanding feature of modern information is that it is recorded outside the human memory in formats that can be accessed over space and time whenever needed. The fact that information can be accessed and used without the presence of the creator or sender causes modern information (especially scientific and technical information) to be factual and impersonal. The usefulness of modern information depends on the user's background knowledge and ability to apply it as needed. Should the receiver in a rural community lack the necessary background knowledge to which modern information could be linked, the information will be worthless.

The fact that modern information is recorded outside the human memory requires the user to be literate in order to access it in its recorded format without the help of an intermediary of some kind. So, literacy plays an important role in the use of modern information. Literate users tend to be much more individualistic in their usage behaviour and are less dependent on the opinion of the authority structure of their community. This too is very different from the use of indigenous information in an oral culture.

Much modern information is based on facts that have been tried and tested over many years. In scientific and technical information in particular, objectivity is a prerequisite. This feature is very different from that of indigenous knowledge where myth and symbol play an important role. It is probably this distinction that causes Awa (1980:310) to remark that Western theories are far removed from the logic that governs economic operation in low-tech nations.

The vast knowledge store in which modern information is embedded has been built up over many centuries and is ready for use, provided the user complies with the

requirements. This indeed will have an implication for the use of modern information for the development of rural communities. It seems that development projects establish a type of interface where rural communities are exposed to both knowledge systems – that is, the knowledge system of the oral tradition and that originating from the developed world based on the printed record. The experiences of researchers of development issues have provided the following interesting results, which were reported in the literature:

According to Shields and Servaes (1989:50) it seems that values implicit in Western culture may come into conflict with existing values of traditional cultures. According to them Western technology shows little respect for myth and symbol, or the power of the mysterious, which is inherent to indigenous knowledge.

A number of the characteristics of modern information are captured by Shields and Servaes (1989:50) who state that Western technology is structured according to the needs of its society, and reflects its norms and values. For example:

- Every phenomenon has to be broken down into component parts, tested and verified
- Technology is built on the culture of efficiency
- The central considerations are productivity, cost benefit and the bottom line
- Technology dominates and manipulates nature rather than being in harmony with nature
- Problem solving is the goal. Hence reality is reduced to those dimensions that can be studied as problems needing solutions

Shields and Servaes (1989) are also concerned about the influence of capitalism, which creates demands for particular products. Results are expected for every economic input made. From an Information Science point of view the question remains whether rural people are properly equipped with background knowledge to compete at the levels required by the economy of the developed world.

(iii) Synopsis of cultural constraints

When comparing characteristics of the two types of information (ie indigenous and outside information), it seems that both lack features that would be conducive to development. On the other hand, both offer something from which developing communities can benefit.

There seems to be consensus among investigators that both information systems can be applied to the benefit of the rural communities. Cronin (1995:25) sees indigenous knowledge as neither inferior to, nor less valuable than modern scientific knowledge. Ozowa (1995:8) is of the opinion that elements of indigenous knowledge and that of modern information should be blended with the aim of improving the modern system that has so far achieved only limited success.

Both types reflect the ideas and experiences of the actors involved. Both types could be applied efficiently when looked at from their own perspectives. For example: in terms of energy efficiency, the traditional system is more efficient, but in terms of productivity modern information seems more efficient (Parayil 1991:42).

There also seems to be general consensus that indigenous knowledge has a potential role in rural development. Cronin (1995:25) points out that indigenous knowledge is culturally grounded and value-laden in a way that Western scientific knowledge does not aspire to be. Broadbent (1990a:50-51) supports this view in pointing out that indigenous knowledge will always have practical advantages over foreign sources of information.

According to Uphoff (Awa 1989:314) indigenous knowledge offers a unique opportunity for mutual learning between development agents and their clients. He warns, however, that unless indigenous knowledge is considered, outsiders will miss, ignore or misunderstand many things, thereby causing potential beneficiaries to discount or sidestep any conclusions or recommendations.

These views reveal a need for participation in development activities, which is fully endorsed by Shields and Servaes (1989:55) who suggest that as many people (intended beneficiaries) as possible should be involved in development programmes from the planning stage, through implementation to the evaluation stage.

It is argued that if indigenous knowledge can be judged by developers as it relates to the entire universe of rural people, it can provide valuable input for development. The more relevant the message to the cultural norms, the greater the degree of understanding and convictions (Ozowa 1995:8). However, Awa (1989:311) warns that it must be seen in context and should not be assumed as a panacea for all development ills. Neither can it act as a magic key for agricultural transformation in agrarian societies.

With reference to technology (including information), Shields and Servaes (1989:54) are convinced that developing countries need an appropriate mix of technologies. They feel that apart from traditional technology, there is a place for advanced technology, modern capital-intensive production, as well as a place for labour-intensive activities. However, it is crucial to choose technology for development that developers think is good and effective and what the intended user or beneficiary needs or wants. The basic question is to determine how to adapt external technology to internal conditions in order to avoid hasty applications that may disrupt highly valued societal norms and cultural values.

From the above discussion it seems clear that cultural issues can act as a constraint to the potential of information as a resource for development. Underlying most of the views is an awareness of the need for appropriate information and adaptation. So it seems that awareness of cultural constraints and insight into their potential can ultimately contribute to the usefulness of information as a resource for development.

4.4.2 Impact of role players

When it comes to the role players in development, they can be divided into two broad categories, that is, developers and all their support groups on one hand and on the other the beneficiaries in the developing communities and those who hold authority in their traditional structures. One can assume that both categories experience needs arising from their desires to achieve their respective goals. However, from views reflected earlier in this discussion, it appears that role players in both categories are fairly unaware of the value of information as a resource.

Apparently both categories' approach in achieving development will be influenced by factors present in their respective cultures of origin. This in turn, it could be argued, will have an impact on the relevant perceptions of the usefulness of information as a resource.

In order to determine what these perceptions entail, it will be necessary to establish what criteria information must comply with in order to be accepted as a useful resource by both categories. These sets of criteria are discussed below.

(i) Developers

Developers of rural communities usually come from a developed society that wishes to, or feels obliged to improve the socio-economic standard of living in developing communities. Usually developers wish to introduce knowledge and know-how that has yielded successful results elsewhere. Most of this knowledge and know-how originated in developed societies. In the past it was presumed that new technologies would extend the benefits of information to all in forms tailored to individuals' needs and skills. In this way, it was believed, it would foster development and enhance quality of life in all nations throughout all sectors of society. However, this optimistic view has been challenged. Research results indicate that increased availability of information does not necessarily lead to improvement, but may on the contrary result in comparative deprivation (Gassol de Horowitz 1993:177, Pickering 1996:452).

Policy makers, development planners and rural development agencies are often blamed for the fact that the quality of life of people in rural areas continues to deteriorate from one development programme to another, due to the ignorance of the potential value of information (Neelameghan 1980, Gray 1983, Aina 1989, Sturges & Neill 1990, Camble 1994:105).

Considering the socio-economic nature of development, it seems clear that criteria required by developers can also be divided into two categories, namely, criteria compliant with the human-centred approach and criteria compliant with an economic approach. As far as agricultural development is concerned, criteria for both social and economic views are relevant, because it has to do with a change in human attitude as well as the maximisation of income.

On the social side, developers would like to bring about change in developing communities with regard to the following: extension of the beneficiaries' knowledge

base, empowerment as a result of understanding, status of awareness, status of attitude to accept solutions that can improve social conditions, providing incentives that will motivate people to participate in new endeavours to their own advantage, acceptance of responsibility and in doing so becoming self-reliant, and ultimately gaining self-confidence.

On the economic side, developers would like to enhance development, increase productivity, improve the life style of their target group, aid survival, increase wealth for the target group, but indirectly also soften the financial burden of the national government of the country as a whole. Finally, developers would like to see their efforts contribute to sustaining the environment for the benefit of future generations.

Despite the good intentions of developers, their efforts are often met with suspicion and resentment, probably because their approach is from their own frame of reference which does not accommodate the target group's understanding and experience of the world in which they live. Traditional structures of relationships are often overlooked or treated superficially. The Western approach is often experienced as paternalistic and seems to be insensitive to local beliefs, values and local expectations or what is defined as important to local structures (Awa 1989:310, Shields & Servaes 1989:50). Awa (1989:313) warns that this insensitivity can become a major impediment to project implementation and can inhibit participation in follow-up projects.

Another point of concern is that industrialised developers often treat developing nations as replicas of the preindustrial economies of Europe. There seems to be a complete disregard for the unique economic, social and cultural situations of developing nations. Shields and Servaes (1989:49) report that this assumption is still very much prevalent today.

Considering the above, it seems clear that both indigenous and modern information (in the form of technology and know-how) can be applied as a useful resource in development. Ignorance on the side of the developer, regarding the circumstances in which it should be applied and how it can be applied, can cause major stumbling blocks which act as constraints on information as a resource. However, awareness of these discrepancies can help developers to avoid them and find ways and means to make information a useful resource for development.

(ii) Recipients in rural communities

From various vantage points in the literature, as discussed earlier, it becomes clear that culture plays a prominent role in determining the way that people utilise information. When one considers the definition of knowledge which identifies it as something personal, individual and inaccessible, which manifests itself in information, one realises that knowledge and information are social products and thus part and parcel of culture. Apparently every culture's knowledge base develops according to the needs and desires of that particular culture to solve everyday problems. It seems obvious that eventually the knowledge base will reflect characteristics of that culture. This probably explains why a recipient group responds in a particular way to information used for development.

Most of the recipients in rural communities originate from an oral or traditional culture where certain features of information handling prevails. Among these are the following:

- In an oral culture the only place where information (in the form of concrete knowledge) can be stored is in people's memories. People with good memories play a vital role in storing and transferring information. The death of a knowledgeable person can mean the loss of valuable information.

- Communication of information depends on communal reaction to a large extent.

- Phrasing and repetition are used to ensure that critical expressions are stored in the memory. Phrases provide the basis for consensually agreed upon interpretation, which may go beyond what was actually said.

- A particular form of language delivered in a special way is employed in specialised contexts for particular purposes.

- Structures of authority play a vital role in storing and transferring information.

- In cultures with an oral tradition, information is exchanged face-to-face. Information cannot be transmitted over long distances. Often information remains within the borders of a particular community. Unless people of different communities interact, information created in other areas will be inaccessible.

- In an oral culture the only means of storing information is people's memories. Stories and myths tend to be experiential (ie based on events familiar to the listener or teller of the story).

- Mnemonic aids such as rhyme are widely used to make the oral transfer of information more reliable.

- Recipe-like patterns or stereotypical methods of expression are also very common. Unnecessary repetition may be used to ensure that information is conveyed correctly and in detail.

A distinctive feature of indigenous information is that it has a rich knowledge base of wisdom and know-how culled from local experience, validated through community application and transmitted from one generation to the next (Awa 1980, Cronin 1995, Mchombu 1992a, Parayil 1991, Talawar & Singh 1994).

In a development situation where policy makers and developers from a developed society strive to alleviate poverty in developing communities, it is usually done with the help or means (information included) that were applied successfully within their own cultures. Within this context, it seems clear that the target group who already possess a knowledge base of their own – which may not be fully efficient to solve a current problem – are exposed to information which originated in another culture. This implies that users from the developing group now have two types of information at their disposal, that is, indigenous knowledge and "outside information" known as exogenous

information. Both types of information display characteristics inherited from their cultures of origin.

Although there is concern for the ignorance of policy makers regarding the usefulness of information in development programmes, there is also a realisation that rural people in developing communities are not even aware that they need information to change their lives, or to solve problems. According to Rosenberg (1993:33) rural people do not even know what information entails. Lor (1996:14) also refers to the poor (in an urbanised developing context though) who are probably largely unaware of having information needs. According to Ozowa (1995:17) a general lack of awareness among small-scale farmers can be attributed to their high level of illiteracy which in turn contributes to the low level of adoption of agricultural production technology.

It is evident that people from rural communities have a desire to alleviate poverty in the first place to survive, but also to maximise their income. However, as reflected in the literature, people originating from a rural tradition have a low degree of information consciousness (Manzvanzvicke 1993:130). This does not mean that they do not have information related needs. Rogers (1992:149) reports that their needs often manifest themselves in wants, aspirations and intentions. He explains that a simple question about pests in an agricultural extension programme can lead to effective learning, not only regarding crop protection but also concerning yields, marketing and, particularly, how to find out things (Rogers 1992:155).

With reference to acceptance of innovations by First World (commercial) farmers, Rogers and Shoemaker (1971) provided a set of criteria which is also applicable to small-scale farmers in developing environments. These are inter alia: affordability, cost effectiveness, accessibility, availability, adaptability, situation specific, appropriateness, timeliness and ease of use.

Considering issues such as format, level of understanding, sophistication, language, types of media and communication channels related to scientific and technical information (that could be useful in a developing environment), and comparing them to the requirements of recipients, it seems clear that the usefulness of outside information introduced to a traditional environment (where orality prevails) could be questioned. In this regard Menou (1983:121-129) observed that many human groups have a lot in common, but internationally, they have at least as many differences, to the extent that information may be incommunicable unless it is acculturated. How to overcome these barriers is pivotal to this study, and will be addressed in chapters 7 and 8.

So, it seems that in rural communities the information usage behaviour of traditional people, unawareness of information needs, the impact of the oral tradition and high levels of illiteracy operate as constraints to information's usefulness as a resource. However, awareness of these problems related to recipients and their information behaviour can help researchers and developers to avoid pitfalls and devise strategies where information as a resource could be used to its full potential.

4.4.3 Impact of information systems.

To establish how information systems and services can influence the usefulness of information, it is necessary to observe how information is transferred by different information systems available to rural communities.

(i) Indigenous information systems

Originally indigenous information was transferred through traditional communication channels and oral literature forms such as folk tales, poetry, songs, drama, dances, taboos and ceremonies (Mchombu 1992a:67). The oral tradition prevailing among rural communities to a large extent contributed to the characteristics of their traditional information systems. Penvenne (in Manzvanzvike 1993:125) found in her study on migrant workers in Maputo that word-of-mouth communication was the medium of worker intelligence – to get their foot in the door. The chatter on street corners, at public fountains, bars and markets often centred on economic concerns – good jobs, good working conditions and employers to be avoided. As far as agriculture is concerned, Ozowa (1995:8) found that Nigerian farmers have always used their indigenous vocabulary in diffusing indigenous agricultural knowledge.

Another interesting feature of indigenous information systems to which Mchombu (1992a:67) refers as information of the public goods domain and that of the proprietary goods domain, is strongly reminiscent of the gatekeeper system of First World information systems.

In the traditional information system, the boundaries of socio-technologies often do not stretch beyond most of the villages in which they were practised (Parayil 1991:42). This as well as features that are inherent to oral cultures are probably some of the reasons why Lundu (1989:223-227) reports that production and transfer of knowledge has occurred in African culture, but the information has never been organised in any form of permanent record. Failure to capture, organise and repackage this information has probably widened the gap between the traditional and modern information systems.

(ii) Modern information systems and services

Technology driven information systems, originating from developed countries, have tremendous potential for information storage, processing, dissemination and retrieval devised to meet the needs of users in these countries (Gassol de Horowitz 1993:173). These sophisticated information systems are imperative to handle masses of printed sources. As a result there is a vast number of information services and systems which offer their services to developing countries, and perceive themselves as offering useful information to those who need to know (Bell 1986a:232). However, Bell (1986a) warns that they are not designed for information provision to users at grassroots level in rural communities. He points out that it is important to realise that users in developed countries and those of developing communities have different priorities. A valid point made by Shields and Servaes (1989:48) and also by Gassol de Horowitz (1993:177), is that increased availability of information does not necessarily lead to the improvement of all. On the contrary, it may result in comparative deprivation.

Comparing the techno-driven systems of developed countries to those of the oral tradition, there seem to be vast differences. Taking a closer look at what is offered and what is needed – or who the recipients are and what they are capable of accepting, it is apparent that services offered are not necessarily useful to users at grassroots level. Considering users from rural communities, the capacity to absorb and to use information is not taken into account (Lamberton 1983:41-42). Apart from the capacity to absorb and use information, information systems developed for First World purposes require an ability to access information in written form; an ability to be able to operate a computerised system, and at best to be aware of one's information needs, know where to look for information and know how to apply it for optimum benefit. In other words the potential users of the modern information system are expected to be information literate.

Another point of concern is raised by Aboyade (1984:14) who points out that the type of information provided by modern information systems for use in developing environments is exclusively focussed on policy makers, researchers and those who manage policy decisions. Scant attention is paid to the information needs of the intended beneficiaries of the policy decisions.

It seems that the Programme and Policy Review document of the Information Science Division of the International Development Research Centre (IDRC), is proof of Aboyade's view. It claims to promote the social and economic advancement of developing regions by providing researchers, policy makers and practitioners in developing countries with access to scientific, technical and other information they require for solving development problems (Oswitch 1990:32, Broadbent 1990a:51-53).

Lor (1996:12) is also concerned about the effectiveness of techno-driven information systems for people of a traditional origin. He refers to these services as 'an army of high technology devotees waiting out there to solve all community learning and information problems with broadcast, television, hyper media, encyclopaedia, satellite linkups, cellular telephones, et cetera – quick fixes utilising glamorous information technology'.

Intrinsically there is nothing wrong with the use of modern technology for those who need outside information and are capable of utilising it effectively. However, technology driven information systems are most probably unable to fill the gap of basic understanding of concepts needed to make sensible decisions – often lacking in developing communities. In this sense one has to agree with Duram (Bell 1986a:234) who views techno-driven systems as transmitters only, which seem pretty useless in their present form in rural communities.

Broadbent (1990a:40-53) is concerned about the pushing of infrastructural support too far too fast to create systems and services that cannot be sustained without donor support. Broadbent (1990b:208) refers to the situation in Africa where information technology is considered a long way ahead of local infrastructural requirements. In such a situation developers run the risk of creating a dependency level at national level (Gassol de Horowitz 1993:177). As far as modern information systems in small countries (developing countries) are concerned Sheridan and Ballantyne (ISNAR, Small countries, study paper 8 1992) report that information systems in small countries have many difficulties with sustaining a service, especially after donor assistance has ended. This reveals the lack of trained local officials.

(iii) Evaluation of the indigenous and modern information systems

Considering the impact of information systems available to developing communities, it seems clear that both the indigenous system and the modern information systems have much to offer. However, both systems lack the ability to provide on their own for the needs of rural users at grassroots level. Ozowa (1995:8) feels that both systems should be integrated with the aim of improving the modern system that has so far achieved only limited success. Broadbent (1990a:50-51) also emphasises the role of information services at grassroots level, which could provide access to local or indigenous knowledge in solving development problems. According to him indigenous knowledge will always have practical advantages over foreign or outside sources of information.

So, the question that remains is how the potential users in a rural community can benefit from two information systems that seem to be incompatible. A possible solution would probably lie in the utilisation of the transfer techniques of the indigenous system in order to expose rural people to outside information available in the modern information system. For such an endeavour it would be necessary to adapt and repackage modern information to comply with the requirements of the indigenous system. This would mean a "change of gear" in the transfer process – from formal (impersonal) transfer to informal (face-to-face) transfer.

In the process of change-over, the intervention of a human intermediary would be inevitable. To be successful, this intermediary will have to be knowledgeable about the attributes and functioning of the indigenous information system, and also about the extent of modern information resources. The intermediary should also know how to adapt and repackage modern information to make it acceptable for transfer through the indigenous information system. So, it seems that the intermediary will become a major link in the transfer process.

4.5 SUMMARY AND CONCLUSION

The question posed at the beginning of this chapter was whether information can serve as a useful resource for development. Reflecting on the different aspects that have been discussed, the answer is definitely yes, but not unconditionally. Information is not a clear-cut product that can be taken from the shelf and applied, as in the case of a tangible tool. This statement can be justified by the extensive evidence found in the attributes of information such as its intangibility and its dependence on so many variables within its environment, for example: its dependence on culture, media, specific situations and the particular needs of its users. Apart from attributes of information, there are also factors related to information usage behaviour of people (role players) involved in providing and utilising this resource. These factors include the impact of culture and the information systems that serve as resource systems.

A prominent outcome of this discussion is the insight gained into the enormous differences in the handling of information by people originating from oral cultures and those originating from modern (industrialised) societies. Their information handling skills have developed along completely different lines and, consequently, their respective information systems are virtually incompatible. Only awareness of these differences and

the ability to adapt will ensure an exchange of information between the two information systems and thus between the developed and developing worlds. This has serious implications for the transfer of information to rural communities, which cannot be ignored by development agents if they wish to launch successful development programmes to improve people's quality of life.

So, the discussion in this chapter is proof of the fact that knowledge is the distinguishing factor between the developing and developed world. Within the context of development, the use of information as a resource is imperative. How to make this resource acceptable will depend on the manner in which it will be transferred from the developed world to rural communities. The transfer process as related to rural agriculture will be addressed in the next chapter.

CHAPTER 5

TRANSFER OF INFORMATION IN RURAL AGRICULTURE

5.1 INTRODUCTION

The purpose of this chapter is to establish how the transfer process can contribute to the usefulness of information in the development of rural agriculture. For purposes of this investigation the emphasis will be on the transfer of information related to agricultural technology. As a basis for this discussion, the following issues have been chosen as a framework to investigate the transfer process between information resources in the First World and users in rural communities in the developing world:

- Establishing the **purpose** of the transfer process. What does the **transfer process** entail?
- **Models** applicable to various phases of the transfer process
- **Steps** required in the transfer process
- **Linkage mechanisms** required to transfer information to rural communities
- **Barriers** which constrain the transfer process

5.2 WHAT DOES THE TRANSFER PROCESS ENTAIL?

Transfer of information can mean many things to many different people. However, we are interested in the transfer of information to users within a particular environment and for a specific purpose. The environment is that of small-scale farmers in rural communities in South Africa, and the purpose is to enhance development in the field of agricultural practices of small-scale farmers. Thus, the three variables: people, agriculture and development determine the parameters within which the transfer process can be defined for this investigation. How these variables impact the transfer process will evolve as the discussion progresses.

In essence, the transfer of information means the process by which information gets communicated from one person to another, or from one organisation to another (Tushman & Scanlan 1981:291; Havelock 1986a:20). Since information manifests in the different types of sources, Havelock (1986c:220) also interprets the transfer process as a complete connecting process, where people in need of information are linked with appropriate information sources.

When considering the various definitions of the transfer process, it seems obvious that the purpose of the transfer process in general is to link people with information. However, when the transfer process is narrowed down to the transfer of agricultural information to rural communities, then there are very specific issues that should be considered.

Within the context of agriculture one can assume that the type of information involved has to do with technology. So we also have to look at the transfer of information within the context of technology transfer. In fact, Bell (1986a:231) reports that information transfer to lesser developed countries is of importance because technology transfer to those countries depends upon it. Williams and Gibson (1990:13) consider technology in general more than physical products: it is information that is put to use. They see technology transfer as an iterative movement of applied knowledge via one or more communication channels. Thus, it seems evident that information transfer and technology transfer are inextricably intertwined.

Transfer as a linking process can come in many guises. It can be a transmission where the content is transferred without any alteration. Content can be disseminated as information directed at an unknown audience. It can also be directed at a particular target group. In circumstances where we need to transfer information to uninformed users for purposes of development (eg new farming practices in rural communities) where there will be a need for adaptation (thus adding value to information as a resource), one can expect an element of training in the transfer process. Especially where information needs to be made more comprehensible at the receivers' level of understanding, training may be involved.

Considering the people, the purpose and circumstances involved, it seems clear that the transfer of agricultural information to rural areas in South Africa becomes a multifaceted process. Thus, for purposes of this discussion the information transfer process can be all of the following processes in one:

5.2.1 It entails linking

The transfer process links people with the right information at the right time for a specific purpose and within a specific situation. Within this context it can be translated as small-scale farmers being linked with appropriate information to promote food production to provide for their immediate need to combat hunger (or obtain sustainable food supplies), that is, for personal consumption. Since development is an ongoing process, the linking will be an ongoing process driven by people and organisations having an interest in the development of rural communities.

5.2.2 It entails spanning boundaries

The transfer process is not only a linking or connecting process, it is also a process of boundary spanning. During the transfer process it is often necessary for information to cross boundaries. These boundaries can be the difference in level of understanding between the sender and receiver. Differences within working groups' environments – such as those between scientists, engineers or extension officers – where usage behaviour and preferences determine the flow of information (Meyer 1994) can also act as boundaries. With regard to these working environments (more in the context of technology transfer) Williams and Gibson (1990:13) observe that people use different vocabularies, styles, channels, schedules, and reward systems, which can act as barriers. However, more important to the interest of this investigation is the crossing of boundaries between the developed world with information systems based on literacy

driven by technology, and rural communities in the developing world with information systems based on the oral tradition – verbal communication.

5.2.3 It entails crossing cultural boundaries

When the transfer process to small-scale farmers is initiated by developers from the modern or industrialised world, it needs to span cultural boundaries. Dissanayake (1986) is of the opinion that the boundary between social cultures, such as the transfer of agricultural information to small-scale farmers in rural areas, is a crucial boundary to be spanned.

When we consider the transfer of agricultural information to small-scale farmers in rural areas, it is assumed that the initiative to transfer originates with a developer. The developer could be either a government, a nongovernmental organisation (NGO), or a multinational corporation. Since these types of developer come from developed countries (with a culture influenced by a tradition of literacy), to a large extent the transfer process needs to cross cultural boundaries.

5.2.4 It entails a deliberate transfer process

As indicated earlier, in a development situation many transfer operations will be initiated from outside the community at which the transfer is directed. Information transfer carried out by developers becomes a deliberate transfer process like "technology push", because the receivers are unaware of the existence and value of "outside" or modern information, which can bring about change in their lives. So, they will not demand information to solve their problems. Therefore, developers who anticipate which type of information can solve problems experienced in developing communities, attempt to transfer information deliberately by way of training programmes to introduce new techniques or programmes.

5.2.5 It entails training

Under circumstances where understanding and extension of the receiver's knowledge base is a prerequisite for the acceptance of information or a new technique, we can argue that transfer of information will manifest in the form of training. Then the transfer process becomes a training process.

Since small-scale farmers are unfamiliar with modern farming practices they need to be informed in a structured way about new practices or equipment and how to operate or apply them. In this sense the effective transfer of information is not possible without the necessary training.

Where a development agency (or its field workers) is ignorant regarding peculiarities of the target group's culture, traditions, norms and values – which might require a different approach in the transfer of information – the whole operation becomes a learning process on the sender's side. So, under these circumstances we can argue that the transfer process is to a large extent a training and learning process for both the target group and the developer.

5.2.6 It entails adding value

We argued in chapter 4 that information could be viewed as a valuable resource for development purposes, in particular to improve agricultural practices. We also argued in chapter 4 that information does not have any value unless it is adapted and repackaged in a format that is acceptable for a particular user (group) in a particular situation. The moment that the recipients understand the introduced concepts and realise that they can benefit from the newly introduced information, it is perceived as valuable or useful. In this sense information transfer then becomes a value-adding process.

5.2.7 It entails a changing process

Within the context of development the purpose of information transfer should be compliant with the objective of development, that is, to bring about change to improve people's lives. This is also valid for the development of rural agriculture where one can assume that information will be instrumental in initiating change in farming practices when the receivers' understanding of a certain farming practice has expanded or changed and results in the implementation of the changed (improved) practice. So, within this context, information transfer can be viewed as a changing process.

From the discussion above it is evident that the transfer of agricultural information to rural communities is a multifaceted process. All the above points need to be considered when an effective strategy is planned for the transfer of information.

5.3 MODELS OF THE TRANSFER PROCESS

The previous discussion has already given us an indication that the transfer of information is a complex process which calls for a thorough understanding of how it operates within a particular system. In order to explain in a rather simplistic way what happens to information during the transfer process, we make use of models (of communication) to depict the different phases of action. However, one should keep in mind that models are only simplified images of reality which enable us to put into perspective how a system operates (Dissanayake 1986:61). These models also enable us to predict the outcome of actions and events.

Since models are only simplified images of reality, they often only emphasise certain aspects of the transfer process and omit others (Lionberger 1986:109). So, to understand how the transfer process advances within the rural agricultural system of a particular community, it becomes necessary to take a closer look at a number of models from different subject fields which might shed light on the particular issue under investigation for this project. That is, the transfer of information at grassroots level – where the small-scale farmer operates.

Within the context of this investigation, we now examine models from subject fields such as communication, development and agriculture. Each one clarifies a particular stage of information transfer that we should consider.

5.3.1 Linear one-way communication models

In the evolution of communication model-building, the linear one-way communication model was one of the first attempts. The best known model from this category is that of Shannon and Weaver (1949) which depicts three elements, that is, a source, a transmitter and a receiver. This model, which viewed the transfer process as rather mechanistic was later extended to the model for research and development (R&D model) which included the different phases of adaptation the message undergoes on its way to the end user, as in **Figure 5.1**.

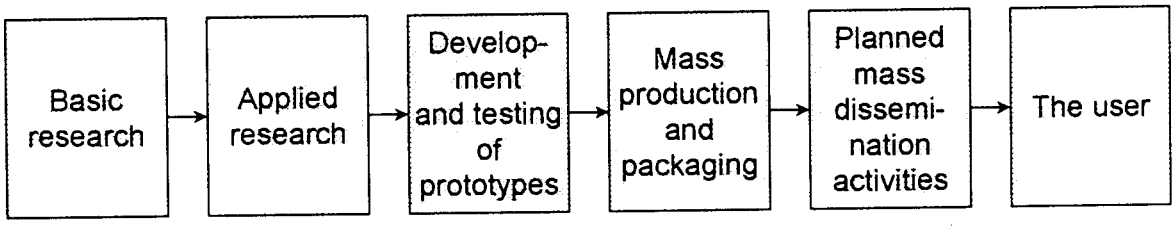

Figure 5.1 The research and development model

In this linear model the emphasis was mainly on the role of the sender, or source, and the needs of the receiver were not considered. In the case of development programmes this was often the case where the sender tried to convince the receiver to accept a particular product or programme (Lionberger 1986:121). However, despite its shortcomings this model remains important for an understanding of the adaptation activities taking place among intermediaries, between developers (as senders) and target groups (as receivers) in developing areas. Significant to this investigation is that in any deliberate transfer action there seems to be a linear movement from the source to the receiver. In other words, for information transfer to rural communities, outside information will flow from the modern information resource base to the small-scale farmers in the rural community.

5.3.2 The homolific chain

The homolific chain model devised by Everett Rogers (Havelock 1986c:232) depicts the way that the research results of an investigation are interpreted by different role players between the scientist and the end user who is supposed to implement the information in practice. According to the homolific chain theory, different types of role players form indispensable links in the transfer chain. With reference to the systems of **Figure 5.2** below one can explain the homolific chain as follows: **Scientists** (system AAA) do some research and publish the results. **Subject specialists** (system AAB) and peers within the field of the **scientist** (system AAA) will find it easier to interpret the latter's research results, because they presumably possess enough background knowledge and they speak the same "language". The subject specialists in turn have contact with **technicians** (system AABB) within their particular fields of interest and understand the technician's way of thinking and doing. The subject specialists are in a better position to explain the results in a "language" understood by technicians. Once understood by technicians, the results can be used to develop a technique or tool that could be put to

good use by **end users** (system BBB), such as small-scale farmers. It is believed that the technician as innovator can better explain to the end user how to operate the tool or programme that was developed as a result of the original research. This is because the technician understands the context in which the end user will apply the technology.

The homolific chain also reflects features of a linear model, because the chain only describes adaptation within the environment of the sender. However, the operation of the homolific chain remains important in the transfer of agricultural technology and information to target groups in developing areas. We still need to understand how techniques that are developed in industrialised countries to improve a certain type of practice, can be adapted by role players of the developed world with the purpose of introducing them to users in the developing world.

Usually this technology and its information are introduced to potential users who are not at all familiar with the new product or tool. In such a case another "link" needs to be added to the chain – one that understands the technical detail as well as the frame of reference of the target user(s). Usually this link manifests as extension officers, consultants or trainers or field workers. The idea that each "link" should be familiar with the environment from which the information originates as well as the environment at which it is directed is very important for the transfer of information to rural communities. The homolific chain is demonstrated in Figure 5.2 below:

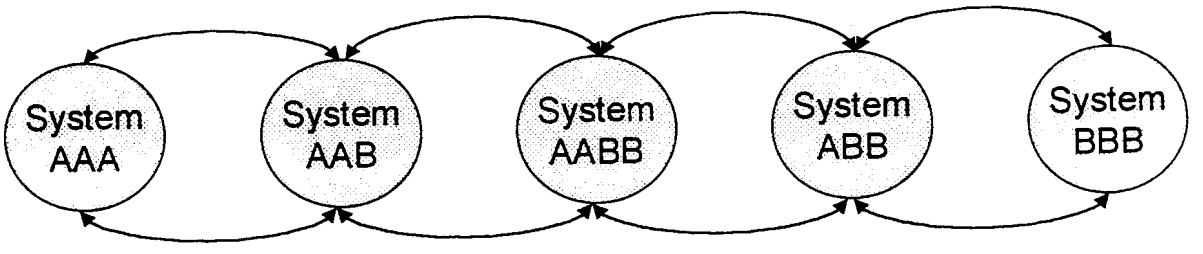

Figure 5.2 The homolific chain

Although we realise today that there is a lot of interaction among the different role players in the transfer process before the message reaches the end user, there is an overarching linear trend on the transfer continuum with the source or sender at one end and the receiver or user at the other.

5.3.3 Interactive communication models

A later development in model building that we are interested in, is that of the interactive models. According to these models there is a realisation that information messages are much more complex and that messages move interactively among different role players in the transfer process. It is also realised that original information packages do not necessarily transfer intact. Sometimes only part of an original information package will be transferred, depending on what purpose it is needed for.

One of the best-known interactive models is that of Havelock (1986c:226) depicted in **Figure 5.3** below.

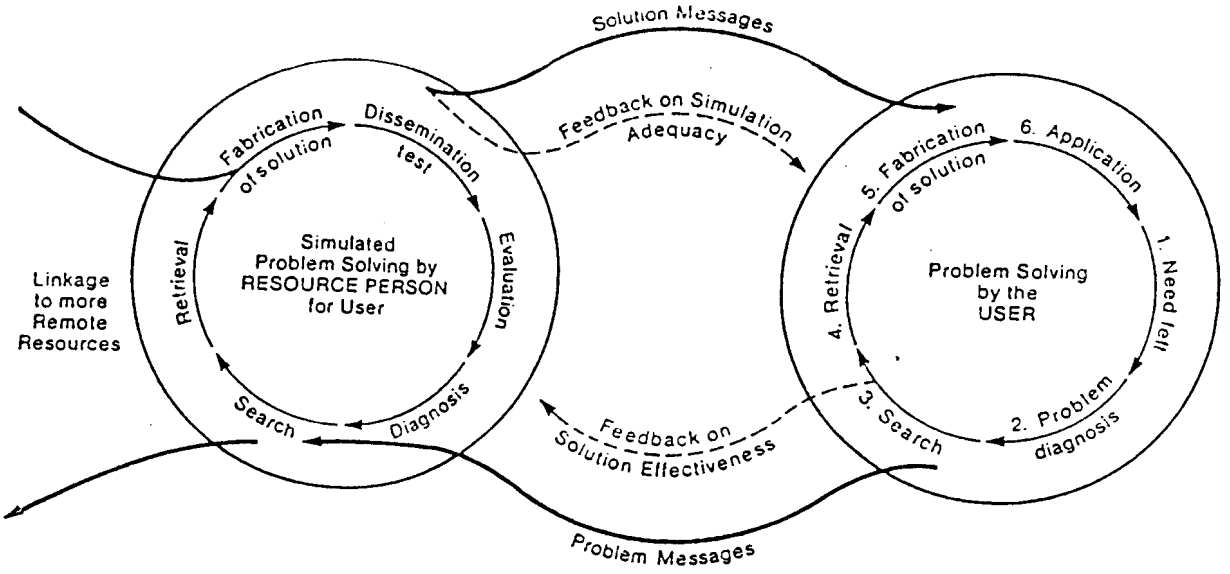

Figure 5.3 The interactive model (Havelock 1986c:226)

In Havelock's model we are introduced to two communities which are linked together with messages. The two communities are: (i) the resource community where most of the solutions to problems are developed, and (ii) the user community which needs solutions to solve problems. As far as agriculture is concerned, exchange of information between these two communities is crucial to the successful generation and transfer of technology (Röling 1990:18). Havelock's interactive model recognises that information from both communities is needed to ensure a successful transfer process. It is also recognised that both communities (eg farmers from the user community and scientists from the resource community) generate information and technology. Both are dependent on information from the other's community in order to transfer appropriate information which can help to bring about change. Linkage mechanisms from both communities are indispensable to procure action.

The adapted interactive model in **Figure 5.4** below depicts a hypothetical transfer process between the resource community of the developed world and the user community of the developing world. Each system has entry and exit points which permit or prevent the flow of information as a result of certain requirements set by the two systems. For example, unawareness of the needs of a user community in a rural area can prohibit the entrance of such a message to the resource system. Entrance of messages from the resource system can be prevented due to a lack of understanding by the user community.

Although Havelock's interactive model emphasises the importance of links between the resource community and the user community during the transfer process, it does not clearly show what happens in the transfer process during the interface between the last link of the resource community and the end user in the user community. In a cross-cultural situation, where the information behaviour of the developer from a First World context differs dramatically from that of the user group in a developing context, it is important to know how the transfer process evolves during this particular interface.

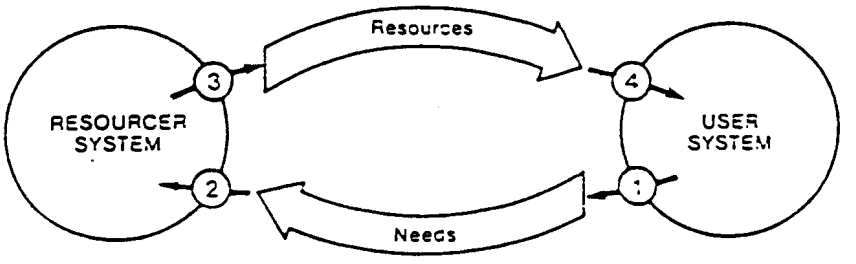

Figure 5.4 The adapted interactive model (Havelock 1986c:226)

Since we are interested in the transfer of information in a developing context – at grassroots level – it is necessary to take a closer look at a model of the development process where the actual contact between the developer and the end user takes place.

5.3.4 Allen Rogers' route to change

According to a definition of development, the development process is seen as a plan of change which Rogers calls the **Route to Change**. Allen Rogers (1992:119) visualises this plan of change as a set of consecutive steps that are essential for development. If one of these steps is omitted or bypassed during a development project the planned change will not be achieved as envisaged.

Since development – understood as an intervention from outside a community – has to do with the introduction of new ideas, knowledge and technology to bring about change, these steps in essence apply to the introduction of information from the outside world to a target group in a rural community. In order to transfer information to bring about change it seems inevitable that these consecutive steps – displayed in **Figure 5.5** below – should be followed to ensure acceptance and implementation of new ideas or techniques.

The five steps of the route to change model displayed below can be adapted for the transfer of agricultural information to rural communities as follows:

(i) The **existing state** refers to the situation in which the target group finds itself during the first encounter with the development agent. This state of affairs has to do with the target group's standard of living and understanding of certain practices. Starting with their existing state, the target group will first need to become aware of the necessity to change.

(ii) For this step an **awareness raising** programme needs to be initiated and facilitated by the developer (acting as the change agent).

(iii) After the initial awareness raising phase, the **development of skills, knowledge and understanding** is necessary in order for the target group to accept the introduced information or technology. In effect, this phase implies training and education with regard to the particular technology the developer wishes to introduce to improve the standard of living.

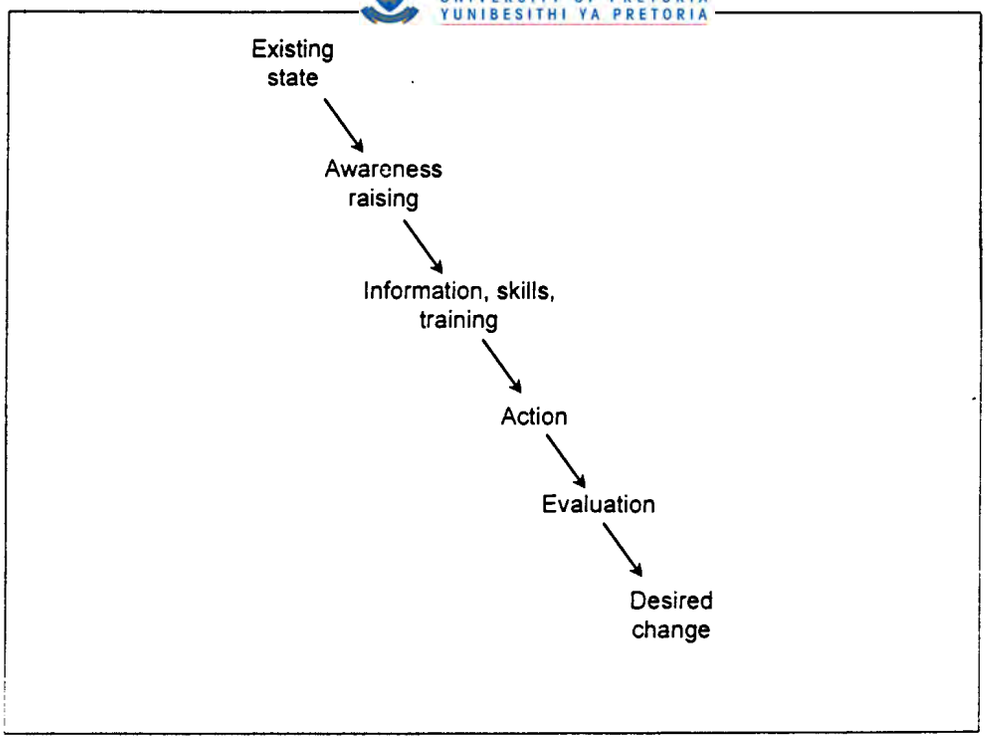

Figure 5.5 Allen Rogers' Route to Change (Rogers 1992:119)

(iv) The next step is the **action** phase where the target group will take action by implementing what they have learnt (eg an improved method of growing maize) preferably under supervision of the extension officer, or development agent who acts as facilitator.

(v) The final step – the **desired change** is achieved when the new method has been fully accepted and utilised and becomes part of the everyday routine of the target group and probably spreads to the rest of the community.

Rogers is of the opinion that omission of any of these steps in the development process will result in failure. However, Rogers' model lacks a step for continuous **evaluation,** which is necessary to ensure that techniques and practices are adapted as circumstances change. For this reason Rogers' route to change in Figure 5.5 has been slightly adapted to include a step for evaluation.

From an information transfer point of view, these steps are in fact the essential or basic activities that should be carried out during the contact phase between the extension officer and the target group in the transfer process. In the case of transfer of agricultural information to rural communities for development purposes, the extension officer or equivalent will be the interface between the resource community and the target group in the rural community. The following discussion will reveal the need to adapt Roger's model by adding a step for continuous evaluation as indicated in Figure 5.5.

Table 5.1 below provides a comparison of the consecutive steps followed in the respective models:

Table 5.1 Adaptation of the Route to Change

Consecutive steps of the Route to Change	Consecutive steps of the Route to Change expanded for information transfer to rural communities
• Awareness raising • Existing state • Development of knowledge, skills, etc • Action • Desired change	• Existing state • Awareness raising • Development of knowledge, skills, etc • Implementation • Evaluation • Routine application of information

The steps of the route to change comprise sets of activities that are carried out during the transfer of information between the development agent (represented by either an extension officer, consultant, trainer or facilitator) and the target group. These activities will be discussed in more detail in the next section.

5.4 STEPS REQUIRED IN THE TRANSFER PROCESS

For any transfer action to take off, a number of activities need to be carried out, either as the result of initiative taken by the sender, or a demand from the potential user. If the potential user is unaware of the existence of useful information – which is often the case in rural development situations – there will be no demand. In such a case the development agency undertakes to provide the required information or technology to get a project or programme off the ground. This type of information provision without demand could be seen as similar to that of "technology push". For this investigation we are particularly interested in the activities that come into play when information is transferred on purpose.

The activities involved during a deliberate transfer action are usually awareness raising, introduction of information, acceptance, adaptation and implementation – typically reflected by the R&D model. However, in the case of information transfer across cultural boundaries, there are circumstances that may require a different set of activities to ensure the successful transfer of information. The following discussion introduces the consecutive steps that should be followed to ensure the effective transfer of information to rural communities. In real-life situations some of these steps take place simultaneously, or can be turned around. However, what matters most is that if one of them is left out, the transfer process will not be successful.

5.4.1 Existing state

As in the case of development, the route to change for the transfer of information to rural communities will also start with the existing state. The first step of the transfer process will be to establish the target group's existing state of knowledge regarding a specific practice (eg maize production). The existing state of knowledge involves, inter alia, the target group's level of understanding, manner of communication, tools for transferring information and factors within the environment that impact the information usage

behaviour of the target group. Usually all these are determined through a preliminary investigation by the development agent – who will be the sender of information.

From the literature (discussed in chapters 2 and 3) we get an idea of what the existing state (including socio-economic status and state of knowledge in general) of a rural community in a developing area might look like. As far as information transfer for agriculture is concerned, the target group is mostly elderly people originating from an oral culture. They usually have no formal education and are used to traditional farming practices. They most probably do not have background knowledge of the new methods or techniques that are introduced, and they usually do not have the means required to implement newly introduced information or technology. All this points to the need for the introduction of activities designed to address the particular situation.

5.4.2 Raising awareness

Raising awareness, which is the second step in the transfer of information to bring about change, could actually be viewed as the first contact between the developer and the target group. This is the stage where the developers introduce themselves and clarify the purpose of their mission to the target group. In a real-life situation this step frequently overlaps with the initial step where the existing state of affairs is determined. The awareness raising step is in effect an exchange of information between the two parties where both learn from each other and learn to see themselves through the eyes of the other. It is during this step that the target group becomes aware of its existing state – deficiencies, but also their expertise grounded in experience.

Rogers (1990:133-137) warns that raising awareness is not a simple action of informing the target group, or conducting a series of discussions. It is a question of listening to the participants and sharing perceptions in order to avoid imposing a set of standards on a group. Probably the most important aspect of this step is that members of the target group should participate in discussions of a particular issue and should be allowed to give their opinion on what is important to them. These types of discussion enable participants to learn how they see themselves and their changing physical and social environment, and how others see different things in their picture of reality. In this way the group gets a chance to reassess the value they place on various elements within this setting. This approach gives an opportunity for participants to become aware of things they previously did not experience as impractical or as a self-imposed constraint. They gain insight into their own situation and realise where they themselves can take a decision to change, where they need to enhance their competencies to be able to work toward change and where they need to accept circumstances.

It seems that raising awareness works in two ways. In the first instance, awareness programmes are designed by development agents to obtain information for a particular development programme. Secondly, awareness programmes could be seen as the initial step in transferring information in such a way that the target group becomes receptive to and willing to accept outside information as a resource for their own development.

Since the developer could be experienced as an outsider by the target group, it is extremely important that the latter should be approached with great care to build up a

relationship of trust. Therefore, development agents should follow a protocol where permission is obtained from the local authority to approach the target group at grassroots level.

In the latest development approaches, awareness raising often takes place during needs' analysis surveys where a variety of participatory rural appraisal (PRA) methods are used. These methods include, inter alia, group interviews, community mapping, community meetings, and informal discussions with elders and community leaders (Chambers 1992a, 1992b, 1994; Mascarenhas 1992, Treurnicht 1997). Although the main purpose of these methods is to obtain information from target groups, the latter take part in decision making and so become aware of their existing state of affairs and how it can be changed or improved.

5.4.3 Development of knowledge, skills and understanding

Considering the existing state of a rural community as explained above, it seems obvious that awareness raising will not be enough to transfer information of a technical nature and assume that the target group will be able to apply it. The next step in the transfer process will inevitably be to develop knowledge, skills and understanding. This is actually the stage where the real transfer takes place, where information becomes knowledge. Outside information will not be accepted where no prior knowledge, skills or understanding exist. So, learning and training become important activities in the transfer of information from the developed world to target groups in a developing community.

Developers operating among developing communities realise that training is imperative for the transfer of information. They are equally aware that unless the target groups understand the contents and the usefulness of the transferred information, they will not adopt it for implementation. However, to adopt the most suitable approach to transfer information or technology, developers need to know what the learning process entails and which training approach to follow to achieve the best results. The processes of learning and training are illustrated in the box below, which is followed by a more detailed discussion:

Table 5.2 Development of knowledge skills and understanding

Learning	Training
• Knowledge building • Developing skills (intellectual and physical skills) • Development of understanding • Changing of behaviour • Changing of attitude	• Approaches in training • Adult education and training • Training methods

(i) Learning

In the process of developing knowledge, skills and understanding it is also necessary to understand how the receivers of this process absorb new concepts, that is, how they learn.

It is of particular interest to this investigation to establish how small-scale farmers in rural communities (originating from an oral culture) learn about farming practices originating from the developed world.

Learning is a cognitive process whereby an individual gains understanding or perceptions, increases his or her knowledge base and develops intellectual and physical skills (Parayil 1991:43; Rogers 1992:21). Learning can also be seen as a cognitive process which brings about change in one's knowledge base, skills, understanding, value systems and behaviour. Knowledge, attitudes, skills understanding and behaviour are identified as the five building blocks of learning (Rogers 1992:12). So, if the developer wishes to introduce training as an essential step in the transfer process, he or she needs to understand how the five building blocks of the learning process function and how they can be developed among members of the target group. These attributes or building blocks will now be discussed.

(a) Knowledge building

Learning is a generative process which takes place when the individual relates new information to existing or prior knowledge. Prior knowledge plays a central part in the understanding of new or outside information. Existing knowledge permits the assimilation and exploitation of new knowledge. We can assume that learning is a cumulative process, because the object of learning is related to what is already known. This then, it is believed, is how understanding emerges – a person obtains insight into relationships between facts and concepts.

Memory also has a role to play in the learning process. The ability to memorise has to do with association – the ability to link concepts. It is assumed that prior knowledge enhances learning because memory is developed by associative learning in which events are recorded in the memory by establishing linkages with pre-existing concepts (Cohen & Levinthal 1990). Thus, as far as memory is concerned, learning can also be seen as an associative process. This has important implications for the transfer of information to target groups in rural communities. Associative learning seems to be an outstanding feature of people originating from an oral culture where poetry, story telling, dances and so on, are important means of memorising concepts relating to ethics, attitudes, politics et cetera (Botha 1991:6).

It seems that accumulated prior knowledge increases both the ability to put new knowledge into memory and the ability to remember how to apply it. Memory development is self-reinforcing in the sense that the more objects, patterns and concepts are stored in memory, the more readily new information about these constructs is acquired and the more facile is the individual using them in new settings. This implies that a learner needs a fairly large knowledge base to be able to use information integratively in a particular situation. As an example, we can refer to the small-scale farmer's need to know about soil cultivation, fertiliser, suitable seeds for his or her area, loans, harvesting methods, et cetera to benefit from information about improved methods for maize growing.

It is through learning that we develop frames of reference within which to make decisions. Development of these frames of reference is seen as a process of learning whereby learners construct patterns or maps of reality. They locate all knowledge somewhere on these maps in relation to themselves at the centre and other knowledge and events elsewhere on the map. Some experiences will be close to the learner, for example a task that grew out of immediate needs. Others will be more remote, that is, strange to the ways and thought and value systems of the learners (Rogers 1992:16). For many people science and technology lie in the extreme outer parts of the "map". They have little in common with these things. It may also be that science and technology are novel domains for the learner where there is no prior knowledge to build on. This could be particularly so in the case of small-scale farmers where outside information originating from developed countries is unknown within their frames of reference.

Furthermore, Ozowa (1995:17) states that adults find it more easy to learn material that is not alien to their existing patterns of thinking and their own experience. This has serious implications for the transfer of agricultural related information (which is scientific and technical in nature) to small-scale farmers who are adults originating from an oral culture.

(b) Developing of skills

In the application of agriculture related information or technology, appropriate skills are of paramount importance for mastering tools, but also for taking decisions and solving problems. According to Rogers (1992:1) we can distinguish between intellectual and physical skills. These need closer analysis.

- **Intellectual skills** – Intellectual skills have to do with our reasoning and comprehension. One of our intellectual skills that is developed through learning, is the ability to distinguish between appropriate and inappropriate actions for a particular situation – this is the ability to make a situational analysis. These are also known as discrimination skills.

  Experimentation and innovation are two intellectual skills developed through learning. Innovation is the ability to move away from the learnt responses of successful programmes and to experiment with new approaches. That is, to develop fresh approaches to dynamic situations (Cusumano & Elenkov 1994:203). Experimentation and innovation may generate conceptual leaps in the development of association which may give rise to creativity and making links that may never have been considered before. According to Cohen and Levinthal (1990:130, 133) it is the coexistence of diverse knowledge structures in the same mind that elicit the sort of learning and problem solving that yield innovations.

  Receptivity, or absorptive capacity is also an intellectual skill that enables the individual to recognise the value of new information, assimilate it and apply it.

- **Physical skills** - Physical skills involve the mastering of tools and practices. Within the context of small-scale farmers, mastering of physical skills is reflected in activities

such as ploughing and harvesting. It seems that in development programmes for agriculture, the transfer of information deals mainly with the passing on of factual information and the demonstration of new skills, application of new techniques or processes, and the handling of new equipment (Rogers 1992:122). For all these the learning of physical skills is required.

(c) Development of understanding

It is claimed that when the receiver relates external information to existing knowledge of a certain concept, insight is gained which enables a better understanding. However, understanding does not guarantee acceptance of the external information introduced. The newly received message still has to be evaluated before the receiver decides to accept or reject it. It is here that discrimination skills come into play. These skills enable the receiver to distinguish between what is appropriate or inappropriate for a specific situation.

In the process of accepting external information which can solve old or current technical problems, it is sometimes necessary to unlearn obsolete information (Cusumano & Elenkov 1994:203). In practice, this implies that small-scale farmers who were accustomed to sowing seeds that they had kept from the previous harvest, will have to learn to use hybrid seeds to ensure a better crop. However, for people of traditional cultures it is difficult to unlearn habits. It seems that they tend to cling to the traditional ways they are used to. (Todaro 1994; Pickering 1996). Small-scale farmers are hesitant to take risks. Only after they have real proof of the success of the new way of doing things will they accept new ideas or practices.

(d) Changing behaviour

Learning can also be seen as a cognitive process which brings about change not only to a person's knowledge base, but also a change in skills, understanding, value systems and behaviour. The manner in which we accept new information will eventually affect our behaviour. For example: small-scale farmers who accept and implement the practice of sowing hybrid seeds each year instead of seed kept from the previous harvest, will finally experience the benefits when they harvest a larger crop. Their positive experience with the new hybrid seeds may bring about a change in their behaviour regarding traditional sowing practices. The same applies to the practice of cultivating the same patch of land year after year without realising that this causes the depletion of the soil's nutritional value. Experiencing the benefit of the introduction of fertilizer might change their behaviour regarding traditional practices that might be harmful and could contribute to hunger and poverty.

(e) Forming attitudes

Learning helps to form new attitudes and interests. A practical example of this phenomenon would be small-scale farmers who learnt new practices with regard to cultivating their lands and who experienced the advantages of the new practices. They unwittingly form new attitudes. Farmers who experience the benefit of cultivating their land correctly and preparing it in advance to benefit most from climatic conditions,

develop a responsibility toward farming practices that they never had before. Farmers who learn to observe signs of pests in their lands become more sensitive to such occurrences. Knowledge of pests and how to control them helps to change their attitude toward caring for their own crop.

With regard to small farmer practices, Ojo (in Ozowa 1995:18) observes that no-one is bound by the sets of values and traditional practices with which he or she grew up because the culture-set is continuously changing. He points out that a major function of extension services is to get the small-scale farmer into a frame of mind and attitude conducive to acceptance of technological change.

It is also often observed that people are knowledgeable about a certain phenomenon such as the risk of infection by AIDS, they know how to protect themselves, they do have access to means to protect themselves, but they have not done so. In such a case it is argued that knowledge alone is not enough. There is a need to change social attitudes, and this requires, among other things, debate and argument within and between societies (*Information and communication for sustainable development* 1998)

How the five building blocks of learning can be harnessed for the transfer of information in a cross-cultural attempt will to a large extent depend on the approach followed in training the target group(s) for the introduction of new technological practices.

(ii) Training

Where the transfer of information is directed at a user group that is unfamiliar with a product or process, or how to apply technology effectively, training of recipients is inevitable. One can see training as an initiative taken by the sender of information (developer) to enhance understanding – or to extend the receiver's (target group's) knowledge base so that they can understand and accept incoming information. Through training, the target group's capacity is increased to make sense of and apply information they receive (*Information and communication for sustainable development* 1998).

Often the transfer of information regarding a particular technique or process requires a whole range of expertise. For example: To grow maize effectively, a small-scale farmer needs to know about more than just planting and harvesting. Knowledge concerning soil preparation – as well as soil conservation – fertilizer, pest control, marketing and loans is also required. Apart from the "know-how", "know-why" is also needed. This can only be obtained through training programmes that should extend over a prolonged period of time (Aasen et al 1990:31).

Training in more than one field of understanding seems to be the case with small-scale farmers where a considerable lack of understanding of effective farming practices and a general lack of technical know-how are experienced. Under such circumstances training seems to be a prerequisite (Röling 1990:15; Madu 1992:11-12). Apart from the lack of understanding, there often seems to be a general attitude of resistance to cultural, social, economic and technical change which it is believed can only be overcome by educational and training efforts (Rogers 1992:3; Bouyer 1995:49).

Considering the above, the purpose of training will be to develop the building blocks for learning among members of a target group. The aim will be to achieve understanding and acceptance by promoting awareness, developing coping skills, and changing attitudes. In achieving this, it will be possible to develop a capacity for self-reliance, ensure long-term progress, modify and improve technology, communicate in simple and effective language and to motivate people to take responsibility for themselves and enable them to make informed decisions.

To understand how training could be used to ensure the successful transfer of information, it is necessary to consider a number of factors that may influence this step in the transfer process. These are, inter alia:

- approaches followed in training of small-scale farmers
- adult education and small-scale farmers
- the training methods that are applied

(a) Approaches in training

When considering the approaches in training that were followed in the past, it is evident that the training action was used to impart selected technical skills and knowledge. This was known as the directive approach. In this approach the developer usually transmitted information to a particular target group. Transmitting implies that very little of the content of the message is changed or adapted during the transfer process to accommodate the target group's level of understanding. The content, methodology and setting of such training were usually all determined by the trainers on the developer's side. In such training programmes the small-scale farmers merely acted as passive recipients of whatever the trainers had to offer. This kind of top-down training originated in the era of input development where problems were seen as technical in nature and it was believed they could be solved with relatively simple solutions (Bhasin 1991:9-10; Rogers 1992:112; Wallace 1994:6).

When the development approaches changed to that of participation, training was no longer viewed in the narrow technical sense. Today the basic thrust is to enable by way of facilitation rather than dictate and enforce. Participatory training entails a new way of working with the target group. Training is now more situation specific, based on the reality as experienced by the target group in their daily life and working environments. The present approach is to build on existing skills, knowledge and experience of the target group – that is, beginning with the known and advancing to the unknown. It also implies a new role for target groups who are now expected to take responsibility for their own learning (Van Zyl 1993:1; Norrish 1994:16-17).

According to Staley (1994:13-15), training is no longer seen as an isolated act of imparting factual information. Instead the contents of a training programme need to be well planned and managed. Within the boundaries of timing, size of the group, participation in decision making and setting objectives, the agenda is determined by the interaction of the group members. However, it should be borne in mind that participatory training does not mean a totally unstructured approach. The part where learners are helped to understand new concepts, or to relate them to existing knowledge (this is the teaching phase) remains structured.

(b) Adult education and training

Since so many of the small-scale farmers in rural areas in South Africa are elderly people, originating from oral cultures and seldom exposed to formal education, it is obvious that they have neither the ability, nor the background knowledge to benefit from information packaged for utilisation in industrialised or modern practices. So, one can argue that due to their lack of background knowledge or inability to access information for modern practices, information becomes less of a resource for development among target groups in rural communities. However, adult education and training can play an important role to add value to information as a resource for development, provided it is applied within the context of a particular situation. Therefore, it is necessary that development agencies should be made aware of how adult education and training could feature in their projects or programmes. Since most small-scale farmers are illiterate adults, it is inevitable that adult education and training will play a vital role in the transfer of agriculture related information.

Unfortunately adult education is often seen as literacy training, which is not essentially the case. Adults can use information without being literate. In developing communities adult education can take many forms, such as community and environmental health education, nutrition, income generating programmes, agricultural extension, and vocational skills training. Most important of all is that the training programmes should be planned and include systematic learning activities in which adults participate voluntarily under guidance (Rogers 1992:29).

However, it seems that more often than not the agents responsible for the training of target groups in rural areas are not always au fait with adult education and training practices. As a result Rogers (1992:122) mentions that adult education and training are frequently omitted from development programmes, or are routinely out of action; or narrow technical training without wider understanding is all that is offered; or there will always be the temptation to take short cuts, because planners feel they do not have time to engage in such a lengthy process – the task is too urgent!

(c) Training methods

Training as a form of transferring information to small-scale farmers is usually a face-to-face action. The manner in which this transfer takes place forms the core of the process. The extension worker or field worker becomes the trainer and the small-scale farmers become the learners.

Teaching helps to hasten or reinforce the ability to relate external information to existing knowledge. It helps to build knowledge and form associations, to memorise, evaluate and develop skills. In the case of illiterate adults, teaching is essential to ensure a successful linking effort. The trainer should also have a very good insight into the target group's traditions, norms, values, the amount and level of information required, as well as the environment in which the practice will take place. The latter forms the frame of reference of the target group. If the transfer effort does not comply with their way of understanding, they will not accept the information or technology offered through training (Dissanayake 1986:270).

5.4.4 Implementation

After training it is possible that the target group will understand and accept the information and acknowledge that it is a valuable resource, but still not implement it to their own advantage. So, the next step will be to initiate implementation. Thus, implementation is that step where information about a process or programme that has been introduced to the target group during the teaching and training step, is put into practice. In Rogers' route-to-change model, the implementation phase is called the action step (Rogers 1990:143). This is where the information that has been processed and accepted is now translated into action.

To achieve implementation of new or outside information among small-scale farmers, the continuing support of the trainer is required. He or she will have to guide and facilitate the target group during this step. In practice this means that the target group will apply what they have experienced in a trial run under the watchful eye of the trainer (Rogers 1992:143). What has been learnt during the teaching sessions can now be related to practical situations in the field. For example: small-scale farmers were taught to plough deep enough to obtain maximum results. During a field visit the group can be shown practically what depth to plough. In this way perception building is intensified and the learner becomes more receptive to chunks of information that can be related to a specific situation.

During implementation the transfer act still continues, because the learner now applies his or her knowledge of different aspects of a topic or issue in an integrative manner (Röling 1990:34). This means that all information with regard to cultivation, using and caring for implements, harvesting, marketing, transport and loans will be applied in decision making to carry out the required activities when needed.

5.4.5 Evaluation

In Rogers' route to change, the fifth step is when desired change is achieved. However, in the transfer of information we need to add another step. That is, evaluation of the course of the transfer process to determine whether the strategy followed has resulted in change.

Usually the transfer process is viewed as completed when the provided information is understood, accepted and implemented. However, the transfer of information is not an end in itself, but an ongoing process. Therefore it is necessary to evaluate training programmes to assess whether the goal has been achieved and to learn from failures and adjust the plan of action. Through evaluation, in which the target groups should participate, they can be helped to move on to new or more advanced programmes. Evaluation also serves as a justification to donors of what has been achieved (Rogers 1992:218).

Since the aim of information transfer is to contribute to the development of the individual as well as the target group's knowledge base, skills and understanding, it is important to establish the effect of the transfer process. In order to evaluate the effectiveness of the transfer process, a number of issues need to be considered. These can be

categorised into two broad groups. They are: issues relating to information as a resource and issues relating to the target group. The evaluation step is illustrated in the table below, followed by a more detailed discussion.

Table 5.3 Evaluation of the transfer process

Information content	Effect on the target group
• Ease of use • User friendly • Relevance • Adaptability • Acceptability	• Awareness raising • Training methods • Capacity building • Change in attitude • Change in behaviour

(i) Evaluation related to information content

As far as the value of information as a resource for development is concerned, it is important to determine whether the information content complies with the following requirements, which will result in either acceptance or rejection by a target group:

- **Ease of use**

  Information should be made easy to understand and easy to use for a particular user group. Considering the lack of background knowledge of industrial information among rural people, it is important that the information should be presented in a simplistic manner, which does not require extra input in the form of cognitive energy. It should be quicker to apply and be more cost effective to be affordable for the potential users.

- **User-friendly interface**

  The interface between the developing agent and the target group is crucial for the acceptance or rejection of information as a resource. A user-friendly interface requires a thorough understanding of the users' level of understanding, their information behaviour and their existing system(s) of interaction to transfer information.

- **Relevance**

  Relevance has to do with the appropriateness of information for a specific situation. Care should be taken that the target group is not swamped with unnecessary detail which makes it difficult to choose – particularly if its members do not have very much background knowledge of a particular technology or practice.

- **Reliability**

  Unless information is correct, comprehensive, current, reliable and appropriate for a specific situation, it is possible that it will not be accepted by a target group.

- **Adaptability**

  Considering the circumstances of a target group unfamiliar with information or technology originating from industrialised countries, it is extremely important that the information should be adapted to or "translated" to accommodate the user's style, level of sophistication, opinions and idiom.

- **Acceptability**

  External information introduced to a target group of a different cultural system, will be sanctioned by the latter's frame of reference. Any outside information introduced to a community needs to be legitimated in the eyes of the community before it will be accepted. When information is transferred through culturally accepted opinion leaders, it is more likely that it will gain wider acceptance (Dissanayake 1986:270).

(ii) Evaluation related to the target group

Apart from content related issues which might influence the effective transfer action, the manner in which information is transferred to a target group will to a large extent determine behaviour that might lead to the acceptance or rejection of provided information.

- **Raising awareness**

  Raising awareness implies that the target group is given insight into a practical situation that might be improved if they knew and understood how to apply new practices. All depends on how the target group is approached. It should be determined whether the approach followed was effective in raising awareness, and if the target group is willing to participate in actions to bring about change to improve their standard of living.

- **Training methods**

  When training methods prove to be inappropriate for a specific target group, they can act as barriers for the transfer of information. It should be established whether the methods used in training help to expand horizons. That is, to improve the ability to relate external information to existing knowledge, develop cognitive skills so that a variety of information can be used integratively for a specific situation. It should also be established whether the training methods help to develop the target group's physical skills, and if the group is able to use newly presented technology correctly.

  It should also be assessed whether different teaching approaches such as story telling, role playing, illustrations and demonstrations were appropriate for the specific target group to enhance associative learning and visual memory.

- **Capacity building**

  Capacity building has to do with the individual's or target group's ability to assimilate newly provided information, match it to needs and problems of a particular situation and then be able to take appropriate action. Within the context of this investigation, capacity building manifests in practice in actions such as deciding to select the correct maize seed for planting in a specific area, ensuring that ploughing activities are carried out at the correct depth, or knowing when to apply weedkillers to eradicate weeds effectively. If all these informed decisions contributed to the improvement of farming practices, as well as improving of the standard of living of the target group, one can claim that, in the longer term, information transfer contributed to capacity building.

- **Change in attitude**

  Change in attitude can be evaluated by comparing the relationship that existed between the target group and the development agent before the training took place and the relationship that existed afterwards. For example, if there was distrust among the target group regarding the proposals of a development agent, and the newly provided information is presented in such a way that it brings about new insights, the distrust may change to mutual trust between the field workers and the target group. If positive change took place, it is possible that the field workers may gain credibility among the target group, which usually results in their accepting provided information as reliable. This will be proof of a change in attitude as a result of information transfer.

- **Change in behaviour**

  Change in behaviour has to do with the manner in which farming practices were carried out in the past, and how they have changed as a result of the transfer process. For example, if farmers came to realise that their cultivated lands would wash away unless they took the correct precautions, they would take responsibility for themselves. Understanding the consequences of irresponsible cultivating practices and taking responsibility for oneself is evidence of a change of behaviour.

It seems evident that the evaluation of transfer activities is a crucial step to ensure that information is not only accepted and implemented once, but that its utilisation becomes a routine, or that it ensures the everyday use of the technology it accompanies. Furthermore, the evaluation of transfer activities provides valuable feedback for adapting existing transfer systems to comply with the requirements of a specific user group.

5.4.6 Routine application of transferred information

In Rogers' route-to-change, the final phase or step is when the desired change is achieved. This implies a higher standard of living, alleviation of hunger, or an increased income for the target group. In the transfer of information, the desired change is

achieved when the implementation of the obtained information or technology becomes a routine operation in the practice for which it was meant (eg techniques for effective maize production). In effect this implies that the effective transfer of information and technology contributed directly to development of the target group(s).

From the above discussion of the different steps in the transfer process, it is evident that the transfer of information is a complex process which depends to a large extent on the nature of the type of information, and also the ability of the target group to absorb and link the particular type of information to their knowledge base. The further removed the target group is from the outside information, the more effort is needed to make it acceptable to the user group.

Now that we have determined what steps are required to transfer information effectively to rural communities, it is necessary to establish what mechanisms would best facilitate the transfer process within the rural context.

5.5 LINKAGE MECHANISMS REQUIRED FOR RURAL COMMUNITIES

Apart from the steps to be taken to initiate the transfer process, the linkage mechanisms used to transfer information effectively to rural communities are equally important, especially when one thinks of the purpose of the transfer process, that is, to link the potential user with information. For this linking process a number of linking mechanisms have evolved over time to provide for the needs and preferences of both senders and users of information. These linkage mechanisms range from personal, informal, and face-to-face communication between persons, to highly sophisticated technology-driven information systems where senders and receivers are not known to each other. Modern information technology enables access to masses of information in a relatively short time and disseminates information over long distances.

Unlike users in the developed world who are used to its sophisticated information systems, users in developing communities are exposed to linkage mechanisms of both the indigenous information system and the modern information system. Considering socio-economic conditions in rural communities, the level of development and norms and values of people originating from an oral tradition, it seems obvious that not all linkage mechanisms that are taken for granted in the modern world will be experienced as equally useful by the potential users in rural communities – in our case the small-scale farmers. The appropriateness of linkage mechanisms in rural communities will depend to a large extent on the users' abilities and preferences in accepting these linkage mechanisms.

In the following evaluative discussion of a select number of linkage mechanisms, it should become evident to what extent these mechanisms could be useful for the transfer of information to rural communities. First the linkage mechanisms of the indigenous information system are addressed, followed by a discussion of a host of media, channels, procedures and events of the modern information system that could serve as linkage mechanisms to a greater or lesser extent. Their appropriateness for small-scale farmers is pointed out in each discussion.

The linkage mechanisms to which target groups in rural communities are exposed currently, are categorised and displayed in the table below:

Table 5.4 Linkage mechanisms

Indigenous information system	Modern information system
• **Communication channels** • **Informal networks**	• **Media**: *Oral presentations* *Sound recordings* *Visual displays* • **Channels** *Printing Channels* *People* *Telecommunication* • **Concrete procedures** *Awareness raising* *Training* *Extension services* • **Events** *Discussion groups* *Field days* *Demonstrations*

5.5.1 Linkage mechanisms of the indigenous information system

Linkage mechanisms of the indigenous system originated in the oral tradition where space, time and storage capacity determined the nature of the mechanisms which had to link people with information. In the developing world where people are not familiar with reading and writing to record information, they are much more dependent on their senses of hearing, seeing and memorising to collect, store or transfer information. Therefore, their linkage mechanisms have developed along these lines, as will be indicated in further discussions in this section.

(i) Traditional communication channels

The indigenous knowledge system has been developed and used for centuries in traditional or oral communities. Indigenous knowledge is communicated through traditional communication channels and oral literature forms such as folk tales, poetry, songs, drama, dances, taboos and ceremonies (Botha 1991; Mchombu 1992a:67). Usually information is transferred by word of mouth and is often limited to the boundaries of a specific community.

A main obstacle to the production and transfer of indigenous knowledge is that transfer from one generation to the next does occur, but without being organised in some form of permanent record (Lundu 1989; Pickering 1996:448). Recording of indigenous knowledge depends to a large extent on collective memory, which is maintained through

mnemonics (through stories, songs, etc) and mime (drama, dances) (Botha 1991:16). Recording depends on what individuals remember and forget. In each generation the individual memory will mediate cultural heritage in such a way that the new components will adapt the old components in the process of interpretation. In effect this implies that what seems to be of social relevance is stored in memory and the rest is usually forgotten (Goody & Watt 1963:307). Thus, only what is retained in memory can be recalled.

(ii) Informal networks

In traditional communities the exchange of information usually takes place through personal contacts. Kaimowitz, Snyder and Engel (1990:239) report that a patron-client type of network is found among small-scale farmers where stronger members take on the role of patrons and the rest of the members assume the role of the clients. When goods and services are exchanged it is usually patrons who benefit most. Mchombu (1992a:67) expands on this informal network referring to its two parts, namely, the public goods domain where everybody has free access to information, and the propriety goods domain held by experts in the rural community. Ordinary members may use the latter only after paying a small fee.

Therefore, it seems that the informal networks of the indigenous information system are much more dependent on personal relationships. It depends on a person or a group's recognition within community structures, whether exchange will be sanctioned or not. Cognisance of this phenomenon is important to developers who intend to transfer information to small-scale farmers on an equal basis.

5.5.2 Linkage mechanisms of the modern information system

As opposed to the indigenous system, the modern information system reveals a much more formal and impersonal character. Although people also act as linkage mechanisms, there is a much more deliberate effort to harness technology to devise linkage mechanisms that can communicate more information faster to whoever might be exposed to it. In this sense Röling (1990:29) refers to a linkage mechanism as a concrete procedure, regular event, arrangement, device or channel that bridges the gap between available information resources and users. However, he does not refer to either people, organisations or media as linkage mechanisms.

For the purpose of this discussion, we will distinguish between people (individuals and organisations), media, channels, concrete procedures and regular events as linkage mechanisms to transfer information to rural areas.

(i) Media as a linkage mechanism

Table 5.5 Types of media

Oral media	Sound recordings	Visual media

Printed media can be viewed as linkage mechanisms in which written messages are packaged to be offered to a fairly unknown audience, provided that receivers of these messages are able to read and decode them. The receiver(s) of printed media can be separated from the sender(s) over time and space. The advantage of this type of linkage mechanism is that the message can be referred to if something was not understood the first time, because it is recorded.

Farm journals and magazines, newsletters, leaflets and pamphlets are a few of the printed media that could be used by agricultural organisations to interact with their user groups at ground level. These types of media are used either to arouse interest, or to explain issues regarding a certain product or process (Bembridge 1991a:69-72). Unfortunately they are of little use to people who cannot read. Thus printed media as a linkage mechanism have no value for illiterate small-scale farmers.

(a) Oral media

The traditional form of oral transmission – such as conversations, speeches and story telling – requires people communicating to be in hearing and usually visual distance of one another. This type of transmission is interactive and the sender of information can tell from the receiver's reaction whether the message is being understood. A disadvantage of this linkage mechanism is that information cannot easily be transferred over space and time. Despite its disadvantages, this linkage mechanism has advantages over printed media for illiterate receivers in rural areas. Since they cannot fall back on information recorded in writing, they have developed a remarkable ability to listen intensely and have developed sharp memories (Fuglesang & Chandler 1987).

Oral communication can also be transmitted electronically by way of sound waves such as radio broadcasts, but then it is not interactive and the receiver of the message may understand it completely differently to the way it was intended to be understood. Usually this type of message is transitory and is recorded in the receiver's memory in the way it was understood (partly, incorrectly or not at all). It is not possible to stop the speaker or the broadcast to listen again if one did not understand or hear it the first time, unless it is recorded on audiotape.

(b) Sound recordings

Sound recordings such as phonograph records, audio tapes and compact disks are modern technology that can be applied as linkage mechanisms to reach audiences that are separated from the sender across space and time. However, cassette recorders are not very common in rural areas and people need to know how to use them in order to access the information that is packaged in this format.

The receiver should also have enough background knowledge of the information content to interpret the way it was intended to be understood, since there is no interaction with the sender. However, it has an advantage over other media such as radio broadcasts, because it can be stopped and replayed, and the listener does not have to listen at a specific time of day. Furthermore, it can be played over and over again. Unfortunately this type of linkage mechanism can pose problems to small-scale farmers who are

introduced to new farming practices and are familiar with neither the information content nor the message format.

However, under circumstances where the information content is understood, these media can serve as reinforcement and support mechanisms. By using traditional methods of teaching such as story telling, proverbs, riddles and poems, sound recordings could serve as a valuable linking mechanism. Querre (1992:55) rightly argues that rural people are used to listening to stories for entertainment and enlightenment.

(c) Visual media

Visual media such as pictures, illustrations, posters, graphics, drawings, comic strips, films and slides could be used constructively in linking users with information. However, only simple messages can be conveyed. So, visual media act mainly in a supportive role where new information or technology is introduced to small-scale farmers as a target group.

On the electronic side, there are audio visual recordings. At present audio visual recordings of information are exclusively available on video-cassette tape. In an agricultural setting they could be used in demonstrating farming practices and results of farming techniques. They have the advantage that they can be replayed many times. It is, however, important that the viewer should have a basic understanding of the practice or technique. Another drawback for small-scale farmers is the high cost of the equipment and also the need for electricity. So, at best audio visual media can play a mainly supportive role – especially where information has been transferred through training programmes.

(ii) Channels as linkage mechanisms

Table 5.6 Types of channel

Print	People: Individuals Organisations	Telecommunication: Broadcasting Television Computers

There are, broadly speaking, three types of channels that act as linkage mechanisms. These are printing channels, people and organisations as channels, and telecommunication channels. Each one of these has a greater or lesser impact as a linkage mechanism in the transfer of information to small-scale farmers in rural areas.

(a) Printing channels

Printing channels include publishers, bookshops, libraries and resource centres. Considering that small-scale farmers in rural communities are mostly illiterate adults, one can appreciate that reading is not a means through which they will search for information. Thus, it seems that publishers, bookshops and libraries as storehouses of

information in printed format, have less effect as linkage mechanisms for information transfer to rural areas. Rosenberg (1993:33) stated with regard to development in rural areas in Africa that there is enough evidence to suggest that libraries may not be the answer. With regard to rural libraries she reports that they have a certain almost classic life cycle in developing communities. Originally they are set up by a group from the community or an aid agency. Their birth is followed by a year or two of rapid growth, followed by a period of slow decline, accompanied by theft, departure of the initiators and loss of interest among staff members. The final stage is reached when all books have been removed, stolen or damaged beyond repair, and the premises and staff are allocated for other activities.

From the above it can be deduced that printed media as carriers of information are not held in high esteem in a predominantly oral society where adults act as role models for the younger generation. This phenomenon should be carefully contemplated by developers when considering the different linkage mechanisms for information transfer to target groups at grassroots level in rural communities.

(b) People as communication channels

Here too we can distinguish between people as individuals and people operating in an official capacity in organisations.

- **Individuals as linkage mechanisms**

  Individuals who have the most impact as linkage mechanisms are those who have direct contact with small-scale farmers at grassroots level. These include transfer agents, field workers, extension officers, facilitators, trainers and often subject specialists. These people carry a heavy responsibility to act as linkage mechanisms. Firstly they have to gain credibility from the target group, they need to understand their way of life, their needs, their problems, their norms and values and their level of understanding. Secondly they need to understand the technology, processes and products they have to introduce on behalf of development agencies or authorities. These types of individual form the last link in Everett Rogers' homolific chain. One can also refer to them as the boundary spanners between the resource system and the user system of Havelock's interactive model.

- **Organisations as linkage mechanisms**

  From the side of the developer as sender we can identify multinational corporations, consortiums, scientific institutions, government authorities, NGOs, regional organisations as some of the more prominent organisational linkage mechanisms. Local authorities, agricultural unions and farmers' associations could be viewed as linkage mechanisms on the receiver's side. Most of these organisations to a certain extent control how much and what type of information is transferred to target groups at grassroots level. Usually their first priority is to enhance development by helping rural communities to become economically sustainable. Although they indirectly contribute to transferring information to rural areas, it is doubtful whether they see themselves as linking mechanisms. However,

it can be assumed that the more they understand about the value of information, the role of the transfer process, as well as the user profile of the target group, the more willing they will be to accept information as a useful resource in development.

(c) Telecommunication channels

- **Broadcasting**

Radio plays a significant role in entertainment and communication in rural areas. It is a cheap and accessible means of mass communication. It is often regarded as the ideal medium to use for communicating information to oral societies, because radio programmes can reach a vast population. It has the advantage that it can overcome the literacy barriers faced by printed media.

Unfortunately it has the disadvantage that it is not interactive. A radio broadcast proceeds at a given pace and cannot be stopped and played back if something is missed. The effectiveness of radio as a linkage mechanism depends on how it is used to transfer agriculture related information through regular programmes and interviews for awareness raising purposes. Radio information usually lacks detail, because programmes are limited to a certain period that lasts only a short time. So, topics might be presented superficially, which might be good for raising awareness, but not good enough to transfer factual information with the intention of getting new practices accepted and implemented.

Usually radio broadcasts are based on scripts that reflect and are deeply influenced by the linear or sequential written structures of discourse. This means that the structure is similar to that of printed material – unfamiliar to rural people of an oral tradition.

Although radio seems to be a favourable linkage mechanism to transfer information to rural areas, Bembridge (1991a:76) reports that it is unlikely that it will take the place of group discussions, field days, farm visits and so on, but it does complement them.

- **Television**

Television offers an added benefit of visual representation as well as sound. This can have an important advantage for people with a limited experience of a certain topic. They can see what certain things look like as well as hear about them. Another advantage that radio broadcasts do not have, is that if viewers are not too familiar with the language in which a programme is broadcast, the images still convey information. This can have an enormous educational benefit. However, it has the disadvantage that pictures can be manipulated to produce false information. Visual effects can play an important role in encouraging receptiveness and helping viewers to believe what they see on television.

- **Computers**

  Computers are facilities that make it possible to access information recorded electronically whether printed or audiovisual. Through computers it is possible to set up electronic networks, which enable users to exchange information more widely than ever before, provided the necessary infrastructure is available. In order to benefit from this linking mechanism, the user not only needs to be literate, but also needs to be computer literate. Considering the status of literacy among small-scale farmers in rural areas (ie elderly and illiterate), it is doubtful whether they will make use of this linking mechanism directly. However, it remains a useful mechanism for facilitators who are capable of using it and who can obtain information needed by their target group.

(iii) Concrete procedures as linkage mechanisms

Table 5.7 Types of procedure

Awareness raising	Training	Extension

By concrete procedures as linking mechanisms we understand practices that take place on a regular basis to transfer outside information from the modern world to target groups in developing communities in rural areas. Among these are awareness raising programmes, training programmes and extension services, which are discussed below.

(a) Awareness raising mechanisms

Awareness raising has to do with a sender of information's attempts to introduce a concept, procedure or product that is completely new to the receiver. Announcements can be made or advertising can take place through media and channels such as publications, radio, television, demonstrations during field days or farmers' days, or face-to-face communication during group meetings, presentations and so on. Most of these mechanisms are directed at a relatively unknown target group and the intention could be more that of wide distribution in various directions. A certain amount of understanding on the side of the receiver is assumed.

Considering that most members of the target group are illiterate, printed advertisements or any other written form of awareness raising mechanisms will be less successful. Usually development agents use face-to-face means of communication to raise awareness. Introduction of new information or technology can take the form of a meeting with the target group, where the purpose and advantages of a new method or technique will be explained. The introduction of new practices can also be demonstrated to the group. It should be kept in mind that if the target groups are treated as passive recipients during these programmes, the acceptance of information or technology remains doubtful.

However, in the case of development programmes, the developing agent is concerned with the acceptance of new concepts, procedures or products to change circumstances

for the better. More deliberate attempts are used where awareness raising programmes are designed in which the target group participates from the initial contact phase by identifying circumstances where they become aware of inefficiencies. The purpose of awareness programmes is to share perceptions rather than informing (Rogers 1990:134). Depending on the circumstances and the type of technology to be introduced, participatory rural appraisal (PRA) methods such as community mapping play an important role as awareness raising mechanisms.

(b) Training programmes

Training could be seen as a formal instructional process under the guidance of a trainer or extension worker who has the special task of introducing new ideas, knowledge and skills (Bembridge 1991a:47). Rogers (1990:5) sees training as the basis for a wider educational experience, for example, to expand horizons rather than just extending competencies. However, both agree that training is a planned form of learning.

In the case where developers wish to introduce new products or processes to small-scale farmers, training programmes prove to be strong linkage mechanisms – especially in instances where there is a need to develop agriculture from scratch among fairly inexperienced farmers. Through training programmes, external information is introduced step-by-step, which stimulates creativity among individuals in the target group. Röling (1990:28) feels that instead of forcing innovation on farmers, it is better to enhance capacity by teaching how to become more innovative.

The different teaching aids used to link illiterate adult learners with outside information are rather important. For example: demonstrations, acting and story telling are often used to emphasise important issues such as selecting the correct fertilizer for a specific area, or stressing the importance of regular weeding of maize fields. People from an oral tradition are familiar with these means of information transfer (Goody & Watt 1963, Botha 1991) and can relate to them easily.

Training programmes for rural farmers, which are a face-to-face exercise, often include visits to crop fields where the original transfer of facts is extended to practical experiences. Thus the advantage of such training programmes is that the linking is expanded to related fields of interest, rather than limited to the passive transmission of facts.

(c) Extension services

Extension in essence is a process of working with farmers and their families to help them gain and apply knowledge and skills to solve their problems, and improve the quality of their lives (Mortiss in Bembridge 1990:196).This short definition of extension implies a personal face-to-face contact with the target group – it is therefore an ideal linkage mechanism for the transfer of information to small-scale farmers in rural areas.

Since most small-scale farmers are from an oral tradition, they depend to a large extent on face-to-face communication for information flow. With personal contact, information can be exchanged regarding needs and problems of small-scale farmers, and extension

officers can explain certain practices if they are not properly understood the first time. For example: a training programme extended to regular field visits appears to fulfil an important role, not only by intensifying what has been learnt in the training programme, but also by promoting practical demonstrations and trust building. It allows for information exchange about availability of inputs and equipment, price structures, loans, policy issues and also trouble shooting regarding many other agriculture related problems experienced by the target group. These are some of the reasons why Bembridge (1991a:38) maintains that the power of extension work lies in the strong interpersonal connections with individuals and groups, and that effective communication is the surest way to maintain these linkages.

(iv) Events as linkage mechanisms

Table 5.8 Types of event

Discussion groups	Field days	Demonstrations

With events as linkage mechanisms, we understand opportunities that are initiated from time to time to introduce a new technique or procedure, or to transfer information regarding a particular problem and which can improve current practices.

(a) Discussion groups

In the agricultural context a discussion group can be defined as a group of farmers with similar farming interests and a common goal (Bembridge 1991a:96). As a linkage mechanism, its value lies in the fact that it enhances information exchange among members of the group. Knowledge, abilities, experience and opinions are shared. Information that might not be so well understood by the individual could be explained by members of the group and consensus can be reached. In this way the group is used as a sounding board to help sort out uncertainties.

Extension workers, who seem to be the initiators of discussion groups among farmers, use this opportunity to link farmers with available information to fill knowledge gaps and facilitate problem solving in the group.

Considering the importance of the opinions of a group among traditional cultures as compared to those of individuals, one would assume that the establishment of discussion groups among small-scale farmers would be popular. However, both Röling (1990:33) and Kaimowitz, Snyder and Engel (1990:239) report that a lack of social organisation among small-scale farmers poses considerable barriers to development. Little effort is made other than that applied by foreign donors. Where group committees are formed with the help of the field workers of a training programme, they form an important link between the field worker and the target group for the exchange of situation specific information.

(b) Field days

Field days or farmers' days are usually large gatherings organised as a means of demonstrating farming practices, or to introduce new farming equipment or tools (Bembridge 1991a:126). Commercial firms are often invited to introduce and display their products.

Unfortunately they do not provide an opportunity for learning new skills and are unlikely to lead to the adoption of such skills. In essence they serve as awareness raising linking mechanisms where farmers come into contact with experts and new products and programmes that may help to improve current practices.

(c) Demonstrations

In a farming setting, demonstrations are used where farmers who are already convinced about a new practice are shown step-by-step how to use a new product, programme or technique, for instance, how to plant vegetable seeds, or how to apply insecticides (Bembridge 1991a:131).

Demonstrations could play an important role in information transfer to small-scale farmers, because there is interaction between the sender and the information in a visual and tangible way. People originating from oral traditions are keen observers and can easily relate to demonstrations. This behaviour of rural people confirms Ong's observation that oral cultures tend to use concepts in situational frames of reference, which are minimally abstract in the sense that they remain close to real-life situations (Ong 1982:49). Would-be developers could benefit by taking cognisance of this phenomenon.

The linkage mechanisms discussed above are by no means complete. However, to a certain extent they demonstrate those more actively used and adapted for transfer of information to rural communities. Their characteristics also reveal that some of them are more effective for awareness raising, while others such as training, extension and demonstrations are more appropriate for the step involving the development of knowledge skills and understanding of concepts. It seems that those that focus more on the informal face-to-face exchange of information are more acceptable among target groups originating from an oral tradition. To summarise, one can divide the linkage mechanisms discussed into two categories, that is: those more appropriate for direct transfer to the end user (small-scale farmer), and those appropriate for transfer to the trainer or intermediary who represents the interface between the resource system of the developed world and the users in the developing world. These categories are illustrated in the box at the end of this section.

It is also evident from the discussion above that investigators have to be aware of two sets of linkage mechanisms that could serve rural communities. These are linkage mechanisms of the indigenous knowledge and information system, and those of the information system of the modern world. Both sets have shortcomings as well as advantages. If used with discrimination, they could complement each other to the benefit of the target group(s).

Table 5.9 Appropriateness of linkage mechanisms

Less used in rural communities	Frequently used in rural communities
Oral media Sound recordings related to modern technology **Visual** media, eg films, slides, graphics, video-cassettes **Print** Books, journals, magazines, pamphlets **Organisations** Government authorities **Telecommunication** Television Computers **Training** Formal education	**Oral media** (stories, poetry, songs, etc) Traditional (informal) networks **Visual media** Pictures, drawings, demonstrations **People** Individuals: trainers, facilitators **Organisations** Local authorities **Telecommunication** Broadcasting **Training** Situation specific training **Extension**

5.6 BARRIERS THAT CONSTRAIN THE TRANSFER PROCESS

According to Havelock (1986b:85) a barrier is something that helps to define a certain area, such as a system of some kind. The barrier is supposed to prevent things entering from outside a system, and to preserve the integrity of the system. With regard to information systems, one can expect that the manner in which information is used by interested parties within the system (their information behaviour) will help to define the system's boundaries to a large extent. However, barriers to information systems are not completely impenetrable. They simply make it more difficult for information to flow from one system to another.

Barriers within a system also control flow, allowing messages to move in certain directions but not in others; allowing certain aspects of messages to be transmitted but not others. In this way barriers allow permeability to a certain extent. In this context Havelock views a barrier as a semi-permeable membrane through which certain transformations take place. What enters on one side will not be the same as what comes out on the other side. As far as information transfer is concerned, Havelock (1986a) sees barriers as all structures and circumstances that prevent the connection between information and a potential user.

From the discussion on what the transfer entails, it is apparent that the transfer process is a linking or connecting process. With regard to transfer of information from the modern world to a developing community, it is often an entirely new connection where nothing existed before. It can be expected that this can be very difficult, especially when there is a difference in culture (Havelock 1986b:78). Some of the most serious problems

experienced in the transfer of information between a development agent (as sender of information) and a target group (receiver) in a rural community, are to overcome the numerous barriers encountered during the course of a development programme. Very often development workers experience that almost all requirements have been met, the target group understands the concept or practice explained to them, they may know how to apply a skill, or fully understand the consequences if they do not act upon the appearance of pests among their crops, and yet they will not do it. Rogers (1990;139) ascribes this phenomenon to a resistance to change in attitude – thus a target group barrier. This is but one type of barrier. There seem to be many more as will be pointed out in this discussion.

From what we have learnt about circumstances and structures present in rural communities so far, it seems that barriers to information transfer can be related to features of information, the transfer process per se, the impact that approaches may have on the transfer process, and actions of different people and organisations involved in the linking of information with a target group. Three different categories of barriers are illustrated in the table below and in the following discussion.

Table 5.10 Barriers to information transfer activities

Information related	Transfer related	System related
• Language • Format • Acceptability	• Training • Space and time	• People • Environment • Modern info systems • Indigenous info systems

5.6.1 Information related barriers

From the literature consulted for this investigation it is evident that issues related to the nature of information can act as barriers. A number of authors, such as Glaser, Abelson and Garrison (1982:30), Ozowa (1995:18) and Pickering (1996:450) identified features of information that can act as barriers to the usefulness of information as a resource for the development of potential users in rural communities. These are inter alia:

- **Language**

  The language in which information is presented often acts as a barrier. Ozowa (1995:18) found that very often small-scale farmers are not familiar with the technical language of agricultural information and as a result find it incomprehensible. In other instances where a predominant language such as English was used as the common denominator, small-scale farmers lost interest because they were only familiar with local languages. This was also confirmed by Mollel and Ralebipi (Ben Fouché & Associates 1999:96) who worked among small-scale farmers in the Northern Province, South Africa.

- **Format**

  Another major information related barrier is format. In the case of illiterate small-scale farmers, information offered in a written format will be considered useless because the receivers cannot read to decode the contents.

- **Acceptability criteria**

  There are certain criteria that information or technology needs to comply with to be accepted. Failing to comply with these criteria will certainly act as a barrier to the transfer of that particular type of information or technology. These are inter alia:

  Credibility - credibility depends on the user experiencing a positive change after applying the information. If the applied information does not contribute to any positive change, its credibility will be doubted.

  Observability - observability has to do with the opportunity for users to see the results of a product or procedure in practice. Unless users experience positive results from applied information or technology it could act as a barrier.

  Relevance - the positive results should be to the benefit of a large number of people. In this case the information or technology's credibility will increase among users. If the advantage of applied information or technology does not materialise on a large scale, it will not be viewed as relevant and as a result will not be accepted.

  Relative advantage - unless users are convinced of its relative advantage over existing practices, they will be hesitant to accept newly introduced information.

  Ease of understanding and installation - if users experience difficulty in understanding a newly introduced practice, or are uncertain how to apply it, they might be hesitant to accept it.

  Compatibility - unless newly introduced information is compatible with previously established values, norms, procedures and facilities there is less chance that it will be accepted by a target group.

Closely related to information related barriers are technology related barriers. Pickering (1996:451) observed that a belief was held that development is equivalent to industrialisation. It soon became clear that information systems of the developing world were inadequate to ensure the transfer of scientific and technical information and its desired impact. Technology alone cannot generate the principles to underpin fundamental and vital human activities. Often a lack of skills to apply technical equipment, or a lack of spare parts will result in a loss of interest (Sturges & Neill 1990:48).

5.6.2 Transfer related barriers

Closely related to information systems are the manner, media and channels used to transfer information. From the discussion of the various mechanisms applied to transfer information to rural communities, it became evident that some are more appropriate than others and some are more effective at a certain stage of the transfer process.

- **Training**

  When training is used to transfer information it seems important that a host of issues regarding the target group's level of understanding, norms, values and so on should be considered in training programmes to avoid barriers.

  Approaches in training methods could act as barriers, for example, where information is merely transmitted to the target group who act as passive receivers (Wallace 1994, Rogers 1993a , 1993b). This occurred during previous development approaches such as the input-growth approaches where inputs inter alia consisted of new kinds of equipment and training. It was believed that knowledge once presented and grasped would be acted upon. An attitude of "give-knowledge-to-the-ignorant" (Rogers 1992:121) prevailed among policy makers. According to Rogers (1992:123) it is clear that the transfer of information and skills alone does not change behaviour. It is the presence of negative attitudes toward new practices that act as barriers. This could be prevented by the promotion of more positive attitudes through the development of confidence and focusing of motivation.

- **Space and time**

  Space and time are also transfer related barriers that could retard the transfer of information between the developing agent and the target group. Since most small-scale farmers cannot read or write, they depend on information in spoken and visual format presented at short distances. Audio-visual technology could be used, provided that the receiver group already has the necessary background knowledge to which they can link the incoming information for a specific situation.

  Information communicated face-to-face, demonstrated, or visually illustrated will have a much greater impact, because the recipients are familiar with these formats – provided they do have the necessary background knowledge to relate it to.

5.6.3 System related barriers

It seems evident that all human activity is dependent on the system to which it is tied. Every system is a subsystem of a larger system. We can regard the Agricultural Knowledge and Information System (AKIS) as a subsystem of a larger social system. The AKIS comprises a set of subsystems which are related to each other and its environment, organised in such a way that it can achieve its goal. Activities carried out within the different subsystems put the whole system in motion and help it to function properly. If components within the subsystems and the environment are not well

synchronised they act as barriers for information entering or exiting the system. These system related barriers can be grouped in the following categories:

(i) People within the system

Rogers (1992:77) and Pickering (1996:450) maintain that knowledge does not occur in a vacuum. The actors involved in the spread and innovation are members of a social system. Therefore, the transfer of information can never be viewed in isolation. It always forms part of an integral process.

Within the context of the agricultural knowledge and information system there are quite a number of role players responsible for the creation, innovation, adaptation dissemination and implementation of information. Role players in each of these groups – whether researcher, technologist, policy maker, development agent or extensionist – experience certain influences from their mental and working environments, which have an impact on their information behaviour (Meyer 1994) and, more specifically, on their transfer or dissemination efforts. For example: the scientist's reward system and the system of funding for research to a large extent determine whether research – to solve a particular problem – will be carried out. Their conventional manner of communication will determine to whom their research results are disseminated – usually to peers in their subject field and not necessarily to end users.

Policy makers such as governments, may be influenced by political and socio-economic opinions of a particular time frame. Even current development approaches may have a bearing on their decision making and policy formation. Aasen et al (1990:29) revealed that role players at government level are motivated to transfer information or technology in cases where development-aid funding is available. It is perceived that large, prestige laden projects will bring political prestige to governments and national prestige in the regional or international context.

In cases where private companies – acting as developing agents – are involved in projects where technology is transferred to target groups in rural communities, the motive will be strictly of a commercial nature. As Aasen et al (1990:28) aptly put it: "A technology supplier will rarely enter into a transaction without any expectations of profits". On the other hand, users on the receiver side will not easily accept or implement technical information if they cannot personally gain from it.

From the above it seems obvious that the different groups of role players have divergent goals or motivations as to why they will participate in the transfer of information. Even worse is that in a development situation they seem to be unaware that they form links in the information system which in the end initiates the transfer process. Each group of role players seems to act in isolation. This causes Sands (in Röling 1990:1) to comment that the links between the different role players in developing countries are generally recognised as a major bottleneck in agricultural technology and have received inadequate attention in the past.

(ii) Environment of the system

Within the environment of an AKIS there are a number of constraints that can act as barriers to the transfer of information. Röling (1990:20-22) identified a number of constraints that have to do with policy structures; operational structures (such as markets, input resources and infrastructure); political and bureaucratic structures and external sectors (such as donor agencies, research institutions and commercial firms).

The formulation of policies and laws that reveal inadequate understanding of the transfer process between the developing agent and the small-scale farmer; poor programme planning and management, and a lack of interest in the small-scale farmer's traditional media and communication networks serve as serious barriers in the transfer process (Ozowa 1995:18).

As far as operational structures are concerned, a lack of coordination between the different elements such as seed, input and distribution, poor infrastructure and inappropriate technology can result in the nonacceptance or nonimplementation of information and know-how.

Political and bureaucratic structures that serve their own interests and those of their authorities, rather than those of the target group, may result in distrust and nonacceptance of the information and know-how that is provided.

The objectives of external donor agencies and commercial firms which often operate in rural areas may also hamper the transfer process if these agencies are more interested in building markets for their products or profits gained, rather than considering the impact of their product on the ill-prepared client.

Considering the above, it seems evident that actions and activities of quite a number of role players and structures that are not directly involved in development, cause constraints in information transfer. To diminish or eradicate the negative impact of these constraints would require better cooperation among role players and better coordination of activities. This proves that the transfer of information for development purposes is certainly not an isolated action of moving information between a sender and receiver.

(iii) Modern information transfer systems

The functioning of the Agricultural Knowledge and Information System (AKIS) is based on the principles of the information transfer system of modern society. The latter is also known as the information organisation and retrieval system. This modern information system has been developed in response to the demands of the industrial society (Broadbent 1990b:204). To determine whether modern information systems are able to provide for the information needs of rural communities, it is necessary to establish on what assumptions such an information system is based.

Modern information systems are based on the assumption that potential end users will be aware of their particular information needs (Soergel 1985), and that they know how to use the required information technology to access the information they need to solve

a particular problem. However, at grassroots level in rural areas where potential users are often not even aware that they need information to solve problems to survive (Rosenberg 1993:32), this assumption is no longer valid, because the potential users are not familiar with the system's requirements. A further problem that might arise is that rural people might not understand the information in the current format it is provided in. So, it can be deduced that modern information systems – unadapted – will have a problem to provide scientific and technical information for users at grassroots level in rural areas. It seems that the principles on which the information transfer system is based, act as a barrier the moment the transferred information is to enter the domain of the users in the rural community (where an information system that acts on different principles prevails).

(iv) Indigenous information systems

Apart from the modern information system, which is responsible for the dissemination of information, the indigenous information system of an oral culture also serves people of rural communities. Similar to the modern information system, the indigenous information system has also developed in response to the demands of the oral culture. Unfortunately very little is known about the indigenous information system among development agents of the modern or industrialised world.

Indigenous information systems have often been looked upon as primitive and inconsequential (Dissanayake 1986:272). It is generally accepted that much superstition and irrationality are imbedded in indigenous knowledge, as discovered by many a developer who could not understand why obviously useful information was not applied. For example: Röling (1990:13) reported the unwillingness of a target group to use fertiliser because it was believed that the fertiliser was "medicine" that could pull fertility from neighbouring fields to the one in which the fertiliser was applied. The underlying assumption was that if one person got more of it, another must necessarily get less.

Another aspect that has an impact on the flow of information in indigenous information systems is that in traditional or oral cultures the family is strongly influential in most social structures. Pickering (1996:450) is of the opinion that people will respond to the beliefs and customs of those around them. Traditional societies regard values passed on to them as very important – they cling to them. It was found that improvements can only be made after there have been changes in values and traditional behaviour (Pickering 1996:452).

According to Dissanayake (1986:270) there are a number of angles from which the centrality of culture in the generation and use of information can be observed. When external information is introduced to another cultural system it will be sanctioned by the latter's frame of reference. This frame of reference is closely linked to the question of legitimation. Any outside information introduced to a community needs to be legitimated in the eyes of the community before it will be accepted. This again is closely linked to the networks through which information is transferred and receives legitimation. When information is transferred through culturally accepted opinion leaders, it is more likely to gain wider acceptance. Dissanayake believes that if proper attention is paid to cultural factors and these are imaginatively employed, successful adoption and use of information will follow.

It is also true that there is much in culturally nourished indigenous knowledge systems that is rational and can be scientifically exploited to meet contemporary needs. It is believed that the imaginative use of indigenous knowledge which is inextricably linked with culture, can help to span boundaries (Dissanayake 1986:273).

From the discussion of the two sections above it seems apparent that the cultures of both the senders and receivers as manifest in their respective information systems act as barriers. Mannheim (cited by Dissanayake 1986:269) postulates that, if we accept the assumption that mental structures are differently formed in different social and historical settings, and that culture is how people organise their experiences conceptually so that they can be transmitted from person to person, we can assume that culture might act as a barrier for information transferred from a developer to a target group in a rural community. Ignoring this fact can impede the purposeful use of knowledge (Dissanayake 1986:269). This particular point was discussed comprehensively in chapter 4.

5.7 SUMMARY AND CONCLUSION

Considering the various issues regarding the transfer of information to rural communities, it becomes evident that this is a complex and slow process that cannot be compared with the imparting of knowledge and skills during some or other development campaign. It is not a means to an end, but a continuing process by which outside information is introduced with the intention of bringing insight, widening horizons, motivating people and changing their attitudes so that they can take responsibility for themselves - and benefit in the end.

The purpose of discussing the different types of models reflecting the transfer of information was to obtain a better understanding of how information can best be directed to end users so that they can apply it to their best advantage. The different models discussed depict different phases of the transfer process which is necessary to understand how the flow of information is impacted. Special emphasis is placed on the model of the last linking stage between information of the modern world and the target group in the rural community. This model shows the importance of a structured manner in which consecutive steps are to be carried out to make the transfer process more meaningful. In this way more value is added to information as a development resource than would have been the case with haphazard transfer activities.

The discussion of the various linking mechanisms also revealed that certain formats, media and channels are more suitable than others for packaging and transferring information to users who originate from an oral tradition. Most linking mechanisms, where literacy is involved, and which are taken for granted in the modern world, cannot be accessed directly by the target groups of rural communities. Development agents should be made aware of these to avoid pitfalls. The discussion also revealed the important role of situation specific training as a linking mechanism and the need for the target group to participate in the transfer operation as the last link between the development agent and the target group as end users.

The discussion of the barriers clearly shows that barriers emerge at almost every phase of the transfer process and are caused by divergent factors. What emerged clearly is

that the transfer process is indeed an interactive process where the developer as sender needs to be knowledgeable of the impact of various factors. Both developer and target group have much to learn about the process. Taking into account the value of modern information, as well as the body of knowledge captured in the indigenous information system, it seems inevitable that effective ways and means should be found to merge the two information systems to which the target groups are exposed in rural communities.

It is assumed that an awareness of the barriers can help development planners to work out better transfer strategies, where these constraints can be avoided or addressed to benefit the most from the information or technology to be introduced to the target group(s).

Being aware of the complexities of the transfer process, one realises that the value of information as a resource for development is largely dependent on the manner in which the transfer process is carried out. Without effective transfer, information as a resource will remain in a latent state as far as development programmes are concerned.

Considering all issues discussed in this chapter, it seems that the nature of the transfer of information to a specific user group within a particular environment will be dictated by circumstances and human interaction within that environment – mostly the action of people involved. The manner in which the transfer process manifests itself will determine the value of information as a resource for development. The transfer process becomes the dynamic force that will determine the value of information as a resource.

So, as far as the transfer of information to rural communities is concerned we gained valuable insight into which transfer mechanisms are available, how they function under what circumstances and which factors act as barriers. We came to realise that in both the information systems of the developed world and the developing world there are elements that could be beneficial to the transfer of information to rural communities. However, the ability to merge these still eludes us. This problem of merging and a possible solution will be addressed in chapter 8.

The next chapter will deal with a discussion of the method of research followed to investigate a case study where information and know-how of maize growing practices were successfully transferred to small-scale farmers who experienced poor crop yields year after year, owing to a lack of appropriate information.

CHAPTER 6

METHODOLOGY

6.1 INTRODUCTION

In this investigation the intent is to establish how agriculture related information from the developed world is transferred to small-scale farmers in a rural community who are used to the oral tradition. It explores factors that may contribute to the transfer of basic information regarding maize production to a target group in a rural community. The case study was chosen as a research strategy because the transfer process under investigation took place in a real-life context where the investigator had no control over the event.

6.2 RESEARCH DESIGN

When deciding on a research design, the nature of the problem is an important factor. For a quantitative study the problem evolves from the literature. This presupposes that a substantial body of literature exists, on which the researcher can build. For qualitative studies the research problem needs to be explored, because little information exists on the topic (Creswell 1994:10).

A qualitative research design has been chosen for this investigation because very little is known about the flow of information among people in developing communities which originate from an oral tradition, or the variables that may affect these people's information usage behaviour. This type of research design allows one to focus on the context that may shape the understanding of the phenomenon being studied.

Another reason to justify the choice of the qualitative research design is that there is no theory base of how information is transferred to rural communities. Existing theories of information transfer are inadequate.

6.3 CASE STUDY AS A QUALITATIVE RESEARCH DESIGN

The case study design is utilised for this investigation. This design emerged from the disciplines of anthropology and sociology (Bisesi & Raphael 1995). Merriam (1988) and Yin (1989) have provided valuable contributions in case study research. The intent of case study research is to obtain a holistic picture of the subject of study where the investigator has little or no control over events. The emphasis is on portraying the real-life events by observing and interviewing individuals within their particular environment (Fraenkel & Wallen 1990). The case study includes in-depth interviewing and participant observation of a situation. In attempting to capture the whole picture it reveals how people experience and structure their world. According to Yin (1989) the case study can best explain causal links in real-life interventions that are too complex for the survey or experimental research strategies.

6.3.1 Components of the research design

For case studies the following five components of a research design are especially important:

- **Leading questions**

  The type of research question being asked is the best way to differentiate between the various research strategies. The who, what and where questions are likely to favour survey strategies, while the **how** and **why** questions are more explanatory in nature and will most likely lead to the use of case studies, experiments or histories as research strategies. This is because these questions deal with operational links that need to be traced over time, rather than mere frequencies or incidence. The leading question for this investigation is to establish

  How is information actually transferred from the developed world to a target group in a rural community?

- **Propositions**

  The proposition reflects on an important theoretical issue. In this investigation the proposition is the transfer of information to rural communities. Here the how and why questions enable one to look for relevant evidence.

- **Unit(s) of analysis**

  This component is related to the fundamental problem of defining what the case entails. In this investigation the unit of analysis is the training programme which enabled the transfer of information to small-scale farmers in rural communities. This training programme actually constitutes the information transfer strategy which was followed during a successful information transfer operation.

- **Logic linking data to the propositions**

  There are a number of ways in which collected data can be linked to propositions. Linking mechanisms ideal for case study research are those of pattern matching, explanation building, and time series analysis (Yin 1989). For this investigation, pattern matching is used to link data to the proposition.

- **Criteria for interpreting the findings**

  The quality of any research design should be judged according to certain logical tests. With regard to the case study design these are as follows:

  Construct validity – establishing operational measures (tactics) for the concepts being studied. The tactics to secure construct validity are inter alia: (a) the use of *multiple sources* of evidence such as documentation, interviews, audiotapes and videos; (b) the *chain of evidence* – cross referencing; and (c) the third tactic is to

have the draft case study *report reviewed by the key informant(s).*

This shows that case studies inherently deal with a wide variety of evidence whereas other strategies do not. Most important is that it allows for the development of converging lines of inquiry – a process of triangulation (Creswell 1994). Multiple sources of evidence provide multiple measures of the same phenomenon.

Internal validity – establishing a causal relationship whereby certain conditions are shown to lead to other conditions. In case studies, pattern matching is one way of addressing internal validity, as well as explanation building and times series analysis.

External validity – This is establishing the extent to which a study's findings can be generalised beyond the domain of the immediate case study. Where survey research relies on statistical generalisation, case study research relies on **analytical generalisation**. In analytical generalisation the investigator strives to generalise sets of results to some broader theory. For example: the transfer of agriculture related information to rural communities that will help to identify other cases to which the results are applicable. For example: the transfer of health related or education related information to rural communities, where information is applied as a resource for development.

Reliability – This involves demonstrating that the operations of the study can be repeated with the same results. The goal of reliability is to minimise the errors and biases in a study. One prerequisite for allowing another investigator to repeat an earlier case study, is the need to document procedures followed for an earlier case. Therefore, it is necessary to develop a case study data base. Record must be kept of all the procedures that were followed. Thus, the research should be conducted in such a way that another researcher can follow the same procedures and arrive at the same results (Creswell 1994).

6.3.2 Characteristics of the case study

The following are a number of distinguishing characteristics of the case study, which are mainly based on the views of Creswell (1994), Lor (Unisa Only study guide for BIB203-G 1990), Miles and Huberman (1994), and Yin (1989):

(1) A case study is an empirical enquiry that investigates a contemporary phenomenon within its real-life context when the boundaries between phenomenon and context are not clearly evident and in which multiple sources are used.

(2) In a case study a single unit of analysis is studied in depth. For example: the unit of analysis used in this design is the training programme devised to transfer information and know-how of maize production to small farmers of Phokoane.

(3) In a case study a large number of variables are identified which could help to explain the current situation of the unit of analysis. This also enables the

researcher to figure out the complex network of relationships among these variables. In this way the case study can help to obtain valuable insights which would not have been possible otherwise.

(4) Typical of qualitative research, in the case study the researcher is the most important instrument of research. Here researchers prefer to make use of their senses, their knowledge and people skills rather than use experiments or surveys to obtain insight into a phenomenon.

(5) Various data collection processes are used in a case study. Multiple sources of evidence are used, such as observation, interviews, official documentation, video tapes and audiotape recordings.

(6) Different analysis processes can be applied, such as linking data to propositions – pattern matching, explanation building and time series analysis.

(7) Typical formats for reporting the information are narrative text and display.

(8) In case study research, investigators do not have ready-made hypotheses to test, but develop hypotheses as the investigation progresses and they gain more insight and understanding of the problem under investigation.

6.3.3 Disadvantages of the case study as a research strategy

There are a number of objections raised against the case study strategy as a distinctive form of inquiry. However, Yin (1989) views them as traditional prejudices, which can be refuted.

One of the greatest concerns has been that the researcher who is the primary instrument for data collection and analysis may have a biased view, which can influence the direction of the findings and conclusions. What is often forgotten is that the researcher's biases, values and judgment are reflected explicitly in the research report. Such openness is considered to be useful and positive (Locke, Spirduso & Silverman 1987).

Another common concern about case studies is that they provide very little basis for scientific generalisation. However, Yin (1989) warns in this regard that where survey research relies on statistical generalisation, case study research relies on analytical generalisation where sets of results are generalised to some broader theory. This is one way of addressing external validity as discussed earlier on. Yin (1989:21) emphasises that the case study does not represent a "sample". The investigator's goal is to expand and generalise theories and not to enumerate frequencies (statistical generalisation).

A third frequent complaint about case studies is that the investigation of case studies makes use of time consuming data-collection procedures such as in-depth interviews and participatory observation, and that these result in massive, unreadable documents. However, not all case studies take long to collect data, for example those involving ethnography or participant observation where long periods of time are spent in the

"field". It depends on the topic being studied. As Yin (1989:22) puts it: one can do a valid and high-quality case study without leaving the library and the telephone. Furthermore, not all reports need to be lengthy narratives. There are others ways of composing the report, for example, by augmenting the narrative information with tables and or pictorial displays.

Yin (1989:137) identified six illustrative structures that could be applied in compiling case study reports. These are linear-analytic structures, comparative structures, chronological structures, theory-building structures, "suspense" structures, and unsequenced structures.

6.3.4 Reasons for choosing the case study as a method of investigation

The case study has been chosen as an appropriate method for this particular investigation for the following reasons:

- The phenomenon to be investigated, that is, the transfer of information from the developed world to a developing community (with an oral information transfer system) is topical but too complex to investigate with a survey. For example: the training programme through which the transfer took place can be studied in depth. This implies that a large number of variables that could be relevant can be identified. The case study enables one to scrutinise the intricate networks of relationships that exist among these variables.

- Usually case studies are used to investigate questions such as **why** and **how**. In this particular case, we need to determine how information is transferred in a community with a dominantly oral culture. We also want to find out why the transfer techniques used in the training programme for the Phokoane small-scale farmers proved to be highly successful.

- Case studies are used to investigate issues where the researcher has little or no control over events, or the behaviour of people involved. In the particular case under investigation the researcher had no control over the manner in which the information was transferred, or the manner in which people of an oral tradition respond to, use, transfer or store information received from an "outside" resource.

6.4 RESEARCHER'S ROLE

Due to the fact that the researcher is the primary instrument for data collection and analysis in qualitative research, the researcher's biases, values and judgment are reflected explicitly in the research report. Such openness is considered useful and positive (Locke, Spirduso & Silverman 1987). To enhance the researcher's credibility, it is viewed as important that the researcher should include statements of past experience and familiarity with the topic, and steps taken to secure collaboration from the main informants (Creswell 1994:145). With regard to this investigation the required statements are as follows:

6.4.1 Past experience

My perceptions of information transfer to elderly illiterate people in rural communities have been shaped by studying literature from various fields related to development approaches, information usage behaviour of people originating from an oral culture, and information systems operative in developed as well as developing societies. My perceptions have also been influenced by my personal experience of transfer patterns among different groups of people operating in the information system of a particular subject field, but who have different approaches to seeking and locating information (Meyer 1994). I believe my understanding of the context within which technical information is to be transferred from the developed world to illiterate people in a developing community enhances my awareness, knowledge and sensitivity to many of the challenges, decisions and issues encountered. This will help me to interpret the manner in which agriculture related information is communicated to small-scale farmers in rural communities.

I bring to the study previous knowledge of both the structure of information transfer and the role of intermediaries (such as extension officers, trainers or consultants) in the interface between the developing agent and the user at grassroots level of the transfer process. I will pay particular attention to the role of the trainer in initiating change, building relationships, motivating individuals to take responsibility for themselves and enhancing decision-making abilities through facilitation.

Due to my knowledge of the information behaviour of different types of users and previous experiences of working closely with different types of role players in the information transfer process in (commercial) agriculture, I bring certain biases to this study. Although every effort will be made to ensure objectivity, these biases may shape the way I view and understand the data I have collected and the way I interpret my experiences. I commence this study with the perspective that the transfer of information to small-scale farmers in rural communities is diverse and complex, but that information as a resource can bring about change in the lives of illiterate, elderly people. I intend to prove through this investigation that information is one of the most important resources for development, despite its intangibility and limiting attributes, provided that it is transferred appropriately.

Since little is known about the information usage behaviour of people originating from an oral tradition, I need to acquire more information about the target group's information behaviour, and also about environmental factors such as policies, socio-economics, politics and culture, which may influence information usage behaviour and prevent information from being transferred effectively. Therefore, I have studied the different development approaches that were followed prior to the current situation, as well as the current state of development in rural agriculture. I also scrutinised the literature on orality and literacy to find out more about rural people's information usage behaviour and how their indigenous information systems function. I also studied different models applicable to the communication of information in order to pinpoint how they relate to the real-life situation under investigation.

I view the role of the trainer as intermediary between outside information and the user in the rural community as crucial. The trainer's personality, rapport and credibility among trainees are important aspects of the study. Trainers often encounter frustration and unanticipated surprises, which require critical thinking and experience in defusing tense situations that could block the transfer of information. Apart from these personal traits, the trainer should be knowledgeable about utilising information as a resource in developing knowledge, skills and understanding among members of a target group in order to enhance their personal development and improve their livelihood.

6.4.2 Confidentiality and preserving anonymity

Since qualitative research involves human subjects whose lives are invaded to a certain extent by the investigator, most authors who discuss qualitative research design address the importance of ethical considerations where anonymity of informants should be respected if so wished (Bogdan & Biklen 1992; Marshall & Rossman 1999; Merriam 1998; Yin 1989). On the other hand Yin (1989) indicates that nearly every case study presents an investigator with a choice regarding the anonymity of the case. This implies that disclosure of identities regarding both the case and individuals can sometimes provide helpful outcomes. In a situation where the reader is able to recall any other previous information he or she may have learnt about the same case – from previous research or other sources – this might simplify reading and interpreting the case report. It would prove to be invaluable for the new case study if it could be integrated with prior research. However, the researcher still has the obligation to respect the rights, needs, values and desires of the informants. These details are of particular concern to this study where the major informant's position and institution are highly visible and the particular case was previously recorded in research reports in the agricultural field (Fischer & Vink 1995; Kirsten, Sartorius von Bach & van Zyl 1995).

The following measures have been taken to protect the informants' rights:

(1) The research objectives were explained verbally and in writing to ensure that they were clearly understood by all informants.

(2) As explained, permission was obtained to proceed with interviewing relevant informants.

(3) Verbatim transcriptions and written interpretations and reports were made available to the major informant.

(4) All informants' rights, interests and wishes were considered first when choices were made reporting data.

(5) The final decision regarding informant anonymity lay with the major informant.

6.5 DATA COLLECTION PROCEDURES

In qualitative research the data collecting procedures revolve around three decision-making steps. These include: (a) the boundaries set for the study, (b) the types of data

to be collected (eg observations, interviews, documents and visual materials) and (c) determining the form or protocol for recording the information (eg form of recording observations, interviews, documents and visual materials (Creswell 1994, Yin 1989).

6.5.1 Parameters for data collection

According to Cresswell (1994) the idea of qualitative research is purposefully to select informants (or documents, or visual material) that will best answer the research question. As opposed to quantitative data collection procedures, no attempts are made to select informants randomly. Since this investigation revolves around the process of transferring information to a particular target group, the programme (including the manual, views from the designer and visual material) for training small-scale farmers to grow maize was selected as the unit of analysis.

Miles and Hubermann (1994) suggest that, apart from the general parameters pointed out above, researchers should also consider the setting, the actors, the events and the process (action undertaken by the actors within the setting). How these apply to the case under investigation will be discussed as follows:

(i) Setting

The training programme under investigation was originally designed for, and implemented among the small-scale farmers of the rural community at Phokoane in the Mpumalanga Province of South Africa. The training programme was implemented during the period 1989 to 1991 under the auspices of the Lebowa Agricultural Corporation (LAC). The development approach followed at that stage (by most development corporations in South Africa) was that the LAC cultivated maize fields on behalf of the local authorities using modern agricultural techniques. Income earned from the crops was ploughed back into development of schools, clinics and other public services needed by the community. Small-scale farmers who constituted roughly one-third of the rural community did not participate directly in the farming operations.

(ii) Actors

The actors to be observed and interviewed include:

- The designer of the original training programme. He is the primary informant for this investigation.

- A number of trainers and other administrative staff who participated in the first implementation activities were also interviewed.

- The small-scale farmers who presently practise maize growing according to the training technique were observed and some of those who originally volunteered to be trained were interviewed. These small-scale farmers (elderly people – mostly women) originate from an oral culture and very few of them can read or write. Although they are unable to use information transferred in a printed format, they still need information to take decisions for various purposes to survive.

(iii) Events

Using the case study design, the focus is on the deliberate transfer of information through training of elderly illiterate people. This includes events that focused on the target groups' level of understanding, trust building and changing of attitudes and developing of a sense of taking responsibility for themselves. The events considered revolve around the different phases of the training programme which coincides with the cultivation cycle for maize growing.

(iv) Processes

The process under investigation is that of the last link of the information transfer process – that is, to find out what happens during the interaction between the developing agent and the user of information at grassroots level. Particular attention is paid to the manner in which the trainer approached the target group; what opportunities he provided for participation, what relationships were established with the group and how the target group responded to the training programme. Attention is also given to the manner in which indigenous knowledge was integrated to extend the participants' knowledge base, and how a variety of means and mechanisms are applied to make outside information acceptable at the participants' level of understanding.

6.5.2 Types of data to be collected

Data collecting procedures in qualitative research involve four basic types of data, namely: observations, interviews, documents and visual images. According to Yin (1989) the major strength of case study data collection is to use multiple sources of evidence. They help to address a broader range of historical, attitudinal and observational issues. They also help to develop converging lines of inquiry – a process of triangulation – which is more convincing when based on several different sources of information. This also addresses the problem of construct validity (ie multiple measures of the same phenomenon).

Types of data collected for this case study are the following:

(1) Documentation which includes the original training manual compiled by the designer, annual reports of development corporations, reports of funding organisations such as the Development Bank of Southern Africa, newspaper clippings referring to the Phokoane case, archival records such as a letter suggesting a change of approach, lists of names of the participatory groups, schedules for training sessions and field visits, test results of participants, and certificates awarded to successful participants.

(2) Audiovisual material including a video of different phases of the training programme and tape recordings on the views of some of the first participants.

(3) Interviews with the designer of the training programme, several of the co-trainers who helped to implement the original training programme among more voluntary

groups, officials of the Lebowa Agricultural Development Corporation and a number of the small-scale farmers who participated in the original training programme.

(4) Direct observations took place during visits to interviewees, small-scale farmers' fields and visits to rural communities in the target area. Observations were also made during visits to other rural communities where the same training programme was implemented at a later stage.

(5) Physical artefacts used in practical demonstrations to transfer information regarding the maize plant, maize growing practices, climatic conditions and soil conservation – all related to the issue of concern – are considered.

6.5.3 Protocol to record selected information

For the purpose of this investigation information from the core documents and visual materials is recorded (a) according to the steps followed in the training programme and (b) the key categories of information handling procedures followed by the designer of the training programme. Information from tape recorded interviews was transcribed and also categorised according to the same key issues as were the documents and visual materials.

6.6 DATA ANALYSIS PROCEDURES AND DATA RECORDING PROCEDURES

Merriam (1988) and Marshall and Rossman (1998) contend that data collection and data analysis should be conducted simultaneously in qualitative research. In the case of this investigation, data recording and data analysis were conducted simultaneously with the interpretation and report writing. A life-history of the Phokoane Case is given, followed by a description of the consecutive steps of the training programme for effective maize growing. The contents of the training programme are analysed and interpreted as a method of transferring agricultural information to small-scale farmers in rural communities. In this process of analysis a hypothesis is developed regarding the information usage behaviour of rural people originating from an oral tradition, as well as a hypothesis regarding the value of information as a resource for the development of rural communities.

6.6.1 Process of qualitative analysis

The process of analysing qualitative data is based on data reduction and interpretation (Marshall & Rossman 1998). Reduction implies that data are reduced to patterns, categories or themes and information is then interpreted using a manual scheme (Tesch 1990).

6.6.2 Matrices for representing the information

Where possible, tables of information are provided at the beginning of a section to offer a more visual perspective on the content of a particular section. Where the discussion on a section became lengthy, visual displays are inserted to give a synopsis of a subsection.

6.6.3 Coding procedure

The specific data analysis procedures inherent in case study design are pattern matching, explanation building and time series analysis (Yin 1989). For purposes of this investigation, pattern matching was applied. The reason for selecting pattern matching is to show, for example, how information behaviour of the target groups in the case study compares to information behaviour of people originating from oral cultures in general, or how norms and values present among the target groups compare with those of similar groups in general.

6.7 VERIFICATION

Construct validity establishes operational measures for the concepts being studied. The tactics to secure construct validity are the use of *multiple sources of evidence* such as documentation, interviews, tape recordings and videos. This shows that case studies inherently deal with a wide variety of evidence whereas other strategies do not. The most important is that the case study allows for the development of converging lines of inquiry – a process of triangulation. Multiple sources of evidence provide multiple measures of the same phenomenon.

The second tactic is what is known as the *chain of evidence* where, for example, cross-referencing is applied between evidence provided by the case study and evidence found in the literature. For example in this investigation, evidence of the information usage behaviour of the target groups of the Phokoane Case is compared with similar evidence in the literature regarding information usage behaviour of people originating from an oral tradition.

The third tactic is to have the draft case study *report reviewed by the key informant(s).* For this investigation the original report was reviewed by the key informant – that is, the original designer of the training programme for maize production at Phokoane.

6.7.1 Internal validity

Internal validity involves establishing a causal relationship whereby certain conditions are shown to lead to other conditions. In case studies, pattern matching is one way of addressing internal validity, as are explanation building and times series analysis.

In ensuring internal validity, the following strategies were employed:

(1) triangulation of data — data will be collected through multiple sources comprising interviews, observations, document analysis, tapes and videos.

(2) Member checking – the informant (trainer) served as a check throughout the analysis process. An ongoing dialogue regarding my interpretation of the informants' reality and meanings ensured the truth value of the data.

(3) Repeated observations at the research site.

(4) Participatory modes of observation.

(5) Clarification of the researcher bias.

6.7.2 External validity

External validity establishes the domain to which a study's findings can be generalised beyond that of the immediate case study. Where survey research relies on statistical generalisation, case study research relies on **analytical generalisation**. In analytical generalisation the investigator strives to generalise sets of results to some broader theory, for example: the transfer of agriculture related information to rural communities that will help to identify other cases to which the results are applicable.

For this investigation external validity is achieved by proving that the technique of applying methods of information transfer used in the indigenous information system to transfer information from the developed world to small-scale farmers in rural communities can also be applied to the transfer of information for other purposes such as health, welfare, or education to other target groups in rural communities.

6.7.3 Reliability

Reliability implies demonstrating that the operations of the study can be repeated with the same results. The goal of reliability is to minimise the errors and biases in a study. According to Yin (1989) reliability is increased by using multiple sources. This has already been discussed.

One prerequisite for allowing another investigator to repeat an earlier case study is the need to document procedures followed for the earlier case. Therefore, it is necessary to develop a case study data base. Record must be kept of all the procedures that were followed. Thus the research should be conducted in such a way that another researcher can follow the same procedures and arrive at the same results.

6.8 REPORTING

There are various ways that the findings of a case study can be reported. Yin (1989) and Miles and Huberman (1994) suggest that the narrative text is the most frequently used form of display. Yin (1989) warns that case study reports can have a number of potential audiences, such as:

- colleagues in the same field
- policy makers, practitioners, community leaders and other professionals
- special groups such as thesis or dissertation committees
- funding institutions

Each audience has different needs and no single report will serve all audiences simultaneously. For the purpose of this study, description was used to communicate a holistic picture of the experiences of the trainer who devised the training programme to

inform the target group at their level of understanding. The final product is a construction of the investigator's experiences and the meaning she attaches to them.

As far as possible the text is supported by graphic displays and tabular boxes to summarise concepts. This allows the reader to experience the challenges encountered by the investigator. It is trusted that this presentation provides the reader with an opportunity to view the world of the illiterate elderly small-scale farmer, who is dependent on information from developed countries for improvement of farming practices.

6.9 SUMMARY AND CONCLUSION

In this chapter I explored the design and procedure for a qualitative research study. It is evident from the discussion that qualitative designs are based on different assumptions from quantitative designs. From the many qualitative designs available, I selected the case study design owing to its appropriateness for the particular problem under investigation.

I also reflected on my role as researcher and experiences and how these could bias interpretations and bring a unique view to data collection and analysis. The approaches followed for data collection and data analysis were identified and explained. Verification helps to demonstrate internal validity as well as external validity and reliability.

Finally, the reader was introduced to the format in which the outcome of this study is displayed and the way in which this outcome compares and contrasts with theories in the literature.

The next chapter comprises a description of the case under investigation and an analysis of the techniques applied to successfully transfer agricultural information to a rural community – that is, the Phokoane Case.

CHAPTER 7

SUCCESSFUL INFORMATION TRANSFER: THE PHOKOANE CASE

7.1 INTRODUCTION

The core problem addressed by this investigation is how information can be transferred effectively to rural communities. The training programme used at Phokoane to introduce small-scale farmers to effective maize growing in order to address the need for food security, provided the opportunity to investigate in depth how information was transferred from a First World environment to a Third World environment in a real-life context. The investigation promised to offer valuable insight into ways and means that make outside information more acceptable to people where oral cultures still prevail. So, the purpose of this chapter is to investigate the strategy followed in the design and implementation of the training programme. The following aspects are covered:

- A description of the case history of Phokoane
- An analysis and interpretation of the consecutive steps that were followed during the training programme
- Advantages of information transfer to small-scale farmers
- Recurring patterns in the transfer strategy
- Attributes of information which proved to be effective during the transfer process
- Reasons why the Phokoane Case is viewed as successful

7.2 CASE HISTORY

Phokoane is a rural community situated approximately 50 km east of Groblersdal, Mpumalanga. The topography is hilly and there are no rivers. The area has deep fertile soil, and the average annual rainfall is between 600 and 700 mm. The main crops grown in Phokoane are maize and groundnuts. The area is highly populated and most of the inhabitants belong to the North-Sotho-speaking Bapedi tribe (Kirsten, Sartorius von Bach & van Zyl 1995). Approximately one-third of the population practise some or other form of farming. Typically the size of the average farm in rural communities varies between two and four hectares (Bembridge 1987).

As was the case in many of the previous homeland areas, there was a lack of commercial agriculture in Phokoane during the late 1980s. With regard to agricultural development in rural areas in South Africa, the approach followed was large scale, centrally managed schemes, which were managed by parastatal companies. It was believed that this approach promoted better use of resources and the use of paid labour. Agricultural development corporations were used to execute these projects (Van Rooyen 1995). This approach is a typical example of the input/growth development

model followed in developing countries at that time (as discussed in chapters 2 and 3). Little was done to improve farming methods for small-scale farmers outside these schemes. Apart from a lack of fiscal means, most of the small-scale farmers also lacked knowledge of modern farming practices. Round the 1980s it became evident that the corporate managed settlement projects failed. The operational costs were too high and cooperatives under jurisdiction of the agricultural development corporations ran at a loss. It was clear that the prevailing approach had had its day and another approach was sought (Bembridge et al 1982, Van Rooyen, Coetzee & Swart 1993).

Of interest to this case was the contribution made by the Development Bank of Southern Africa (DBSA) which was established in 1983. One of its main considerations was to invest in developing (homeland) agriculture, which to a large extent comprised small-holdings. This mandate was interpreted as integrated rural development through entrepreneurial support. In effect this meant that its approach of supporting small-scale farmers provided the opportunity for integrating the promotion of farming with other rural development activities. It should be borne in mind that rural households devote their time and efforts to both farming and nonfarming activities. It was believed that this integrated approach, which included business and agricultural development, could be spearheaded by agricultural investment. Clearly one detects here an attitude of a developer "knowing" what should be good for a developing area, regardless of whether the inhabitants understand what it is all about or how they could be involved in their own development.

The DBSA was aware of the external and internal constraints, which acted as disincentives for development in rural communities. According to Van Rooyen (1995) some of the external constraints comprise natural agricultural risks, limited inputs and marketing facilities, poor infrastructure, inappropriate policies and legislation as well as problems associated with land tenure and the acquisition of agricultural resources. Constraints of an internal nature included lack of funds, labour, skills, knowledge and education. It was within this context that the Farmer Support Programme (FSP) was adopted. The FSP was one of the more contemporary development approaches where the idea was to involve small-scale farmers in agricultural development projects where they would be trained simultaneously in the necessary skills and learn by doing (Lionberger 1986).

During the late 1980s, DBSA introduced the FSP for development to various agricultural development corporations which operated in rural communities. The Lebowa Agricultural Corporation (LAC) – which was responsible for development of the Phokoane area – was one of several agricultural corporations in developing areas that accepted and implemented the FSP approach. Initially all did not go well due to resistance to change among staff members, dissatisfaction and suspicion among farmers who could not relate to the directive approach of an outside organisation, and because very little practical experience in the application of the concept was available (Adendorff 1991).

It was during this time that Adendorff – designer of the training programme for Phokoane farmers – was appointed manager at the Phokoane Cooperative. Managed according to the input/growth approach, this cooperative too ran at a loss. There was

general distrust and a prevailing foul mood among the inhabitants of the community. Maize fields were plundered before they could be harvested. Threats were made to burn the tractors. Staff members were forced to evacuate all the tractors to the Nebo police station. The cooperative manager (at that stage unaware of the DBSA's introduction of the FSP approach) also felt that he could not relate to the prevailing practices and decided to raise his concern about the future of the Phokoane Cooperative in a letter to his general manager. He wrote inter alia:

> *Because the task of development should start with the people, in their environment and on their level it is imperative that we* [cooperative managers] *should be full time in the field. I believe this is where we are going to achieve our success in the end conquering existing ignorance and suspicion* (Adendorff 1987).

The quote above reveals a desire for small-scale farmers to be involved in their own development. This is a move away from the approach followed thus far. The fact that it was felt that the development – that is, the transfer of information – should be at the level of the small-scale farmer is already an indication that the message should be conveyed through training.

However, in the interim, general management – still concerned about the financial losses of the Phokoane Cooperative – gave Adendorff one year to put the cooperative on a sound footing again. He had to act swiftly to put his plan together, since it was shortly before the growing season. To aggravate matters, he could not liaise openly with individual farmers, since they would be viewed as "sell outs" by the rest of the community, due to the distrust that prevailed toward the existing practices. So, the very first participants (8 volunteers) were secretively trained under cover of darkness in his bakkie's headlights!

For Adendorff the FSP was very much in line with his own perception of the development of rural farmers. He interpreted the main objective of the FSP to be people oriented with the entire development programme being demand driven, depending on the needs, problems and fears of a particular community. He felt that by accepting such an approach the rural people would be helped to help themselves, instead of becoming dependent on handouts only (Adendorff 1991).

Since Adendorff knew the socio-economic circumstances in Phokoane so well, he held the view that development could best be initiated by teaching the small-scale farmers the basic principles of growing maize effectively at an elementary level. In this regard he complied with one of the support elements in the design criteria of the FSP, namely, training. From an Information Science point of view this meant transfer of information through training.

He believed that when initiating an FSP, the correct approach must be adopted and implemented. He firmly believed that the only way to succeed was to build trustworthy relationships with the farmers, to communicate at a level they could understand and to communicate in a mode they were used to, and to be completely honest in everything that was said or done. He believed that by adopting such an approach, the small-scale

farmers could be convinced that the situation in which they found themselves was truly understood and sympathised with, and that the authorities had no intention of taking their crops or their fields. From an Information Science point of view, trust building and honesty have never before been thought of as variables that could enhance or retard the transfer of information, and yet the Phokoane case showed that they could indeed influence the acceptance of outside information.

Since most of the small-scale farmers could not read or write, Adendorff had to devise a training programme where information regarding the basic principles of maize growing were conveyed in story form with the use of metaphors they were used to. Demonstrations and acting were built into the programme where necessary. Two of his priorities were that participation in training should be voluntarily and that men and women should have equal say in planning arrangements around the programme. He knew they were sensitive about the literacy issue, so he decided to invite them to his "school where one does not need to read or write!" This is already an indication that one does not need to be literate to be able to use information – a common misconception.

Against this background, the initial training programme was put into action. The training programme was designed with the different phases of the growing season in mind. Apart from factual information regarding maize production, the farmers had to be introduced to additional information regarding soil preparation, weed and pest control, climatic conditions, how to arrange and care for tractors and other implements (which are a prerequisite for ploughing and planting in modern practices), how to arrange for seed, pesticides and bags for harvesting and how to go about borrowing money, paying back loans, et cetera. From the issues listed above it is obvious that the types of information needed to transfer information regarding maize growing were far more than isolated facts on maize. This is an indication that information on a specific issue is mutually dependent on information about related issues in order to become useful.

The implementation of the training programme was done according to the different phases of the growing season to make a particular type of information or technique even more meaningful for the target group. This is an indication that timing is an important factor in an information transfer strategy.

The training programme involved a lot of preplanning where a number of variables had to be considered before the actual training could start and also planning for activities that were to come into play after harvesting and to ensure that the new method become part of everyday farming practices. The consecutive steps followed to design the training programme are depicted in the form of a flow chart in **Figure 7.1** (verso of previous page).

In the first year of the programme's implementation, the farmers had a very good season and they harvested bumper crops. Where they had harvested only half a bag per hectare in the past, they now succeeded in harvesting 26 bags per hectare (Adendorff 1991). The response of the first participants was overwhelming. Their success resulted not only in a change of perception, but also in a change of attitude. Their self-image improved to such an extent that they asked to be trained in other skills

as well. They were now ready to take responsibility for themselves – to earn a living by growing maize in order to become self-reliant. Interestingly, many of them now wanted to be taught how to read and write!

The success of the first voluntary participants gave rise to an unexpected demand from more volunteers. In five years time, the "school" that had started out with eight volunteers under cover of darkness grew to a voluntary corps of more than 3 430 small-scale farmers in and around Phokoane by the end of 1991 (Adendorff 1991).

The initial success of the training programme resulted in the adoption of the programme by the Lebowa Agricultural Corporation (LAC) who introduced it to other groups of small-scale farmers under their jurisdiction. Through this training programme a substantial number of people in rural communities could take part in growing food for themselves, not only to alleviate chronic hunger, but to raise their maize growing practices to a subsistence level.

7.3 ANALYSIS AND INTERPRETATION OF THE PHOKOANE CASE

From an Information Science point of view, in reality Adendorff's training programme comprises all the consecutive steps and activities required for the deliberate transfer of information to a specific target group. The training programme as such represents the last link of the transfer process between the information resources of the developed world and the end users in a developing world. In Figure 7.1 the training programme is depicted as a flow chart. In order to establish exactly how the information transfer process evolved in circumstances we know little about (ie, information flow in a community originating from a predominantly oral culture), the different steps and activities of Figure 7.1 will be analysed and interpreted step-by-step. For clarity, each step will be illustrated in an exhibit box at the beginning of its discussion.

7.3.1 Step 1: Existing state: collecting information and raising awareness

Table 7.1 Existing state

Collecting information	Situation analysis	Raising awareness
Observation Survey	People Farming practices Farming conditions	Interaction

(i) Collecting information

When establishing the existing state of a developing area, one tries to obtain certain information from the rural community for analysis to determine why certain problems exist and how they can be improved or solved. In effect this means that one needs to obtain certain types of information regarding the target group and its environment in order to decide on the appropriate type of information to provide for a specific situation. In the Phokoane Case methods for collecting information were observation and a survey compiled by Adendorff. The manner in which this was conducted reveals the interaction with the particular target group.

(a) Observation

While working for LAC prior to 1989 Adendorff had the opportunity to make certain observations concerning the local people, their farming practices and farming conditions. He obtained valuable information about the target group and their culture through observation, while working among them. Although he did not live among the people when collecting information for his investigation, he had fairly good working relations with small-scale farmers and moved frequently among them during his daily activities in the rural areas.

In his observations of the local people, he detected underlying fear and suspicion of anyone from a governmental body. This is an aspect that he later clearly distinguished from the normal needs and problems related to farming practices. Interestingly enough the observation of being suspicious of anyone from a governmental body was also reported of rural communities in other African countries (Aboyade 1984:260). Adendorff's identification of fear and suspicion as variables that could interfere with his transfer effort differs from other transfer efforts which mainly focus on the formal or technical side of information transfer.

When given the opportunity to implement the new approach, Adendorff already had a fairly good idea about the type of problems present in the Phokoane community. This pre-existing knowledge, as well as his general knowledge of maize production, laid the foundation for constructing an appropriate interview schedule to collect data for a proper needs' analysis of the existing food producing problems of the Phokoane community. A copy of this schedule is attached as **Appendix A**.

(b) Survey

Currently methods of participatory rural appraisal (PRA) or rapid rural appraisal (RRA) are applied where the target group participate in the survey. In doing so, the target group usually provides valuable information to the investigator. At the same time they become aware of deficiencies in their way of doing things. However, Adendorff was not familiar with either the PRA or RRA methods at that time. Nevertheless, his survey also depended on the participation of the interviewees.

With regard to the purpose of the training programme and the type of information to be transferred, Adendorff had to obtain information in order to

- identify the role players in a development programme for rural farmers (ie the farmers, financiers, developers, cooperatives, government departments, local authorities, etc)
- enable the investigator to design an appropriate development programme
- set guidelines along which development should take place
- establish what the farmers' situation was with regard to living conditions, farming practices, land holdings, agricultural viability, and level of knowledge
- establish the farmers' fears, problems and needs

With all this in mind, and the insight he had already obtained through observation, Adendorff devised an interview schedule (Appendix A) with regard to land size, average yield, family size, monthly and annual consumption, average shortfall, average surplus, price of meal, price of seed, price of fertilizer, inputs obtained, time of planting, time of ploughing, cultivars, ploughing depth, ploughing costs, planting costs, fears regarding confiscation of their lands or crops, and others fears and problems they might experience.

The manner in which the interviews were conducted with this particular type of information user were of particular interest to Information Science.

Since the majority of participants were illiterate, they had to be interviewed. The interviewer used their responses to complete the interviewing schedules. During the interviews Adendorff made a point of explaining in a very simplified manner why he needed the particular information. He gained their cooperation by using a "metaphorical approach". For example, he explained to them that he needed certain information from them in order to build the road on which they must walk in future. In order to build this road, he must determine how much building material is required and this he could not do without their help. They could easily relate to the manner in which he addressed them, because people of an oral tradition are inclined to convey messages in metaphorical speech so that the listener should not feel offended (Olson 1994:137). This relates well to findings about communication in the oral tradition as discussed in chapter 4 of this investigation.

In approaching the participants in this way, he also built awareness and prepared them for the requirements needed to participate in the "new" way of growing maize. Throughout his initial contact with these rural people, Adendorff was constantly busy building trustworthy relationships.

Considering the contents of the interview schedule it becomes clear that Adendorff did not only aim to obtain hard facts regarding farming deficiencies, et cetera, he also wanted to probe the hidden factors that could determine the acceptance or rejection of the information that was to be provided. That is why he included questions about their fears. This would later be used deliberately to build up trustworthy relationships throughout his contact with the target groups.

Since Adendorff was aware that rural people were rather suspicious of outsiders, he had to assure them of the anonymity of the survey by telling them that their names were not needed for the survey. He emphasised that participating in the interviews was completely voluntary.

While conducting the survey, Adendorff avoided asking questions regarding personal information about the people. He was mainly concerned about how they produced food, therefore, he focused on this type of information. He deliberately avoided questions on personal issues such as how many children they had, because such questions caused uneasiness and could harm their frail relationship at that stage. He found that they talked about the other types of information at a later stage when they were more at ease with him, and then in a more natural way.

Valuable lessons can be learnt from the way in which the interviews were conducted among rural participants. Making use of metaphorical speech and addressing issues indirectly seemed to be an effective way of obtaining honest answers from people of an oral tradition, because they were used to communicating in this manner.

Adendorff realised that he had to be very careful how he phrased his questions. For example: when inquiring about the size of one household he would ask how many people shared the meal every night – a rather indirect approach. In another instance, to prevent respondents from answering what they think the investigator wishes to hear, he would ask how much they paid for seed and later on he would ask what type of seed was used. (He knew that the different cultivars were priced differently.) In this way he built in checks and balances.

The above approach followed with the initial interviews with group leaders at Phokoane simplified matters with other groups later on.

(ii) Situation analysis

From the information obtained from observation and the interviews, Adendorff was able to make his intended needs' analysis. For purposes of this investigation the results of the needs' analysis revealed more than socio-economic needs only. It provided information that gave insight into the existing state of the target group at that time, that is, the people, their knowledge of farming practices, the farming practices used and the farming conditions – as discussed below:

(a) People

- Most of the rural farmers were either elderly people or women with young children
- The average household consisted of seven people with very little to eat – most of the families lived below the breadline
- They had virtually no income except for the meagre support from a husband earning a living in the big city, or the old age pension of one of the family members
- Most of the rural farmers were illiterate and lacked knowledge of proper farming practices
- Most people lived according to the traditional African cultures where they act within a group and the headman or an elder makes important decisions on behalf of the group. They were fond of singing and dancing to demonstrate their feelings and emotions. All seemed very religious.

Interestingly, most of these features identified by Adendorff were observed by a variety of authors – such as Aboyade (1984), Aina (1989), Oswitch (1990), Sturges and Neill (1990) and Nwagha (1992) – who wrote about, or did research in developing communities elsewhere in Africa. According to Adendorff (1991) many of the above-mentioned features observed among the interviewees, could contribute to poverty,

hunger, bitterness, anger, fear and distrust. He realised that unless these problems were addressed together with the problems on farming practices, all development efforts would be fruitless.

Underlying the above profile of the people is the fact that they were all struggling to survive. They needed information on how to grow food to combat hunger, rather than how to farm for a profit. This has important implications for the transfer of information, because most of these features could have an indirect negative impact on the transfer of information if not considered properly in a transfer strategy.

(b) Farming practices

From the needs' analysis it became clear that the implementation of poor cultivation methods could cause many of the crop failures among small-scale farmers (Adendorff 1991). The analysis showed the following major constraints:

- Almost no fertilisers were used. Only 3% of the small-scale farmers used fertilizers
- Virtually nobody used topdressing, or had ever heard of it
- Certified seed was not used – 95% of small-scale farmers used the wrong seed
- Traditional broadcasting of mixed seed (pumpkin, watermelon and maize on one land)
- Traditional cultivation started too late (ie January, instead of October)
- The small-scale farmers ploughed twice at an average depth of 100 mm, instead of once at a depth of 250 mm
- Incorrect plant population per hectare – 98,2% planted incorrectly
- No pest control or any weed control was applied
- Incorrect utilisation of natural resources such as rain, wind, high summer temperatures and cold winter temperatures for various stages of maize production
- Lack of money. They could not afford appropriate implements which could improve their farming practices.
- Lack of support services – ploughing and planting services, credit facilities, etc were almost non-existent

The above reveals that the farmers lacked information about the more developed farming practices – which could ensure food security. The existing state – where very little was harvested – confirms that the traditional practices could not secure a sustainable crop. It seems that a lack of knowledge on those aspects that were prerequisites for successful modern farming practices contributed to crop failure among small-scale farmers at Phokoane. The facts revealed above gave Adendorff a clue to the factual type of information he had to transfer to his target groups.

From an Information Science point of view it is important to point out that the profile of the people shed light on the indirect factors that could retard the transfer of information about maize farming, while the profile of farming practices reveals the lack of factual information needed to enhance maize farming.

(c) Farming conditions

Not all information needed to plan an effective transfer strategy could be obtained from the participants. Most of the data on farming conditions was obtained by Adendorff from official records such as the DBSA's series of development information on the previous homeland governments (DBSA 1986) and was not collected during the survey. The following data on the Phokoane area were important for Adendorff's needs' analysis:

- Soil quality – high to marginal potential
- Rainfall – Good average precipitation for dry-land crops
- Landownership – The majority of farmers in Phokoane rent their land from the Local Authority. However, a few people in the Phokoane Magisterial District own large farms. They, in turn, rent small portions to interested parties.

It should be mentioned that not all members of a rural community own land for cultivation. In the case of Phokoane about one-third owned land.

The data collected on the three issues discussed above, enabled Adendorff to make a situation analysis with regard to the types of problems to be addressed. These three areas provided valuable information on the living standards of the people, their traditions, culture, religion, fears and expectations, level of education, food requirements, crop yields, landownership, farming practices and available support services.

From an Information Science point of view, sections (a) and (b) respectively provided insight into factors that could indirectly impact on the transfer strategy and factual information needed. Section (c) provided information needed in planning and decision making. So, from Adendorff's survey we learnt that the developer needs information in order to transfer information. In the case of Phokoane, three types of information (identified above) were needed for the planning of an information transfer strategy for maize growing by small-scale farmers.

All the information collected enabled Adendorff to adopt an appropriate approach that could be followed to initiate development, so that participants and eventually the whole farming community could benefit.

(iii) Raising awareness

Apart from the information obtained from the interviews, Adendorff's knowledge of the old approach in which the small-scale farmers had no say in development practices, and what he observed when visiting the fields, made him realise that the small-scale farmers

should also have a say in matters. He believed that the approach should be changed from a top-down to a bottom-up approach where the local farmers could take part in affairs concerning their livelihood. In his interaction with the small-scale farmers, they became aware of their lack of knowledge on how to farm more effectively. The manner in which interaction took place developed a new, more positive attitude and a willingness to participate among the small-scale farmers.

7.3.2 Step 2: Planning and management of the transfer strategy

Table 7.2 Planning and management

Approach	Group system	Support services
Action plan Implementation plan	Farmer interest groups Group committee	Tractor services Seed, fertiliser, etc Harvest facilities

The second stage of Adendorff's training programme compares with the planning and management step of the information transfer strategy. All the steps taken in this stage involve activities about planning, the approach of the training programme, arrangements regarding the target groups and arrangements regarding support services. Planning in advance for all three steps proved to be important for the smooth running of the training programme and of course for the effective transfer of information.

Consistent interaction with, and participation of the target groups during this stage were crucial for trust building between the trainer and the target groups. Interaction and participation at this stage were also important for raising awareness regarding maize production, and to prepare the participants for the actual training sessions to follow.

How plans and activities were carried out during this stage will be discussed below:

(i) Approach

The approach that Adendorff adopted was in line with the goal that DBSA had in mind with FSP, that is, to raise agriculture from a subsistence level to a commercial level. However, Adendorff found that the farming practices of the people who volunteered to participate were even below subsistence level. Therefore, he set a goal to develop agriculture from a sub-subsistence level to a subsistence level and eventually bring it to a commercial level.

He also felt that a bottom-up approach should be followed where the local farmers could take part in development practices on a voluntary basis. No practice which they did not understand or could not relate to should be forced on them.

In order to achieve the set goal, he adopted the following aims:

- Establish communication and healthy relationships with the local people through voluntary participation

- Eliminate fears, distrust, hatred and bitterness
- Establish training programmes appropriate for illiterate adults
- Help farmers to help themselves (empowerment)
- Provide a training course according to the (agricultural) needs of the particular community
- Arrange for the necessary support services needed for production activities

These aims provide us with valuable insight into how information which was obtained in the previous stage was now applied according to Adendorff's understanding of an appropriate transfer strategy which coincides with the development approach adopted by FSP, namely, to involve the participants by transferring information through training to illiterate adults. The transfer of information should be limited to the needs for a specific situation and, during the transfer process, underlying fears, et cetera, should be addressed. The transfer process cannot be carried out in isolation. So, the appropriate support services needed to enhance the transfer process should be considered and actually planned for when drawing up the transfer strategy.

(a) Action plan

In order to achieve the stated aims, Adendorff devised an action plan consisting of a set of consecutive steps, which are discussed below. The sequence in which the steps were set was to be followed in practice (for all would-be target groups) to do justice to the bottom-up approach he envisaged. These consecutive steps were the following:

- Identify problems, needs and fears of specific group
- Present the training programme (Phases I and II)
- Follow-up visits / practical extension
- Testing and graduation ceremony
- Evaluation of the programme's performance
- Arrange support services in advance

The action plan was intended to convince the local farmers of their need to be trained and how it would help them to overcome their problems. After the action plan was drawn up, it was taken to the farmers and explained to them for their approval.

Adendorff's action plan is an indication of his commitment to involve the target group from the beginning and make them fully aware of what they could expect from the training programme.

The following points were presented for discussion with the participants:

- A training programme will be implemented, which will teach them the basics of maize production
- They will learn how to improve cultivation methods and crop rotation
- Through the training programme they will learn to maximise use and conservation of natural resources
- Every participant's maize fields will be visited on a two-weekly basis
- Agricultural practices will be raised to a subsistence level
- Phase II of the training programme will be implemented as soon as Phase I has been completed successfully
- After Phase II agricultural practices could be raised to a commercial level

For Adendorff it was important to discuss every step taken with would-be participants. As a result he found that a lot of the initial resistance was broken down, and the farmers committed themselves to supporting the development effort. It appears that discussion of the action plan with the small-scale farmers motivated them to participate in the forthcoming training sessions.

(b) Plan for implementation

After the action plan was accepted by the farmers, a plan for implementation was drawn up to show the participants how the training programme was going to be implemented and how they were to be involved. This plan was also discussed with the participants to address uncertainties, and to gain their support and commitment as in the case of the action plan.

The implementation plan comprises the following important points:

- Voluntary participation was emphasised every time the plan was proposed to a group
- The farmers who initially came for training were asked to return to their communities and form a group of interested farmers who were willing to receive training. These groups were called Voluntary Farmer Interest Groups (VFIG).
- Each group was to select its own committee, the Group Committee
- Each committee was briefed on its responsibilities regarding assistance to the trainer and the group. (Functioning of the group system will be discussed in a later section.)

- Phase I of the training course would be presented in the first year. The training comprised a theoretical part called the *school*, and a practical part, which included visits to the fields and further practical training and advice – that is, learning by doing

- Phase II would be presented after Phase I had been completed successfully and only to those who were interested in further training

- Participants would be tested orally after completion of each phase

- Certificates would be presented to all participants who completed a course successfully

- All groups would be visited regularly on a two-weekly basis for practical assistance in all aspects of production

Only after the implementation plan had been discussed with the interested farmers and the trainer was convinced that they were satisfied, did he request them to form their own interest groups as discussed below.

From an Information Science point of view, important lessons can be learnt from Adensdorff's initiative to manage and control the transfer of information to small-scale farmers in this way. Much more emphasis is placed on the involvement of the receiver of information than was the case with transfer strategies followed in previous development approaches.

The following section deals with the group system as envisaged by Adendorff, followed by the actual formation of the Voluntary Farmer Interest Groups and then a discussion of the selection of the Group Committees and their activities. From an Information Science point of view, the group system is a good example of the creation of an informal channel or a network to transfer information.

(ii) Group system

As part of the planning stage of the training programme, Adendorff had to get the group system in place. Adendorff believed that the group system was the only way in which large numbers of farmers could be accommodated in the training programme. Since the inception of the training programme in 1991, the number of participants had grown to about 7 000 by 1995. Within the group system it was possible to train this number of people with the help of four to five trainers.

The reasoning behind the formation of groups was that members of a group lived in close proximity to each other. So, the trainers need not cover long distances to visit individuals' fields during their two-weekly visits. Members of a particular group were usually all at the same level of progress, which simplified training efforts and avoided the need to train individuals separately within the same area.

Apart from the advantage to the trainer, there are also other advantages from which the group could benefit. One of these is that people living together in the same community, sharing the same problems, having the same aspirations, expectations and hope for a better future, are brought together on common ground. Interestingly Fuglesang and Chandler (1987) also mention that people's interests control the flow of information in society. It is believed that when people share an interest in a given topic, communication is enhanced among the group.

Of interest to Information Science is that the group system is used deliberately to expose a number of potential receivers to outside information. However, this deliberate transfer differs from the dissemination of information used by mass communication activities where the receivers are unprepared and do not necessarily have the background knowledge to which they can add the "new" information.

Adendorff found that support for one another within a group is typical of rural communities. Forming a training group often resulted in strong camaraderie where these people stand together and help one another wherever possible. They achieved their common goal, namely to eliminate hunger. This is probably the first time that their goal could become a reality. This also had an advantage for the transfer of information in a predominantly oral society where all "new" information is stored in memory. Should one member of a participant group forget something they were taught (eg how deep to plough), the other members of the group were available to give the answer. The group could also be used as a sounding board by individuals who were uncertain about certain facts they obtained during the meetings. Indeed, the group system served as an informal channel for interaction.

Another advantage is that when farmers purchased or marketed in a group they could share transport, thus reducing costs. The same applied to bulk purchases of certain insecticides, fertilizers and other inputs. In addition, when tractor services were required from a contractor, the group could divide the expenses among them. This also had an advantage for the contractor who could then operate in one area at a time.

Adendorff realised that each group is unique in its own right, and should be treated as such as far as training is concerned. Without their trust, cooperation and participation, implementation of the training programme would not have been possible.

From an Information Science point of view it seems important to use knowledge of group dynamics among rural people to improve information transfer to rural communities. The following is an indication of how Adendorff used group dynamics to transfer information among participant groups.

(a) Voluntary Farmer Interest Groups

All those leaders who contacted Adendorff after the successes of the initial group, were asked to return to their respective communities and form their own groups of people who were interested to be trained in maize production. No restrictions were placed on the number of participants per group, regardless of whether there were 7 or 70 per group. There were also no age restrictions. In fact, some farmers were in their eighties!

Each group was required to elect its own committee, consisting of a chairperson and four members. Knowledge obtained about the composition of the community was cleverly applied here. Since the majority of participants were women, the only requirement regarding the composition of the committee was that two of the committee members should be women. It was deemed essential that the committee be made up of an uneven number (usually five members), because this enhanced decision making and problem solving. This was especially so in the event of a disagreement or an argument. The five members were taught to vote and a definite outcome was assured in this way.

The fact that each group was required to elect its own committee resulted in the identification and election of natural leaders. This simplified matters for the trainer with regard to motivating groups to implement the newly obtained information in an orderly fashion. The formation of voluntary farmer interest groups was an attempt to acknowledge the very people involved in food production for survival.

(b) Group committees

True to the tradition of metaphorical speech which the participants understood so well, Adendorff introduced the concept of the group committee as a hand with five fingers. He explained to them that separately the fingers are not so effective, but together they enable the hand to function properly. Two fingers represent men, two represent women and the middle finger represents the chairperson! Needless to say the concept was accepted without any resistance.

From an Information Science point of view the group committees fulfil a very important purpose in the transfer of information. Firstly, they serve as communication channels between the trainer and the respective interest groups. Whatever the needs or problems of the groups may be, they are to be directed through the committees to the trainer. Whenever the trainer needs to give the groups information with regard to meeting dates, venues, et cetera, it is transferred to one of the committee members to pass on to the group members.

The committees also have certain responsibilities. These are to

- register the groups with the local cooperative
- arrange with the trainer and the groups for training
- select a venue for training (could be a tree, local store, home or school grounds)
- solve problems or differences among members of the groups
- assist group members with arrangements for agricultural services, inputs and credit
- ensure that group members adhere to all standards of maize growing as taught in their training (eg applying the correct amount of fertiliser to each plant as indicated during the lecture)
- decide on the future of the group

For the transfer of information the involvement of the participants in the training programme through the formation of groups is crucial. Here Adendorff harnessed rural tradition to transfer outside information through channels the rural people are used to, namely, by word of mouth.

From an Information Science point of view the group committee is a point where the transfer of information to rural communities deviates from the conventional methods used in the developed world. Of interest too is the type of information being exchanged through the group committee. That is, information regarding the communities' livelihood and practical arrangements that could affect their decision making – not factual information. So, one can view the group committees as "ad hoc" channels to be used for transfer of information in the groups' interest only. Factual information regarding maize growing went through the training "channel", which will be discussed subsequently.

(iii) Support services

Apart from the training leg of this programme, Adendorff arranged that all support services were in place to complement his training programme. For example, he arranged ahead of time for tractor services, seed, fertilizer, pesticides, et cetera to be ready when needed. He also arranged for marketing facilities after the crops were harvested. These planning skills were later taught to the small-scale farmers at a more advanced level by including them in Phase II of the training programme.

The above is evidence that the transfer of information is dependent on the effective functioning of the different subsystems within the farming system. If one of these subsystems malfunctioned, it would have been to the disadvantage of the whole training programme and thus the information transfer strategy as a whole. The lesson learnt from this is that any transfer activity should be well managed in coordination with activities of other support systems. The success of the transfer of information at Phokoane can to an extent be ascribed to coordination and good management of all the other support services. It appears that Adendorff had the ability to plan and manage his transfer strategy on a grand scale.

7.3.3 Step 3: Actual transfer of information

Table 7.3 Actual transfer of information

Transfer through training	Appropriate techniques	Supportive tactics
Training programme Phase I: Theory Practice Phase II	Lectures Lecturing aids: Metaphors Storytelling Demonstrations Repetition Revision Field visits	Building trust Situation-specific information Repackaging information Group dynamics Sense of time Sense of orderliness

(i) Transfer through training

In the Phokoane Case, training formed the core of the information transfer strategy. Considering the lack of knowledge on maize production among the small-scale farmers, their poor self-image and their way of conveying messages, Adendorff had to devise a programme that could fit in with their existing methods of dealing with information. Therefore, he used training to introduce outside information, that is, to add new concepts to what they already knew about maize production.

Considering his target group's limited understanding of information related to modern farming practices, and the fact that all outside information had to be memorised, Adendorff decided to divide his training programme in two phases. Phase I would constitute a number of lectures where basic principles regarding maize growing would be introduced. Phase II would comprise more or less similar issues, but at a higher level of sophistication where numbers, amounts, dates and measurements were introduced at a level that illiterates could handle.

It is remarkable that Adendorff had no tertiary training and worked purely on his experience with black people from childhood and his experience of (commercial) maize farming. Unwittingly he applied a very basic principle of training, that is, to move from the known to the unknown, or from the less complicated to the more complicated. Thus the small-scale farmers were allowed an opportunity to come to grips with basic perceptions, before moving to their application in a given situation.

The manner in which the transfer of information was handled during the period of training is discussed below within the framework of the two phases.

(a) Phase I

Phase I of the training programme comprised a set of six lectures about maize growing. For practical reasons Phase I was divided into two sections, namely, a theoretical part where the factual information was introduced in consecutive lectures, and practical training which consisted of visits to the farmers' maize fields to discuss and visually demonstrate whatever was introduced in the previous lecture. The idea was to reinforce new perceptions learnt.

- ***Theoretical training***

Considering the level of education of the participants, it was necessary to limit the contents of the lectures to the basic aspects of maize growing. Since the participants were illiterate, the contents of the course had to be compiled in such a way that information could be easily memorised and also be related to what they already knew about maize growing. So, the lectures started with relatively easy concepts and gradually progressed to more complicated concepts.

The contents of the different lectures of Phase I followed the different stages of maize growing. That is, from soil preparation up to the harvesting stage and eventually marketing. The theoretical part was broken down into several lectures and presented

at a set venue. The programme contents were divided among six lectures as illustrated in the box below.

Table 7.4: Lectures for the training programme (Adendorff 1991)

Lecture no.	Contents of lecture
1	1.1 Introduction to the maize plant 1.2 Requirements to produce a good crop 1.3 Utilisation and conservation of natural resources 1.4 Soil cultivation
2	2.1 Fertilisation 2.2 Purpose of agricultural lime
3	3.1 Weed control 3.2 Witch weed 3.3 Crop rotation
4	4.1 Pest control 4.2 Stalk borer and termites 4.3 Establishing a maize crop 4.4 After-care of maize crop
5	5.1 Farmers' identification of problems 5.2 Stock and grazing
6	6.1 Examination 6.2 Issuing of certificates 6.3 Slide and film show

- ***Practical training***

Although the theoretical part of Adendorff's training programme was a practical way of transferring factual information to the participant groups, he felt that it was important that it should be followed up with the transfer of information in a real-life situation where the "how" and "why" of the information obtained during the lectures should be built on during field visits every two weeks.

This practical training continued throughout the growing season. It served as a reinforcement for facts that were transferred during the lectures, and farmers were assisted practically. During these visits the different aspects learnt about in the lectures were discussed or pointed out in the maize fields. For example: during the lecture on pest control the participants learnt about the stalk borers that could devastate a whole crop if not treated in time. These pests only appear at a specific time during the growing season.

During field visits, the participants were taught how to look out for signs of their presence. Most of the participants were familiar with the particular beetles and they observed holes in the leaves of maize plants, but never related the two types of knowledge, or realised that this was what caused crop failure. Now that they knew what to look out for, they were prepared to care for their crops. This is an example of empowerment through information obtained in a real-life situation – seeing is believing.

Also during field visits, participants were assisted with all kinds of personal problems. They could ask questions on concepts that were not clear to them, or things they had forgotten. Such was the case when a stormy argument developed around the correct depth that was required for effective ploughing. The misunderstanding was cleared up during a field visit. This incident is a typical example where the human memory as a storehouse of information failed its owner!

To avoid suspicion, visits to a farmer's fields were always made in the farmer's company, or in the presence of a witness (an example of continual trust building). These visits were used to obtain information with regard to the participants' input needs from the cooperative and also to inform the farmers of information the cooperative needed from them with regard to administrative arrangements. This was also the time when input related information could be transferred to the farmers, for example, the availability of fertilisers and pesticides at the cooperative.

From the examples given above, it seems clear that field visits were used for both reinforcing the contents of the lectures, as well as transferring additional information important to the cause. Thus, from an information transfer point of view, field visits were another important communication channel devised to exchange messages between the participants and the development agent.

(b) Phase II

The Phase II training course was based on observations of the farmers' performance in Phase I. It was developed to provide for farmers who had already completed Phase I and had a desire for further training. Such farmers experienced at least one growing season with the necessary extension and after care. They already had the idea of farming in a more structured manner and had also developed a feeling of responsibility toward farming in general.

Although the same approach that was used in Phase I was adopted for Phase II, it differed in that the training was at a higher level and included soil conservation, chemical weed control, financial planning and programme planning. Much more emphasis was placed on the concept of planning, and using the seasonal and climatic conditions to their advantage. Farmers were also taught how to keep a calender for the different activities and chores that need to be conducted regarding maize production – thus systematisation in applying information for a specific farming practice. They were also taught the importance of carrying out certain activities on a regular basis, such as field visits, checking for the appearance of pests or weeds in their fields, and the application of fertilizer at set times – awareness of the importance of time in the application of information on maize production.

The aim of the approach followed in the lectures of Phase II was to a certain extent to develop a sense of responsibility, to become self-reliant and to develop a more positive attitude toward sustainable farming practices. The contents of the lectures were set out in such a way that farmers would realise their responsibility in caring for the environment, or being responsible when using chemical weedkillers, or budgeting carefully so that they would not find themselves in financial trouble.

An outstanding feature of Phase II was that the basically illiterate farmers were gradually introduced to more concrete numerical information. Numbers, amounts and dates now played a more important role. For example, they learnt about measuring lengths and heights when constructing a storm drain or building contours and waterways. When using fertilizer they needed to understand the meaning of a combination of letter symbols and numbers on fertilizer bags, for example, that NPK refers to nitrogen (N), phosphorus (P) and potassium (K) respectively, or that 3-2-1 and 4-3-4 also refers to the relative ratio of the three elements contained in the fertilizer. They had to learn how to "read" the meaning of the particular fertilizer and decide whether it is suitable for their particular area, for example, 3 is (N), 2 is (P) and 0 is (K) and for their district 3-2-0 was advised at planting time while LAN (refers to limestone ammonium nitrate) may be required for additional application later in the growing season. Understanding numbers was also important when working with chemical weedkillers, for example: how many millilitres to mix with one litre of water.

In order to make use of schedules in programme planning, it is essential to understand dates. A careful look at the example of a programme in **Appendix B** shows the use of numbers with regard to dates (15th Sept), weight measures (20 kg), containers (bags), objects (8 people) and sizes (hectares). Most of the farmers who could use these, probably had a functional perception of numbers. Others depended on group leaders for interpretation, or to remind them of important dates.

(ii) Appropriate transfer techniques

Adendorff's theoretical training section was the core of the transfer process where factual information from the developed world was introduced to small-scale farmers. Since the latter were not familiar with the environment from which the information originated, extreme care had to be taken to ensure that the information was offered at a level that they could understand and accept.

Since most of the participants were illiterate, it was important to make each lecture interesting and memorable in some way or other. It was necessary to keep their attention throughout a lecture. Incidently, all the lecturing aids that Adendorff chose to make his lectures interesting turned out to be the very means with which information is transferred or memorised in a traditional oral culture. These included use of metaphors, storytelling, demonstrations and repetition. The transfer techniques that Adendorff chose and how he utilised them are discussed below.

(a) Metaphors

To get the participants involved, Adendorff often used a tactic of annoying them first by making a ridiculous statement, which they then strongly and loudly opposed! As soon as he got their attention, he put matters in the right context and could get on with the lecture. A good example was when he held a maize plant in front of them and told them he was holding a *musadi* – a woman – in front of them. He knew that a woman was respected very highly by them. Their reaction was to deny it immediately. He then explained to them the maize plant's connection with food in relation to the woman's role in the household caring for her family's food supply. In this way Adendorff used a

metaphor to transfer information at a level they could understand. This practice was followed throughout Phase I of the training programme.

Due to the nature of the contents of the lectures, each one of them had to be prepared well in advance. He had to decide exactly what he wanted to tell them about the practice and how he wanted to present it. The manner in which he presented it was often improvised while addressing the group. From an Information Science point of view this proves what an important role planning, preparation and involvement with the target group play in the successful transfer of information.

Figure 7.2 on the next page is a typical example of the approach followed during lectures.

The example he used is that of a taxi and tools to fix it. These are concepts with which the particular group is familiar. Adendorff skilfully compared these images to natural resources with which they are also familiar. However, now he put them in a context where the group is made aware of a certain responsibility they have toward their maize fields. They have to take care of these if they want to benefit from them. In this way information does not only serve to extend the participants' knowledge base, but also to raise awareness and to change their attitude toward the environment around them.

The information introduced to raise awareness about the absence of contours in maize fields is simultaneously demonstrated with a drawing on a blackboard or flip chart, as depicted in **Figure 7.3** (see on verso of the next page - p.162).

(b) Storytelling

Storytelling is another lecturing aid Adendorff used to transfer information. Storytelling plays an important role in oral cultures where information is transferred from one generation to the next. Also, illiterates' senses for listening and memorising are well developed. (The role of storytelling was covered extensively in chapter 5.)

Adendorff was unaware of these facts. However, in his view, the people he had to train were like children in their reactions to outsiders. That is why he decided to use storytelling as a lecturing aid. A good example is where he explained to a training group – through acting out a story – that the invasion of witch weed in a maize field is like a lion that sneaks up on the goats in the kraal.

A video tape recording, which was studied during the investigation stage for this research, showed how intensely the group observed every movement of the trainer and the interpreter. The moment the "lion" jumped at the "goats" the whole group yelled and screamed – with much laughter afterwards! In this way the information was transferred in a memorable and lively way – to be remembered long afterwards. Thus, through lively storytelling the transferred information was linked to their perception of a lurking danger, but also to their understanding of weeds as a potential danger to their crops.

Soil conservation and natural resources

1 The soil is the vehicle on which we travel throughout life's journey.

2 The sun, wind, cold and the rain are all the tools with which we must maintain this vehicle.

3 By not knowing how to use these tools correctly, we will be doing more harm than good to this vehicle and could prevent it from continuing on its journey.

4 This is exactly what is happening to our farming activities at present. It has come to a standstill, simply because we do not know how to utilise our natural resources correctly.

The soil

1 The soil is the taxi. It carries us from our day of birth until the day of our death. Not only does it carry us, but also all the other passengers (all inhabitants of this world) with their possessions and belongings.

2 This taxi (the earth) can never be replaced!! We only have one and we must look after it and maintain it, otherwise we will be heading for a Big Smash. Especially with the way in which we are heading and the rate at which we are travelling now.

3 As a result of lands with no contours or grass strips, waterways that are being ploughed, overgrazing and wrong cultivation methods, we are destroying our soil. Our soil is eroding, lands are becoming smaller as a result of all the gullies. The soil itself is becoming poorer and poorer and, while all this is happening, the people who have to be fed from these lands are increasing daily.

4 Just have a look at all the erosion taking place around us every year! What is going to happen to us?

5 Draw on a blackboard clearly depicting and describing all the functions of contours, grass strips waterways, storm drains, correcting gully erosion and grazing control.

Figure 7.2 Excerpt from the lecture on soil conservation (Adendorff 1991)

Interestingly, during Phase I of the training programme the farmers responded favourably to storytelling and metaphors. However, once they realised what it was all about and they had come to grips with the new concepts, they got bored with these techniques and asked Adendorff to explain matters in an ordinary way. The fact that

they had the confidence to discuss the matter with him is a good example of the healthy relationship they had with one another. It also indicated that their knowledge base expanded with regard to this particular type of information. A lesson can be learnt from this, namely, that outsiders should to be very careful not to misjudge other people's level of understanding of certain concepts. One cannot assume that storytelling will always be the best technique for transferring information to training groups of people from an oral tradition.

(c) Demonstrations

In order to convey messages in a practical way and also to break the monotony of simply listening to someone talking, Adendorff devised innovative teaching aids to demonstrate important concepts. For example: he used an old plastic detergent container, drew a cloud on the outside and filled it with water to resemble a cloud. Two other containers of different sizes were filled with soil, and the roots of a maize plant were drawn on the outside. These containers were used to demonstrate what happens to soil that was not ploughed deep enough (represented by the smaller container) to absorb the rain, and also that roots cannot penetrate deep enough into soils that were not ploughed deep enough. When the contents of the "cloud" was poured into the larger container (representing soil that was ploughed deep enough) every drop was absorbed. However, when a "cloud" with the same amount of water was poured into the smaller container, half of it spilled over. The message conveyed was that maize fields that are not ploughed deep enough cannot absorb all the water of an average downfall and the run-off can cause soil erosion, which in the end can result in a poor harvest.

Prevention of soil erosion was also demonstrated by drawing maize fields on a blackboard showing how much land should be left unploughed to serve as gullies for run-off.

Figure 7. 3 is an example of a blackboard illustration of gully erosion, as was explained by drawing on the blackboard while lecturing.

Through the various demonstrations used in the theoretical part of the training programme the information transferred orally was visually concretised, which helped to intensify memorisation of outside information.

(d) Repetition

From the discussion above it is evident that key concepts were repeated often in different ways and forms to emphasise important issues during a lecture. This was done on purpose, because the participants could not fall back on written notes and had to memorise the entire course. This worked well, because people originating from oral cultures are used to repetition in an attempt to memorise better.

Some of the trainers reported that they often observed that some of the elderly women in a training group were constantly fidgeting with their blankets' tassels, or grouping sticks or stones in patterns on the ground. They later learnt from the other participants that this was a way to memorise the contents of the day's lecture. So, apart from the

trainer's efforts to support memorisation, the recipients too devised their own means to memorise through association.

(e) Revision

Revision is another form of repetition Adendorff used to enhance memorisation and to embed new concepts. At the beginning of each lecture, the previous lecture was revised. The group was expected to respond to questions based on information introduced in the previous lecture. In this way group participation could be enhanced and all participants could get involved.

A careful look at the way the programme was compiled reveals that much effort had been made to accommodate the target group's circumstances, and to ensure the smooth running of the programme. The above is a good example of this approach, as are the arrangements discussed in the next section.

(iii) Supportive tactics to enhance transfer

Unaware of the impact of information behaviour on the transfer process, Adendorff incidently used appropriate means to transfer information regarding maize growing to his target groups. This could be ascribed to the fact that he knew rural people and their traditional way of doing things so well. He also understood well how the traditional way differed from the Western way of doing things. This is a prerequisite for intermediaries at grassroots level, as discussed in chapter 5.

Apart from his good understanding of his target group, Adendorff realised that his training efforts would be in vain if he did not address many of the underlying factors (identified earlier) that could retard the transfer process. So, throughout his contact with the target group, he addressed these issues in order to break down negative effects.

(a) Building trust

Adendorff did not use training merely to impart information on farming practices. He skilfully applied his knowledge about their way of communicating – that is, metaphorical speech, visual demonstrations, repetition to memorise, et cetera – to approach them at their level of understanding. This he did while continually building trustworthy relationships through acknowledging their way of communication, and praising them for participating by responding to the information he offered.

The training programme also gave the participants the opportunity to test him as trainer for his honesty and sincerity – whether he would live up to the promises he made during the proposal of the implementation plan. This proves that there was continual interaction between the trainer and the participants during the transfer of information. Information transfer should be interactive and need not be a one-way flow as believed in the past.

Adendorff realised that although all the participants agreed to attend the course, they had not yet been convinced of his good intentions, or that the training would change

their lives for the better. Thus, what was required most by the participants at the beginning was respect, hope, goodwill, genuine friendliness and the assurance that they would be able to complete the course and that they would eventually benefit from the training. All these were at the back of his mind when compiling the lectures.

(b) Situation-specific training

The training Adendorff offered was situation specific and not adult education and training in general (where participants had to come to grips with reading and writing). He focussed mainly on basic concepts regarding maize farming for small-scale farmers' particular situation. He started by introducing rather elementary concepts about the maize plant, the soil and weather conditions in their particular area that could influence their maize production – things they already knew but now related to their efforts to grow maize. Once the basic concepts were understood, he slowly progressed to more advanced information regarding different types of maize, types of fertilizer, et cetera.

The training programme was the first direct contact and communication link that Adendorff had with the majority of participants in a group. (Previous contact was with group leaders only.) Thus it was important that he used this opportunity correctly and with great care to ensure success.

From an Information Science point of view we learnt from the training programme that information on a particular topic (in this case maize production) transfers best within a given situation where knowledge of other operations is also required to give impetus to the information of concern, especially where the outside information is dependent on knowledge of related issues assumed to be understood by all. This proves that outside information is not totally value-free, but socially conditioned and shaped by the social structures that apply it, as claimed by Shields and Servaes (1989:49). It therefore seems important that the circumstances of the situation for which the particular type of information is intended, should be considered carefully in advance.

(c) Repackaging of information

A close look at the lecture content in Table 7.4 reveals that the types of information transferred to the small-scale farmers were not limited to maize production only. The structured way in which the training programme was planned required the transfer of information of closely related activities needed to motivate participants to implement the new practices in full. For example: the transferred information would have been of little use if they did not understand how to plough properly, or how to arrange for loans in order to obtain the required inputs such as seed and fertilizer.

A lack of information on these related issues could have resulted in understanding and acceptance of information obtained through training, but not its implementation. In that case the participants would not have been empowered through information. This shows how important it is that the small-scale farmer should also understand how related structures operate to put into perspective the newly obtained information regarding maize production. Therefore, additional information was built into the training programme to teach the participants how related operations integrate with maize growing.

The Phokoane Case is proof that the transfer of information is not necessarily an isolated event. To be effective as a resource, a particular type of information needs to be repackaged together with other types of information required for a specific situation or for particular circumstances. This is even more important when information is transferred from a developed world to a developing community where background information regarding related operations cannot be taken for granted. This can have serious implications for efforts to transfer technology, where a developer wishes to introduce a new product or programme which he or she believes can improve living conditions in a developing community. So, it seems that knowledge of these circumstances and skilful planning of a transfer attempt can add value to information as a resource for development.

(d) Group dynamics

For the transfer of information the involvement of the participants in the training programme through group formation is crucial. Here Adendorff harnessed rural tradition to transfer outside information through channels the rural people are used to, that is, informally, by word of mouth.

From an Information Science point of view, the group committee is a point where the transfer of information to rural communities deviates from the conventional methods used in the developed world. Of interest too is the type of information being exchanged through the group committee, namely, information regarding the communities' livelihood and practical arrangements that could affect their decision making – rather than factual information. So, one can view the group committees as "ad hoc" channels to be used for the transfer of information in the groups' interest only. Factual information regarding maize growing went through the training "channel", which is discussed below.

(e) Enhancing a sense of time

For various practical reasons, working within certain time limits was important for the programme followed at Phokoane, but it was also important to cultivate a sense of time among the target group, who were used to accomplishing chores at a leisurely pace.

A training session usually did not exceed three hours. Approximately two hours were allocated to lecturing and one hour to general conversation. The contents of the lectures were limited to elementary but essential concepts on a particular topic. It was argued that the manner in which the messages were transferred was more important than the amount of information. Care had to be taken that the groups were not burdened with too many facts, because everything had to be memorised. Depending on circumstances, lectures were given in the morning while the participants were still fresh and also to fit in with daily chores that had to be performed before sundown. The fact that participants had to walk long distances to attend the lectures was also a consideration – public transport was not always available. So, the transfer of information was not a question of imparting information and getting it over and done with.

Time also plays a role where certain activities need to be carried out at set times if transferred information is to be implemented effectively. The first phase of the transfer

strategy – data collection – revealed that the participant groups were used to carrying out activities at a leisurely pace. This could have negative implications for the effective implementation of the newly obtained information on maize growing. So it was important to create a perception of the importance of time in the practice of growing maize. This type of information was conveyed by the introduction of a timetable.

Adendorff drew up a timetable (attached as **Appendix C**) to keep track of his visits and lectures to the different groups. Every group was visited regularly each fortnight. Since the different groups were at different stages in the training programme, he had to prepare his lectures for each group in advance. He also had to keep record of each group's enquiries on certain aspects to keep in touch with them and prove his sincerity.

Each group committee also received a timetable of their visiting dates so that they could arrange with the group in advance and make sure that everyone showed up for their appointment. In this way Adendorff could maintain order and discipline among the groups. At the same time the different groups got used to the idea of working according to a time schedule that coincided with the maize growing cycle. This is a rather subtle way of transferring information without demanding punctuality, which is a prerequisite for this type of practice.

(f) Establishing orderliness

Transferring information through training also requires regular attendance of meetings, especially where outside information is introduced in a sequence of consecutive lectures. Irregular attendance would result in losing track of the whole picture. So regular attendance of lectures became a prerequisite in the Phokoane Case. From the documentation collected, it seems that Adendorff must have been only subconsciously aware of this fact, since he brought up more practical reasons for keeping an attendance register, as recorded below. However, whatever the reason, it was conducive to the effective transfer of information on maize growing.

Adendorff felt strongly about discipline and orderliness. This is one of the reasons why he kept an attendance register for all groups. He argued that a constant attendance figure showed the interest displayed by the participants. To him regular attendance was also an indication of whether the level of presentation was appropriate. The attendance register also helped him to keep track of those participants who could not for some or other reason attend a particular lecture. In such a case arrangements could be made for the participant to catch up by attending the lecture at a neighbouring group's meeting.

Apart from the role played by the timetable and the attendance register in the transfer strategy, they are evidence of contact with the participant groups on a regular basis. Regular contact is of cardinal importance for the effective transfer of information within a specific context where the receiver's knowledge base is built on previous experience to which new concepts are added.

(g) Using interpreters

Another issue that could hamper the transfer of information is understanding the language in which the information is presented. In the case of Phokoane, this issue was considered carefully. When the group was more used to the Afrikaans or English version of a word, it was used instead of the vernacular. However, if the group was more familiar with key concepts in the vernacular – such as "manjor" for fertiliser – that word was used. No lecture was presented without the presence of an interpreter who could translate into the vernacular for those who could not understand the language used.

7.3.4 Step 4: Evaluation

Table 7.5 Evaluation

Participant performance	Programme performance	Achieving change
Oral examination Award ceremony	Oral examination results Farmers' response	Impact of Information Continue training

The fourth and last stage of Adendorff's training programme includes evaluation of the original programme and continuation of training at a more sophisticated level. In terms of the transfer of information, this can be interpreted as evaluating how well the required information was transferred, and what efforts were made by the trainer to motivate the target group to accept and implement the information (or in this case technology) that was offered. The last step in this stage is to continue with training, but now at an advanced level to meet newly developed needs among the participants. Obviously this implies that information was also offered at an advanced level.

The implementation and interaction of the last stage of the training programme is reflected in the discussion of the following issues.

(i) Participant performance

In order to determine how well the information transferred was received and understood, a natural means was to test the participants' basic knowledge of maize growing practices. Participants were not only tested, but their achievements were acknowledge by awarding certificates to those who passed.

(a) Oral examination

Since the majority of participants were illiterate, they had to memorise the entire course. Naturally the testing also had to be done orally. The oral examination took the form of a quiz. A list of 30 questions and answers, which covered all aspects of the training course, were compiled in advance. An example of the original test is attached as **Appendix D**.

If the participants could not remember certain standards and measurements, for example, to plough 250 mm deep, or plant 100 mm apart, they were allowed to show

by hand or any other means that they understood the question and knew what to do, because the participants were dependent on their memories and visualised what they learnt.

As far as test results are concerned, Adendorff viewed 70% as a realistic pass mark. To him such a pass mark meant a 70% improvement to the participants' area and showed how many of the identified deviations could be rectified through training. **Appendix E** is an example of the test results of one of the training groups.

(b) Award ceremony

To motivate participants to take part in the testing procedures, all participants who passed the test qualified for a certificate which was presented at an official award ceremony held for the different training groups. For such an occasion a special programme was arranged, and senior officials from LAC were invited to do the presentations. **Appendix F** is an example of a programme for a graduation ceremony.

The certificates were specially designed for the different training groups. An example of such a certificate is depicted in **Appendix G**. Each group's logo appeared on their certificates, which were held in very high esteem by the different groups. The logo was a form of identification with a particular group and gave group members a sense of pride.

Adendorff reported that the award ceremony was an overwhelming occasion for all participants. For the first time they could show that they could also achieve something if they were properly trained. They were all very proud and the whole ceremony boosted their self-image tremendously. In a certain sense they saw the certificate as a passport to a better living.

The certificates also served another purpose – as an incentive. A participant who received a certificate, immediately qualified for more credit facilities at the cooperative than somebody who did not pass the test or did not attend all the lectures. More credit at the cooperative meant such a person could plan more effectively in advance for the next year's crop. In this way Adendorff used the certificate as an incentive to motivate participants to take part in the FSP as a form of development.

(ii) Programme performance

(a) Oral examination results

The oral examination set for the participants fulfilled a dual role. It also reflected on all aspects of the training programme and could serve as a basis for measuring progress as indicated below:

- **Participant capacity**

  By setting a realistic pass mark, the amount of knowledge absorbed by the participants could be assessed.

- **Level of understanding**

  A comparison of the different groups' pass marks helped to indicate whether the level of information transferred was above or below the participants' level of comprehension in general.

- **Problems in the programme**

  With a comparison of marks allocated for a specific question, problem areas in the training programme could be identified easily.

- **Weak points in the programme**

  It helped to determine weak points in the programme, eg what needs had not been addressed. It helped to adapt or improve the training programme and develop a future strategy for Phase I.

- **Strategy for follow-up**

  It also enabled the trainer to develop an appropriate strategy for Phase II of the training programme.

- **Value adding**

  It added value to the training effort and created a sense of pride in the farmers who passed and now qualified for a certificate.

- **Credit control**

  The records kept of each group's results could be used to control credit facilities at the cooperative (as explained before).

(b) Small-scale farmers' response

Apart from the trainer's evaluation of the training programme, observation of the farmers who completed Phase I of the training programme, as well as tape recordings of the views of a number of participants provided the following feedback of the impact that the transfer of information had on the participants and their livelihood:

- Small-scale farmers looked different and were far more confident and had a desire to learn more. They had a totally different approach to agriculture due to their "newly obtained knowledge".

- Farmers became more self-reliant and committed. They were willing to take responsibility for themselves. Farmers became more time oriented. They now realised that there is a definite time for planting, hoeing, fertilising, etcetera. These activities cannot be left until they felt like doing them.

- The new maize growing practice resulted in yields of an average of 26 bags per hectare whereas in the past they had often harvested no more than one bag per hectare.

- The newly obtained knowledge also resulted in a change of perception regarding maize growing. One of the group leaders admitted that he had never realised that small farmers could produce maize of such a high standard. He had firmly believed that commercial farmers applied a "secret medicine" to achieve such high yields.

  Another group leader admitted that they had previously accused the whites of taking all the good land and leave them with the rubbish, and that is why they experienced poverty. Now they knew the truth was that they themselves were responsible for their poverty, because they did not know how to farm and there was nothing wrong with the soil. The testimony could be interpreted as the impact a lack of knowledge can have on an entire community, as well as the value of information transferred in a manner that is acceptable to the recipients.

- The first successful harvest also resulted in motivation. Participants wanted further training – also in other skills such as gardening, poultry rearing, sewing and knitting. They argued that this would help to get other means of income and make them less dependent on the risks of agriculture.

- The trained farmers realised that the training resulted in an expansion of their knowledge base, which caused them to experience life differently. One group leader put it in typical metaphorical speech:

  [our] *eyes have been opened and we are now in the light – day and night.*

- There was also a spin-off for farmers who did not take part in the training programme. One respondent confirmed that many of those who had plundered the cooperative's maize fields in the past, now approached the trained farmers and asked for guidance in maize growing. These were the first signs of a demand for information from the users' side whereas the training was a deliberate transfer effort from the developer's side up to this point. From an Information Science point of view this could be interpreted as an **information pull** from the moment the outside knowledge was understood and accepted by the small-scale farmers, whereas previously, prior to understanding the outside information and technology, there had only been an **information push** from the developers' side.

(iii) Achieving the desired change

From the responses of the majority of the trained farmers it seems that the transfer of information caused an expansion of their knowledge base for maize production, which resulted in a social change in their lives. For most of them it meant elimination of hunger, buying clothes, caring for their families, sending kids to school (well fed and well clothed), re-uniting families and a more positive outlook on life in general. This is consolidated in the comments below:

One group leader said that he saw training as the solution to eliminate hunger and poverty and to uplift the individual. Previously he found himself in a situation of no hope where life did not seem worth living. Now he felt like a human being.

An elderly farmer (83 years) commented: *"For the first time in my life I can go to sleep at night without having the fear of waking up hungry."*

Many of the women farmers commented on the opportunity of having enough to eat, and having money to buy clothes for themselves and their children. In the past children were sent to relatives elsewhere for survival. It sometimes happened that children who were not sent away to relatives were sent to steal food from those in the community who still had something to eat. Now their children could stay at home and families were re-united. One farmer expressed her feelings by saying that to her the training programme meant: *"A life with my family."*

a) Lasting impact of information

From the above it seems clear that the provision of information in a rather limited section of agriculture had a tremendous impact on those who participated. The impact was not only in the field of agriculture: it was also experienced socially and emotionally, and of course economically. This seems to prove that although information is an intangible resource it is a dynamic force that can bring about change.

Another point to consider here is the level of need to which the information was applied, or which was targeted. If information about other skills was offered at the time the community struggled to combat hunger, the impact would probably have been less spectacular. This has important implications for developers who do not consider a developing community's real needs and who provide aid according to their own view of what will be good for the community. This proves that the application of the right information at the right time for the right circumstances is far more effective than information in its original package as provided by its creator or sender.

(b) Continuation of training

The Phase II training course was based on observations made of the Phase I farmers. It was developed to provide for the farmers who have already achieved Phase I and had a desire for further training. Such farmers experienced at least one growing season with the necessary extension and after-care. They already had the feeling of farming in a more structured manner and also developed a feeling of responsibility toward farming in general.

Evaluation proved to be necessary to determine in what direction the transfer of information should advance. This indeed led to the development of Phase II of the training programme. So too was the response of the target groups who already indicated new needs for more information – not necessarily in the field of agriculture. Thus, a move away from the lowest (physiological) needs level on the Maslow hierarchy.

Adendorff's training programme for the Phokoane people proved to be very successful. The graph in **Appendix H** shows the increase in maize production after training took place (Adendorff 1991). The training programme was later developed into a train-the-trainer programme, which eventually formed the backbone of information transfer activities of LAC's Farmer Support Programme (Adendorff 1991).

From an Information Science point of view, two inferences regarding the LAC's response to the training programme can be made here. Firstly: It seems obvious that the LAC must have been unaware of information as an input resource for development prior to the training programme initiated at Phokoane. Other inputs were indeed provided, such as financial input, farming equipment, and whatever was recognised as input resources under the approach followed at that time. Secondly: it seems that only after the correct method of transfer was used (which was compatible with the oral communication system of the target group), the target group realised their lack of knowledge regarding effective maize growing. Only then the need for information as an input resource emerged. This shows us how dependent information is on the correct transfer techniques to be recognised as a resource for development.

7.4 ADVANTAGES OF INFORMATION FOR SMALL-SCALE FARMERS

The Phokoane Case proved that information is an important resource for development which could bring about change to improve people's livelihoods. The transfer of information regarding maize production through training proved to benefit the participants and their community in various ways. These advantages can be divided into two broad categories, namely those observable within the community and those individually experienced by the participants, as summarised in the block below:

Table 7.6 Advantages of information for small-scale farmers

Advantages visually observed	Advantages internally experienced
• Food security • Material possessions • New skills • Improved sense for time and orderliness	• Improved self-image • Accepted self responsibility • Knowledge base enlarged • Improved receptivity • Improved decision-making ability

First of all the aim to provide food security was achieved. People who lived on a sub-subsistence level were able to provide for their own needs as far as maize production is concerned. They could afford more material possessions whereas, previously, their entire meagre income was spent on food consumption.

People's self-image improved. Their attitudes changed. Hostility and bitterness made way for inner peace and harmony among people. They developed a sense of time and orderliness and also learnt to take responsibility for themselves.

The training programme resulted in the extension of the knowledge base of the target group. Participants had a better understanding of maize growing, but also developed

a better understanding of their environment and their responsibility to strive for sustainability as far as soil conservation is concerned. They also learnt about new concepts regarding loans and spending money wisely. They learnt new skills which simplified their method of growing maize and helped them to carry out tasks in a systematic manner.

The training programme helped to develop a receptivity for information regarding maize production which would not have had much meaning for them in the past, for example, brands of seeds, fertilizers or pesticides. They did not only understand, but could take decisions on how and when to apply them. They were no longer dependent on someone knowledgeable to make decisions on their behalf.

The training programme had a multiplier effect. Every successful harvest encouraged more and more small farmers to participate voluntarily – even those who resisted any development efforts in the past. Thus, one successful transfer effort resulted in the natural diffusion of information in the community. People realised how they could utilise communal lands to their own advantage. In this way more than just the target group involved in training, benefited from the successful transfer of information.

7.5 RECURRING PATTERNS

A thorough study of the original training programme, considering the opinions reflected in interviews with different respondents, and studying the video tapes of the different lectures, enabled the investigator to depict recurring patterns which cropped up from time to time through out application of the training programme at Phokoane. These recurring patterns had to do with deliberate efforts to transfer information to a specific target group – the illiterate, adult, small-scale farmer. The recurring patterns (as shown below) could be divided roughly into three groups, that is:

- the deliberate involvement of the *target group* in the transfer process
- *techniques to effectively transfer information* as a resource
- the *role played by the trainer* in the transfer strategy

Table 7.7 Recurring patterns

Target Group Involvement	Information Transfer Techniques	Trainer Involvement
• Trust building • Cultural values & norms • Voluntary participation • Women • Group dynamics	• Metaphorical speech • Storytelling • Memory aids • Visual aids • Face-to-face transfer • Indigenous knowledge	• Planning, management, coordination • Situation-specific training • Thorough preparation • Step-by-step approach • Discipline and orderliness • Incentives & rewarding of achievements • Consistent interaction

These patterns will be discussed subsequently.

7.5.1 Target group involvement

A distinctive feature of the information transfer efforts at Phokoane was the involvement of the small-scale farmers. Adendorff took a firm stand that his training programme should be people centred. He was convinced that the small-scale farmers need to participate in programmes which were aimed at their upliftment. This deliberate involvement of the target group manifested right through the training programme and helped to create a favourable environment conducive to the acceptance of outside information.

Attempts which focused on the involvement of the target group were the following:

(i) Trust building

Realisation of the poor self-image of participants, their distrust and aggression toward outsiders compelled Adendorff to build interrelationships between the target group and himself with all means at his disposal. This was done by showing empathy for them, but at the same time encouraging them to take advantage of the positive side of their lives, their children, ability to sing, possession of land, et cetera. He emphasised from time to time that the "school" was only to the best of their interests – they would not be penalised if they did not perform well, or if they could not read or write. No one would take their lands or their crops from them. The harvest belonged to them and would contribute to their personal food security. Once there was a trustworthy relationship between Adendorff and the participants, they were prepared to take his word – thus willing to accept outside information. So, it seemed that the trust building effort was conducive to acceptance of outside information from an outsider as far as the participants were concerned.

(ii) Acknowledgement of cultural values and norms

According to Wigglesworth (cited in Madu 1992) cultural differences are seldom integrated in training programmes for developing communities. He suggests that the cultural value system of rural communities be given adequate consideration in the training process. Acknowledging cultural values and norms is exactly what Adendorff did in his training programme. For example, religion is held in very high esteem among people of rural communities in this particular area. Therefore, no lecture was presented unless one of the participants opened with prayer – usually said by a father figure who was respected by the group. Often when there was some sort of conflict among the group, singing (another cultural tradition) was used to defuse the situation.

Another example of integrating cultural norms and values was the way in which the training programme was presented. Lectures were usually given in a venue chosen by the group. All lectures were presented in story form in an idiom they were used to. The concept of credit facilities, and how one should safely use them was introduced in a way that would make sense to them. For example: money borrowed that should be repaid with interest was introduced as a cow that should be returned with a calf! The danger of unpaid debts was strictly monitored so as not to let them run into problems they were not used to, or could not handle.

Despite demands for mechanical harvesting, Adendorff insisted that children as well as men working elsewhere, should take part in harvesting operations. In this way he felt family ties could be restored and children as well as the parents could share in their achievements.

Although cultural norms and values were acknowledged and respected, the groups sometimes confronted him with traditional practices which resulted in unsustainability of the environment – for example, ploughing practices that caused soil erosion. When they referred to their forefathers who would not approve of a new practice, he left it to them to decide which way to go but warned that they should be prepared to take the consequences.

(iii) Voluntary participation

No one was ever forced to attend the lectures on maize growing. Only individuals who came out of their own free will, were accepted for training. However, once they volunteered to be trained they were expected to comply with the requirements and discipline of the trainer.

The trainer also left the choice of venue to the participants. Training mostly took place in the open under a tree, near a school building or even in a donga – considering the weather conditions!

(iv) Involvement of women

A typical phenomenon of rural communities is that an increasing number of extended families are headed by women (Nwagha 1992 ; Dixon et al. 1994). This could probably be ascribed to the fact that many of the men migrated to the big cities in search of better paid labour. Adendorff experienced a similar situation at Phokoane. He felt that it would only be fair that women should also have a say in farming matters. For this reason one of his requirements with the election of group committees was that two of the five members should be women. Many of the women in the training groups turned out to be some of the better farmers.

(v) Group dynamics

As mentioned before, to act within a group is typical of rural people. Adendorff used this to his advantage in training the small farmers in effective maize production. In a group situation people could share their views or uncertainties, which could then be discussed and sorted out. Apart from the advantages for the group, it was more time and cost effective for the trainer. Participants could be organised into groups for training. There was much better control over a group's lecture attendance or progress than there would have been in the case of individuals. It was also easier to pass on messages with regard to farming activities to groups than to individuals, and also to visit groups instead of individuals.

An advantage of group dynamics (such as group committees) was that it enabled Adendorff and his co-trainers to attend to a much larger section of the smallholder

communities. Through group dynamics and good management it was possible for about five trainers to attend to 7000 participants from the inception of the training programme.

Adendorff realised that training of small farmers in groups would be far more effective than the training of individuals. Rural people were familiar with communal activities conducted under the authority of a headman. Individuals came to him and asked to be taught to grow maize that gave the same yields as those who had already undergone training. (They were referred by one of the first eight participants – communication by word of mouth.) He also found that those who took the liberty to come, were commissioned by a group of people who were interested. Such persons were natural leaders chosen by their own people and not allocated to a group by an outsider.

Natural leaders simplified matters, because it was easier to reach consent with a leader of a group before starting with the group. Group leaders were also respected and followed by the group. The general credibility of a leader among the group enabled the trainer to convey his message to the group. If the group leader trusted the trainer, he or she would pass on the message to the group. So, the trainer could use the leaders as intermediaries.

It was the responsibility of the group leaders to register their members at the local cooperative. In this way there was some control over who the members of the different groups were, and also how many participants there were for whom the cooperative had to arrange for inputs such as seed, fertiliser, pesticides and bags.

7.5.2 Techniques to transfer information

The techniques used by Adendorff to transfer information proved to suit the information usage behaviour of the rural people at Phokoane well. Most participants originated from the oral tradition. From the discussions below it will become evident that all the techniques he used to transfer outside information are typical of the communication techniques used in a predominantly oral culture. Most of these techniques focused on the users' natural senses such as listening, repetition for memorising, demonstrations for seeing and doing, as well as the incorporation of their indigenous knowledge to hook on new information.

(i) Metaphorical speech

Metaphorical speech was one of the main tactics to simplify concepts regarding maize growing and to approach the group at their level of understanding and also their way of transferring messages. It could be viewed as a form of association where new perceptions are related to existing concepts in the receiver's memory.

(ii) Storytelling

Metaphorical speech was applied in every lecture as a transfer technique. For example: the maize plant was compared to a *musadi* (woman), the soil with a taxi, the witch weed as the lion that sneaks up to the goats in the kraal (maize field), the fertilizer as colostrum needed for growth of the new born calf (maize plants).

(iii) Memory aids

Singing in the fields, repetition of the previous lectures, comparisons between the maize plant and the musadi, or colostrum for calves and fertilizer for seedlings.

(iv) Visual aids

Illustrations on containers to represent clouds and containers with soil to represent the maize field. Showing how deep, or how far apart to plant seeds.

(v) Face-to-face transfer

An outstanding feature of the training programme was that the information was transferred informally face-to-face between the trainer (sender) and the receivers. If something was unclear, there was opportunity for explanations or demonstrations of concepts. This was an ideal situation for transferring information to the particular target group where usually the members were not used to reading to obtain the information they needed. The demonstrations helped to concretise the functioning of techniques or processes, and to support memory.

(vi) Utilising indigenous knowledge

Adendorff used the people's indigenous knowledge of the maize plant, climatic patterns, the soil, et cetera, very successfully in his training programme. He used it as a point of departure to add on "new" knowledge and to show them how they could use that which they already knew more efficiently.

By using the target group's indigenous knowledge of maize farming this transfer technique compares well with the latest trend to integrate indigenous knowledge in the transfer of information to developing communities as recognised by Havelock (1986).

7.5.3 Involvement of the trainer in the transfer strategy

The Phokoane case showed what an important role the trainer has to play in the transfer of information from the developed world to a developing community. The trainer proved to be a crucial link in the transfer process. The particular circumstances in the developing community required a change from the conventional approach of dissemination to an unknown receiver – who could pick from the information made available according to his or her own choice – to a deliberate transfer where the trainer had the responsibility of interpreting the available information on behalf of the receiver.

Apart from the trainer's interpretive function, the discussion of arrangements below is also proof that the trainer created a favourable environment in which the required information could be transferred. It seems that the success of the transfer strategy applied in the case of Phokoane depended to a large extent on the trainer's ability to interact with the receiver groups, and his ability to plan, manage and coordinate the transfer strategy. In this regard the whole transfer process became much more personal than in the case of the conventional transfer process. Apparently this is because the

trainer could not assume that the receivers would understand the information, or know how, where and when to apply it.

The following is evidence of Adendorff's efforts to conduct a transfer strategy within the environment of a rural community with an oral tradition.

(i) Planning, management and coordination of transfer activities

An outstanding feature of the training programme was the consecutive steps followed, and also the coordination and management of other support services necessary to streamline the transfer process. Apart from the well-organised training programme, arrangements regarding the time and venues for the groups' lectures were also well planned and managed to accommodate participants – who had to travel on foot to attend meetings. For the trainers too – who had to present lectures at more than one venue on one day, thorough planning proved to be more sensible.

The transfer of information regarding ploughing, hoeing, fertilizing or pest control was planned ahead according to the consecutive stages of the maize growing season. The lectures for the different groups – which took place on different days – also needed to be coordinated to avoid duplication. Without these arrangements the trainer would encounter numerous breakdowns in the transfer process. This proves what an important role planning, management and coordination of transfer activities play in the transfer process.

(ii) Situation-specific training

The goal of the training programme was to introduce the participants to a specific practice – that of growing maize for food security and not for commercial production. The transfer of information was limited to comply with the specific needs and situation of the participants and not extensive training in the particular practice. The training was also at a level and in a manner acceptable to the group(s). In this way the outside information had a stronger impact, it enhanced receptivity while the participants were not overwhelmed with unnecessary detail.

(iii) Thorough preparation

Thorough preparation proved to have contributed to the success of the information transfer activities in the Phokoane Case. The manner in which each lecture was compiled, the arrangements for seed, fertilizer, arrangements with tractor services for ploughing et cetera are all evident of thorough preparation to ensure a smooth operation of the training project and thus the transfer process. Thorough preparation in itself contributed to the trainer's credibility among the participants.

Thorough preparation of each lecture was essential for different reasons. First of all, the different groups were at different levels of the training programme. So the trainer had to keep track of each group's progress. Secondly, each group had its own "personality". What attracted the attention of one group, might not get any response from another group. He tried to accommodate every group's "personality" as far as

possible in the presentation of lectures. This also shows how important intimate knowledge of the groups is in the transfer of information in a face-to-face situation.

Since Adendorff had to explain every concept very clearly and at an elementary level, he used examples from everyday life which they were used to, and simultaneously integrated a lot of their indigenous knowledge in his presentations. This approach called for careful preparation. Should he use the wrong metaphor, or be insensitive to their values and norms, he could easily annoy them or lose their attention. The preparation of lessons was time consuming and energy sapping, but in the end it was worth all the effort.

(iv) Step-by-step approach

In conjunction with the thorough preparation, all the factual information regarding maize growing was transferred according to a step-by-step approach. Since the participants had virtually no knowledge of proper cultivation methods and were mostly elderly people and illiterate, the transfer of information had to be done step-by-step so that they could come to grips with new concepts. For the same reason the basic facts on maize production were broken down into consecutive lectures. Each lecture built on the contents of the previous one. The main points of the previous lecture were always emphasised at the start of the next lecture.

The step-by-step approach was even taken a step further during field visits where practical problems regarding a particular issue – such as weeds or pests – were identified and discussed on a one-to-one basis. This implied that the participants could use the trainer as a sounding board to evaluate their own understanding, and they could get immediate feedback.

(v) Discipline and orderliness

Discipline and orderliness was present in all transfer activities for practical reasons. Once new information was introduced, arrangements for related activities such as ploughing services or provision of seed and fertiliser had to be in place to enhance the process of implementation – since implementation was still part of the transfer process.

Discipline and orderliness in the transfer process was further enhanced by keeping an attendance register for all participant groups. Adendorff also prepared timetables for various activities to be carried out during the growing season. These were given to the leaders of the different groups to warn the members of the groups ahead of time. In this way he could keep track of the various groups' progress, and avoid some groups missing out on the contents of a particular lecture, or the same lecture being repeated for a second time.

(vi) Incentives and rewarding achievements

Incentives and rewarding of achievements were used in the transfer process to motivate participants to implement the newly obtained information and also to show concrete evidence of their intellectual gain. Adendorff found that rewarding any form

of achievement meant a lot to the participants. He used the award ceremony and certificates to enhance their self-respect and self-image. The participants interpreted this gesture as an acknowledgement of their being somebody.

Those who completed the programme and passed the oral test obtained a certificate. During the contest whenever someone answered a question correctly, he or she was praised. No matter how small the contribution, it was always acknowledged. This enhanced commitment on the part of the participants.

Although the rewards were meant for accepting outside information, they manifested in a setting more acceptable to the particular circumstances. For example: a participant who received a certificate qualified for more credit facilities at the cooperative than those who did not pass the test or attended lectures irregularly. More credit at the cooperative meant that such a person could plan effectively in advance for the next year's crop. In this way participants were motivated to take part in the training programme they volunteered for.

It is well known that the people of rural communities are fond of singing. Adendorff made a point of showing his admiration for the participants' talent of singing while working in the fields or while carrying out daily chores. This too was a form of reward. After the harvest too he visited all of them and complimented them on their yields and shared in their pride and joy. These gestures were highly regarded by all participants. So it seems that different incentives and rewards were applied as particular situations occurred and they played an important role in smoothing the field for the transfer process among the small farmers. From an Information Science point of view, incentives and acknowledgement of achievements at the right time can be conducive to the transfer of information.

(vii) Consistent interaction with target groups

The consistent presence of the trainer and his personal interest in the groups' progress were evident in all phases of the training programme. This helped to build trust. More so than with trainers who would turn up from time to time to impart information and then disappear again for someone else to come and introduce information on other issues which do not always make sense to the receivers. The trainer who started the transfer process regarding maize growing took it through all its phases up to a point where the target group could form a picture and the whole issue was put into perspective.

7.5.4 Multiplying effect of information

The multiplying effect of information was evident in the fact that more and more small farmers volunteered the moment they observed the bigger yields of their neighbours, and also when they realised that the good harvests enabled the participants to afford more material possessions than before.

The achievements resulting from the transfer of technical information also brought a change in attitude. Aggression and resistance gave way to self-confidence and more tolerance of one another. In the Phokoane Case those who resisted development

initially by plundering the Cooperation's crops, later came to the first participants and asked to be trained to grow maize so that they too could benefit from the results. Those participants who experienced the initial success, asked to be trained in all kinds of skills.

The recurring patterns discussed above, can be seen as a "tool kit" from which Adendorff pulled techniques and tactics to ensure that information was transferred effectively. How and when to apply them remains a challenge for any facilitator who wishes to participate in such a transfer effort.

7.6 INFORMATION ATTRIBUTES EFFECTIVE DURING TRANSFER PROCESS

The Phokoane Case provided us with practical examples of a number of attributes of information that prove suitable for information transfer to rural communities. They prove why information could be viewed as an important resource for development, but also that information has little value unless the target group understands how to apply it to their advantage. A thorough scrutiny of the Phokoane Case enabled us to identify a number of the attributes of information which distinguish it from other input resources needed for the development of rural agriculture. A culmination of these attributes (which are mainly intangible) made by Eaton and Bawden (1991), was discussed in chapter 4 of this investigation. The following discussion reveals how these attributes manifested in the development of small-scale farmers at Phokoane:

7.6.1 Value of information

Eaton and Bawden (1991) suggest that, unlike other tangible resources, information is not readily quantifiable. Its value depends on its context and its use by particular users on particular occasions. The Phokoane Case is proof of this statement, considering that information regarding maize growing was offered at a time when the participants were starving, had a poor self-image and distrusted outsiders. If at that stage, for example, information on how to read or write, or how to prevent tuberculosis would have been offered, it probably would have been accepted with less enthusiasm, because it did not address their acute problem – that of hunger. Thus the timing for the transfer of this particular type of information was right for the prevailing circumstances. The information regarding maize growing was also offered at a level and in a manner the receivers could relate to. In the Phokoane Case information on maize growing came at the right time, and its successful results gave rise to a demand for more information on other issues such as training in reading and writing skills and other occupations. So it seems that the right timing and the particular circumstances brought meaning to the information provided which would have had less value for the receivers otherwise.

The training programme also resulted in opportunities for tractor services, demand for more input facilities such as seed, fertilizer and pesticides. So, it seems that in the case of Phokoane, the right information at the right time brought the multiplier effect into play.

7.6.2 Multiplicative quality of information

An outstanding difference between information and more tangible resources is that it is not lost once it is given to others. Sharing it almost always causes it to increase

(Eaton and Bawden 1991). The fact that more and more small-scale farmers volunteered to participate in the training programme after the initial successes of the first participants, is evident of the multiplicative quality of information. The nonparticipating small-scale farmers who saw the results of training in their neighbours' maize fields also wanted to benefit from this new resource obtained through training. In this case training is the variable that made information a useful resource.

The fact that so many of the participants were inspired to learn new skills after their initial successes, is also proof of the multiplier effect of information as a resource. In fact this demonstrates that information can be a dynamic force in development.

7.6.3 Dynamics of information

The Phokoane Case proved that information is a dynamic force which can bring about change in a person's understanding. Although the participating farmers were unaware that it was their newly obtained information that gave rise to their successful yields, these successes motivated them to express their desire to practise their newly obtained method of maize growing and to learn other skills too, such as reading and writing. It seems evident that information as an intangible resource caused certain responses in those small farmers who experienced it. In the Phokoane Case the responses were conducive to development.

The outside information obtained through the training programme indeed extended and altered the participants' store of knowledge – not only as far as maize growing is concerned. It also widened their horizons and increased their perceptions. This was confirmed by many of the participants who were interviewed as proved by the following quote: [our] *eyes have been opened and we are now in the light - day and night*

Apart from the cognitive changes brought about among participants, the newly obtained information also caused a change in attitude. Adendorff (1991) observed that the participants had more self-confidence, there was a willingness among participants to take responsibility for themselves, and their successful harvest motivated them to practise their newly obtained techniques once again in the next growing season.

7.6.4 Interdependence of information

The Phokoane Case proved that the value of information depends upon the context in which it manifests itself, as well as its use by particular users within specific situations. Proof of this was identified in the following incidents in the Phokoane Case:

- **Dependence on other input resources**

  The fact that Adendorff had to arrange for inputs such as seed, fertilizer, weedkillers, ploughing and tractor services, is proof of the mutual dependence of information on other resources for development. If the other resources were not available, the newly obtained information might have served to broaden the individual or group's knowledge base regarding maize growing, but it is doubtful whether they would have benefited from it if (a) they could not obtain tractor

services in time to plough, (b) fertilizer was not available when needed, (c) they did not have the fiscal means to buy seed or obtain the mentioned services to get the ball rolling. The opposite is also true. All the other resources could have been available, but would have proved less advantageous without knowing or understanding how to apply them effectively.

- **Medium dependence**

  Apart from information's dependency on other resources for development, the Phokoane Case proved that information is also dependent on the users' trust in its effect and the users' understanding or preference for the medium through which information is conveyed. So, it seems that information is also dependent on less tangible dimensions such as trust, personal preferences and understanding.

- **Intermediary reliant**

  The Phokoane Case also showed to what extent information is dependent on culture and medium. The contents of the training programme had to be transferred face-to-face and by word of mouth in order to be acceptable for the participants who were unfamiliar with information in a written or printed format. In addition, they did not have enough background knowledge against which to judge any outside information offered in written or printed format in isolation – that is, without the help of an intermediary to explain or interpret the contents.

  Due to the participants' lack of knowledge of modern farming practices, information regarding maize production was also dependent on training to be of any value to the target group. Without the particular manner in which the training was done (metaphorical speech, comparisons, acting, demonstrations, etc) this particular type of information would have had less value for the participants. So, what actually happened here was that Adendorff took outside information and applied to it linking mechanisms (metaphorical speech, etc) that were used in the indigenous information system, to make it acceptable to users from the oral tradition. In effect he rerouted information from the modern information system to the indigenous information system.

- **Situation specific**

  All this proved that information as a resource for development is dependent on a specific situation to warrant its usefulness to the potential user(s). The well-known cliché "the right information at the right time to the right people at the right level", applies here.

7.7 REASONS WHY THE PHOKOANE CASE IS VIEWED AS SUCCESSFUL

Since a qualitative approach is followed in this investigation, we can raise questions about the validity of the successfulness of the outcome of the transfer strategy. How can we prove that the transfer strategy followed by Adendorff was indeed successful?

Firstly evidence to prove the validity of this statement can be found in the effect the transfer endeavour had on the small-scale farmers as well as the impact on the rural agriculture of the particular area. The impact is visualised according to two categories in the box below:

Table 7.8 Proof of success of information transfer

Small farmers	Rural agriculture
• Increase in self-reliance • Change in perception • Extension of knowledge base • Develop motivation • Acceptance of responsibility • Increase buying power • Send kids to school • Re-uniting of families	• Increase in yields • Improved food security • Increase in voluntary participants • LAC incorporated the strategy in its extension service to small-scale farmers

Secondly, The initial training programme proved to be so successful that the LAC adopted it for extension services within its jurisdiction (personal communication with LAC official 1996). Thirdly, a number of research projects were carried out at Phokoane to study various aspects of the approach followed by Adendorff, such as the research projects reported by Kirsten, Sartorius van Bach and Van Zyl (1995) and also that of Fischer and Vink (1995). Apart from invitations to address various farmers associations and agricultural societies on the topic, Adendorff also confirmed that he had received visits from representatives from international institutions such as the World Bank and the BBC who were interested to learn more about his approach (personal communication 1996).

The initial success of the Phokoane case still has a ripple effect in the sense that Adendorff is still approached to consult development agencies on projects carried out in different rural communities such as Thabina in the Northern Province and Ndonga in the Eastern Cape (personally visited by this investigator in 1998).

7.8 SUMMARY AND CONCLUSION

In this chapter the consecutive steps of a successful training programme have been discussed and analysed from an information transfer point of view. The in-depth analysis revealed a number of insights regarding spanning of boundaries between an information system of the developed world and the indigenous information system used by people originating from an oral culture. It seems that the success of the transfer action can be attributed to the following:

- utilisation of transfer techniques from the indigenous information system to transfer information originating from the developed world

- identifying and addressing negative attitudes and perceptions, which could retard the transfer process, in the target group

- considering the target group's existing state of knowledge
- good planning and coordination with related services and activities of subsystems of the transfer system
- participation of the target group in the transfer process

The outcome of the analysis made in this chapter proved why the transfer of information in the Phokoane Case could be viewed as successful, namely, that it brought about change with regard to the participants' life style, as well as in their maize production practices.

The investigation of the Phokoane case also revealed which attributes of information were most suitable in a developing situation. These correlate well with the comparison of attributes which was carried out in chapter 4.

From an Information Science point of view, Adendorff's training programme represents a model for the transfer of information, applicable to the interface between the development agent and the target group in the rural community. This training model is similar to that of Rogers' route to change, discussed in the previous chapter. The first three sections of the training programme (observation, survey and needs analysis) make up the information collection stage. This stage compares favourably with the first step of Rogers' route-to-change model – the existing state. The following steps (approach, action plan and plan for implementation) make up the next stage where contact is made with the target group who are made aware of the intended training programme. This stage compares favourably with Rogers' awareness raising step. The training stage compares well with the route-to-change step for development of knowledge, skills and understanding. Unlike the route to change, there is also an evaluation step, which is essential to determine if the transferred information has had the desired effect on the target group. The final step is the achievement of the desired change where the target group applies the transferred information as a routine practice.

However, a remarkable distinction of Adendorff's approach is his ability to utilise techniques deriving from the indigenous information resource system to introduce information derived from the modern information resource system.

Adendorff's approach offers an opportunity to develop a new theory on how to bridge the gap between the developed world and the developing world regarding information transfer. It also sheds light on how to add value to information as a resource for development. These will be discussed in the synthesis in chapter 8.

CHAPTER 8

TRANSFER OF AGRICULTURAL INFORMATION TO RURAL COMMUNITIES

8.1 INTRODUCTION

The discussion so far, regarding the transfer of agricultural information to rural communities, as well as the analysis of the Phokoane Case, has produced valuable insights, enabling us to visualise how information could be transferred more effectively to rural areas. The investigation has also provided insight and information that could be put to good use in planning a strategy for the transfer of information to rural communities. Therefore, the purpose of this chapter is to

- develop a model for the transfer of information to rural communities
- identify variables to be considered for a strategy for the transfer of agricultural information to rural communities
- reflect on the role of the facilitator in the information transfer process

8.2 MODEL FOR INFORMATION TRANSFER TO RURAL COMMUNITIES

The Phokoane Case, which was about the transfer of agricultural information to small-scale farmers (in this case, illiterate adults), provided us with the opportunity to observe the complexities of the transfer process between industrialised countries and target groups in rural communities where the oral tradition still prevails. This generalisation can be made in terms of the fact that the literature (discussed in chapter 3) reveals that rural communities in most developing countries have an element of illiterate adults who are unfamiliar with outside information from industrialised countries. In order to meet their information needs, they are

- dependent on the information usage behaviour present in oral cultures
- dependent on their indigenous store of knowledge
- exposed to outside information, but have difficulty in either accessing or exploiting it to their advantage due to lack of an effective boundary-spanning mechanism

Unless they are deliberately introduced to outside information, it will have no meaning to them and they will be unable to benefit from it. It was exactly this type of problem that was addressed in the Phokoane Case.

We could view the training programme of the Phokoane Case as an act of deliberate transfer of information similar to "technology push", which shows us what can be done so that illiterate people can benefit from the information at their disposal. In terms of development it was a planned intervention, because there was no demand from the target group due to their ignorance of information as a resource.

8.2.1 Creating a new model

Insight gained from the literature study for this investigation, as well as the Phokoane Case as a planned intervention, offer the opportunity to develop a transfer strategy where a number of variables have to be considered, such as the information usage behaviour of the target group, environmental and socio-economic conditions, local policies, infrastructure and the contributions of different stakeholders involved in activities related to the issue of concern (ie maize production).

It seems that much of the success of the transfer process in the Phokoane Case could be ascribed to the systematic manner in which it was approached and the different variables that were accommodated. Meticulous planning, coordination and good management, target group participation and integration of indigenous knowledge seem to have been prerequisites to keep the transfer process on track. In other words, all these variables became building blocks for the transfer route between the information resource and the target groups as recipients.

Probably the most important lesson learned from the Phokoane Case was the application of transfer mechanisms, typical of the indigenous knowledge system, to outside information from the information resource system of the developed world. Thus, Adendorff utilised elements of both the indigenous information resource system and the required information from the information resource system of the developed world. This actually resulted in the merging of the two systems to serve the particular type of user group. We can visualise the transfer process for rural communities as two feeder roads coming from different directions which merge to become the main road, which then carries the required information to the target groups where it is applied in the consecutive steps of the transfer programme. The main road also provides the opportunity to convey feedback from the target group. This then forms the basis for a model of the information transfer process to rural communities as depicted in **Figure 8.1** (see verso of previous page).

Considering the fact that the transfer mechanisms of the indigenous knowledge system require human involvement, it seems natural that the presence of an intermediary will always be required for the deliberate transfer of information to rural communities – especially for technical types of information. This model is of importance to the very last link or interface between the development agent and the target group at grassroots level.

8.2.2 Explanation of the Merger Model

In this section, the meaning of the different components of the model will be explained in more detail. These components include: the information systems from which the feeder roads originate, the merging point from where the facilitator controls the transfer process, the composition of the main road which represents the transfer strategy, the continuous interaction of facilitation and feedback between the facilitator and the participants, which should take place during all the steps of the transfer strategy, and finally the desired change regarding increase of knowledge, change in attitude toward outside information, establishing food security and improvement of living conditions.

(i) Feeder roads

The two feeder roads referred to in the model represent channels to access components needed from the two information resource systems to which the target groups in rural communities are exposed, or from which information can be drawn to apply in practice in order to solve problems. These two systems – the indigenous knowledge system of the oral tradition and the modern information resource system of the developed world – are of course incompatible. In order to make the two systems more compatible, human intervention is required in the form of an intermediary or facilitator who is familiar with both systems, and who should know how to access both systems via the feeder roads. Thus, at the point of merging the transfer process requires human intervention. The intermediary or facilitator takes on the responsibility of the merger.

From this point onward the transfer process requires deliberate efforts to select only appropriate information from the resource systems, as well as selection of transfer mechanisms most suitable for a particular situation. The success of the transfer process to a large extent depends on the manner in which this merging function will be carried out. Without a thorough knowledge of the functioning of the two information resource systems, management of the transfer operations, the target groups' requirements and conditions of the environments in which they operate, transfer of information to rural communities might be less successful.

(ii) Main road

The main road represents the transfer strategy to be followed by the intermediary or facilitator. This includes, inter alia, a survey of the existing state, a situation analysis, decision on an approach and plan of action to follow, implementation of the action plan, transfer through training, testing, evaluation and continuation after the desired change has been achieved. Since the target group participates in the transfer process, their interpretation, experience, complaints or needs can be referred back along this road to the intermediary, who can decide how to adapt the transfer strategy to accommodate the target group. So, the model also allows interaction.

(iii) Consecutive steps of the transfer strategy

The main road component of the Merger Model resembles the consecutive steps of the strategy the intermediary or facilitator needs to develop for the transfer of information for a particular situation. The consecutive steps discussed below were inspired by insights obtained from the step-by-step approach followed by Adendorff in the Phokoane Case, as well as the consecutive steps reflected in Alan Rogers' route to change. These steps include the following:

(a) Observing the existing state

Lessons learnt from the Phokoane Case and the literature show how important it is for any transfer strategy to determine the existing state as a point of departure. Determining the existing state can be done by carrying out a survey and through observation. Data obtained are then analysed and the results will give an indication of the existing state.

Adendorff's survey provided us information-wise with the type of issues in the existing state of the small-scale farmers that one can also expect to find among other target groups in a rural community. The issues of the existing state were, inter alia, a lack of knowledge among the small-scale farmers with regard to an effective maize growing practice (eg how deep to plant, application of fertilizer and timely weeding). The small-scale farmers were also unable to relate existing chunks of knowledge to apply to a specific situation. For example: the appearance of beetles at certain times in the maize fields and holes appearing in leaves were not related to each other and, therefore, not understood as a pest that could destroy their crops. There was a general lack of familiarity with modern farming practices, inputs and financing. People were mostly illiterate and used to a verbal and visual exchange of information. In a certain sense the small-scale farmers' existing state enables us to establish an information profile that could help us to design a more effective transfer strategy.

Understanding circumstances of the existing state also provides an opportunity to help participants increase their awareness of their situation and to develop their concern for change in their social, economic, cultural and political circumstances.

(b) Situation analysis and awareness raising

Awareness raising is the step where the target group is made aware of their needs and problems and possible solutions. In the Adendorff design this was also the step that followed the existing state as suggested by Rogers' route to change. However, the Phokoane Case revealed that awareness raising did not take place as an isolated incident. Initially, the very first participants were made aware of better maize growing practices by following the suggested instructions. Their successes raised awareness among neighbouring farmers who were eager to obtain similar results.

According to Rogers (1992:133) awareness raising is more than informing the target group. It is also listening to the participants while discussing with them the concerns of the intended programme – a question of sharing perceptions. This is exactly what happened during the survey conducted to obtain background information on the target groups. The survey was actually a sharing of experience where the participants revealed their way of living to the investigator. In the process the participants were able to reassess the value they placed on various elements within their world of reality. Adendorff as investigator aptly shared his concern with them, by explaining that he needed certain information from them in order to build the road on which they must walk in future.

However, awareness of various aspects of maize growing developed gradually as the training programme advanced. This is indeed what Rogers (1992:135) said about awareness being a continuing process, a constant reinterpretation of reality in the light of fresh perceptions, fresh experiences and fresh insights.

Awareness enabled participants to concretise their needs, wants and desires. It also motivated them to take action by volunteering to take part in the training programme.

The awareness raising step is essentially an exchange of information between the target group and the developer who needs to act upon the information and also become aware of detail that could result in the adaptation of his or her plan of action. It seems obvious that both the developer and the target group need to become aware of circumstances. It is indeed a process of sharing different ways of seeing ourselves and our world (Rogers 1992:135).

In light of the above, it seems natural that awareness raising should be one of the first steps of a transfer programme for development purposes, because the transfer of information needs to be based on the target group's sense of awareness.

(c) Plan of action

The plan of action includes a number of decisions that need to be taken regarding the approach that is to be followed (eg involvement of the target group, nature of transfer activities, implementation, evaluation and in what form the transfer activities should be continued).

Apart from the approach to be followed, the plan of action also includes the consecutive steps to be followed during the actual transfer of information (eg training sessions in which the actual information is transferred, dates, venues and implementation).

Adendorff's training programme was the stage where the transfer of information was put into action. In effect it was a development of knowledge, skills and understanding. The action stage comprises a set of consecutive steps. First the transfer process was planned and designed and shared with the participants. The next step was to initiate the training programme by setting dates and venues for the consecutive lectures, which were followed by the implementation of the actual activities of ploughing, planting, hoeing, et cetera. This allowed the participants to act on what they had learnt. Simultaneously, regular field visits were carried out to transfer additional practical information to reinforce perceptions that were transferred during the lecturing sessions. This is proof of a personal experience of the transfer process in the fullest sense of the word and not merely the imparting of information through talking. Here the transfer of information became an action programme where the participants were involved in their own development.

(d) Evaluation

Evaluation is necessary to determine whether adaptation of the original plan is necessary. Without evaluation, a developer can easily follow a strategy based on assumptions which can in the end prove to be costly if not accepted by the target group.

Adendorff's training programme is evidence of how important it is to determine the efficiency of a chosen strategy in any transfer programme. Adaptation to local conditions was viewed necessary to ensure acceptance of information by the target groups. This step is rather important for information transfer in general, since adaptation to achieve acceptance adds value to information as a resource for development.

(e) Continuation to achieve the desired change

Evaluation of the transfer strategy determines how the transfer activities should be continued to achieve the desired results. That is, the acceptance and implementation of newly introduced information.

In the Phokoane Case, the desired change that was brought about by the transfer of information could only be established after the regular implementation of the new practice for a number of consecutive seasons. However, as in the case of development, information transfer is a continuing process. Phase II of the training programme at Phokoane is proof of this. After the initial success of Phase I of the training programme, many of the small-scale farmers had a desire to obtain information on more advanced practices where knowledge of fertilizer, pesticides and advanced planning and marketing was required. As the desired change was achieved, it gave rise to a demand for more information on other types of skills. This could be viewed as the multiplier effect of information.

The consecutive steps of Adendorff's training programme seem to be the essential boundary spanners between the developer – originating from the developed world – and the target group in the developing community. This is because they help to bridge the gap in understanding through situation-specific training, and also acknowledge the receiver of the information in his or her entirety. Differences in circumstances between the two worlds force this last link in the transfer process to be face-to-face, and in an oral medium. This is evidence of the difference between the transfer of information to rural communities and conventional transfer practices in a developed set up. In the case of Phokoane the training programme was not only a boundary spanner, but became the point where two information transfer systems merged. However, it is significant that this merging was not possible without planned human intervention. It therefore seems that the information transfer process between the developed world and developing communities needs a switch over, which requires human intervention.

8.3 VARIABLES TO BE CONSIDERED FOR A TRANSFER STRATEGY

The discussion of the model above is a visual representation of the information transfer process. However, lessons learnt from the Phokoane Case, as well as the literature study, prove that there are many variables that should be considered during the development of a transfer strategy. The variables to be considered can be related to four categories, namely: the approach to be followed, people involved in the transfer process, information systems that serve as resources, and features of information that could influence the transfer process. All these are summarised in **Table 8.1** below.

8.3.1 Approach related variables

There is much to be learnt from the approach adopted by Adendorff, which contributed to the successful transfer of information on maize growing. Among the most important features identified were

Table 8.1 Variables to be considered for a transfer strategy

Approach related	People related	System related	Information related
1. Transfer through training	1. Authority and leadership	1. Information resources	1. Training
2. Voluntary participation	2. Family structure	2. Indigenous knowledge	2. Format
3. Involve groups	3. Traditions, norms, values	3. Transfer mechanisms	3. Language
4. Recognise women	4. Perception of time	4.People as boundary spanners	4. Credibility
5.Trust building	5. Group dynamics	5. Informal networks	5. Observability
6. Coordination, discipline, orderliness	6. Collective memory	6.Media & channels	6. Relevance
7. Step-by-step approach			7. Relative advantage
			8. Ease of understanding
			9. Ease of use

(i) Transfer through training

Information transfer through training seems imperative in cases where the target group is introduced for the first time to outside information regarding a certain practice. As is the case with so many rural communities, most of the small-scale farmers in the Phokoane area were elderly people or women with young children. Some of the participants were in their eighties. Most of them were illiterate which implied that existing information from the developed world was inaccessible to them. Therefore, the training programme served as a platform to extend the group's knowledge base.

Through training, information regarding maize growing was repackaged to suit the needs of the target group. It was also adapted to their level of understanding so the exercise was more than merely passing on facts. The participants' unfamiliarity with the literate world's way of transferring information was taken into consideration. Adendorff focused on their well-developed skills in listening and memorising to transfer information. His methodology proved that literacy is not always a prerequisite for the transfer and implementation of information or technology. There is an important lesson to be learnt from this, since most of the development efforts in rural communities undertaken by development agents are aimed at illiterate adults.

The information transferred by Adendorff through training was situation specific. He realised that training in general would have very little effect if people could not relate

to it, or put it to practical use. Therefore, his training was limited to maize production. A high yield meant survival, and this served as a strong incentive for small-scale farmers to take part in the training programme.

Adendorff was aware that the participants in his training courses did have some knowledge (indigenous knowledge) of maize growing according to their traditions, but they lacked knowledge of the standardised practices of deep ploughing, proper hoeing, fertilisation, et cetera. So, he first had to train these people at a very elementary level in a way that made sense to them and which was acceptable to them. In other words he first had to increase their receptivity before they could accept this "new" information on maize growing.

(ii) Voluntary participation

Since the latest trend in development is that participants from target groups should take part in all aspects of the transfer strategy, it is important to encourage members of a target group to participate. The Phokoane Case showed that participation contributed to people's self-esteem and self-confidence. However, this participation should be voluntary. In the case of Phokoane, no participant was forced to accept the information offered. After the first successes of the training programme, small-scale farmers volunteered to participate.

(iii) Involvement of groups

Since most people in rural communities are used to the traditional methods where the leaders decide on behalf of the groups, it seems advisable that groups and not individuals should be involved in the planning, decision making and implementation of transfer activities. For example, in the Phokoane Case, participant groups were encouraged to take part in quizzes or participate in question time during group meetings and field visits. Contact between the field worker or facilitator and the participants is simplified where groups instead of individuals can be visited.

Apart from these practical arrangements, individuals in a group depend on the opinion of the group when new information is introduced.

(iv) Recognition of women

The investigation showed that about 80% of the small-scale farmers in rural communities are women, therefore, it is important to involve them in decisive matters. However, they could only be involved if they had the necessary knowledge to enable them to show their insight into matters in which they are involved.

(v) Trust building

Trust building and development of self-confidence are viewed as prerequisites to change existing mind sets of aggression and distrust to attitudes of trust and acceptance of information that is introduced from outside. In the case of Phokoane, trust building was achieved through rewarding every task carried out correctly by way

of positive remarks or certificates awarded at ceremonies. The expression of appreciation for typical features such as beautiful singing and respect for the groups' values and norms were other attempts to build trust and gain credibility. Thus, it seems important to build in incentives that will also motivate people to develop responsibility for themselves.

(vi) Coordination, discipline and orderliness

The Phokoane Case showed how valuable planning, coordination, discipline and orderliness can be in any transfer programme. These prove to be general prerequisites for the smooth functioning of the transfer process. They were applied in Adendorff's training programme, as well as in arrangements for meetings or organising support services.

(vii) Step-by-step approach

The Phokoane Case, as well as examples from the literature study, show how important it is to follow consecutive steps in the transfer process and also not to provide too much information at a given time, which could result in confusion among the recipients. In the Phokoane Case the transfer of information was carefully planned. The fact that the participants were dependent on their memories for storing new concepts, compelled the trainer to break down the contents of the training programme into consecutive lectures. Each lecture contained only essential facts, in order not to overwhelm the receivers with too many new concepts at a given time.

Since the participants were mainly elderly illiterate people originating from an oral tradition, it seems obvious that the transfer mechanisms used to transfer information regarding maize production should meet the requirements for information transfer in traditional or oral cultures. Although the Phokoane Case did not explicitly reveal how inhabitants transfer information among themselves, the transfer methods that were applied successfully during the training programme provided us with clues to the type of transfer mechanisms the target groups were used to, or could relate to. These were inter alia:

- **oral** means of information transfer through storytelling
- use of **metaphorical speech** to accommodate a traditional means of communication to which the participants could relate
- **acting** to transfer and aid memorisation of factual information such as the correct use of fertilizers for different growth phases of the maize plant
- **demonstrations** to aid visualisation of real-life situations and to emphasise the importance of acting correctly to avoid disaster by, for instance, ploughing correctly to avoid soil erosion
- relating outside information to **indigenous knowledge** such as comparing the value of fertilizer for seedlings to that of colostrum for new-born calves

- **repetition** to reinforce the memory for storing information

All the above compared well with the typical way in which oral cultures transfer information in general, as discussed in chapter 5.

Considering the above it seems clear that the approach followed emphasised the human element in the transfer process with a desire to address existing attitudes and perceptions that could retard the transfer process.

Although the training programme was concerned with the transfer of information to small-scale farmers, it certainly can be generalised to the transfer of information to other groups in a rural community who are also elderly, illiterate, unskilled in modern practices, and originate from the same type of traditional background. These insights can be put to good use when developers wish to design strategies for information transfer or technology transfer to rural communities with the intention of developing different sectors in a rural community.

8.3.2 People related variables

(i) Authority and leadership among groups

The literature reveals that headmen and elderly people are usually viewed as authority figures in traditional cultures. This was also the case at Phokoane. Traditionally, headman were respected by the group for their knowledge and wisdom and are therefore trusted in decision making and planning to solve problems (Olson 1994:107). It seems that the group put their faith in their leaders and believe that they will know best and act on their behalf. This is probably the reason why very few of the group will take the risk of making an individual decision.

According to Olson (1994:42) the opinion of an authority figure will be accepted over ideas contained in written information, since knowledge in print is experienced as downgrading figures of wisdom. Interestingly enough, Adendorff found that once he as an outsider was accepted by the groups, they trusted him fully regarding the outside information and accepted whatever he introduced unconditionally. It would therefore seem that information from the development agent will be accepted, provided he is trusted by the group. It seems evident that mutual trust plays a cardinal role in the transfer of information among traditional cultures.

In the Phokoane Case, Adendorff found that many of the farmers who approached him to sign up for participation for the first time, were actually commissioned by a group of people who were interested in his training programme. These "delegates" turned out to be natural leaders selected by their own group and not allocated to a group by an outsider.

Adendorff found that the advantage of group dynamics with regard to information transfer is that it is easier to reach consent with the group leaders before starting with the group. Group leaders were also respected by the group. Their credibility among the group enabled the trainer to convey his message to the group. If the group leader

trusted the trainer he or she would pass on the message to the group. So, the group leader becomes a natural channel for the transfer of information to people at grassroots level.

(ii) Family structure

Adendorff's needs' analysis revealed that although the small-scale farmers had an extended family structure, the husbands or able men were mostly absent as a result of migration to the cities in search of paid labour. This seems to be a typical phenomenon in rural communities where an increasing number of extended families are headed by women (Nwagha 1992, Dixon et al 1994). At Phokoane about 80% of the small-scale farmers were women. This had serious implications for decision making or provision of funds for participating in the training programme (buying seeds, fertilizer, etc to implement newly obtained knowledge), or in applying for loans. Indirectly, the absence of males hampered the acceptance and implementation of information or technology.

(iii) Traditions, norms and values

The needs' analysis conducted by Adendorff revealed that most of the participants originated from a traditional culture. From the literature (Goody & Watt 1963; Ong 1982; Botha 1991; Olsen 1994) it is also evident that in traditional cultures all information is obtained, stored and transferred by oral means – that is, face-to-face and by word of mouth. This has serious implications for the transfer of agricultural information from the industrialised countries to rural areas. The bulk of the information from the industrialised world is currently disseminated through print and electronic media. This implies that outside information in these media will be inaccessible to small-scale farmers, unless it is interpreted by an intermediary such as an extension officer or trainer, or repackaged in a format and on a level they can understand.

A large part of Adendorff's success with transferring outside information to his target group can be found in his application of transfer techniques of the oral culture, in this way honouring the group's traditions, norms and values. His approach proved that unless transfer methods are changed to acceptable levels for this type of recipient, the transfer effort will be less successful.

(iv) Perception of time

In traditional cultures time does not seem to be the same issue it is for people from the developed world. Rural people tend to carry out chores much more leisurely (Hill & Still 1980). This has implications for maize growing practices where ploughing, planting, hoeing and application of fertilizers or pesticides requires timeliness to avoid crop failure. These activities could not be carried out at will. Adendorff addressed this problem by supplying the group leaders with timetables regarding different activities during the maize growing season.

(v) Group dynamics

Although it is not stated explicitly in Adendorff's needs' analysis, it is well known that rural people are used to communal activities conducted under the authority of a

headman. However, he was certainly aware of this, which is why his training programme was directed at groups and not individuals. An important lesson can be learnt from Adendorff's utilisation of group dynamics in his transfer strategy.

A scrutiny of the training programme as well as several interviews revealed how the group dynamics phenomenon was manifest in the groups' information behaviour. For example: members of the group supported each other in interpreting the training programme's contents – which were regarded as outside information. The group seems to safeguard individuals from misinterpretation or taking the risk of making independent decisions on issues they are not too familiar with. Individuals usually abide by the group's decision on an issue. A few examples are the confirmation of the group on how much fertilizer to apply per hectare, how far apart seeds should be planted, or how deep to plough. All these concepts were new to the participants, and because they were not used to taking decisions individually, the group served as a support system for the individual.

(vi) Collective memory

When it comes to the transfer of information from the developed world to a developing community, it is important to consider the role played by the community's collective memory. From the literature it is evident that in oral cultures information is stored in a collective memory. This was also the case at Phokoane. With regard to the training programme, the group acted as the collective memory due to the fact that participants were illiterate and could not fall back on recorded information. Individuals depended on memory support from family and friends.

As recorded by Fuglesang and Chandler (1987), illiterate people seem to have very sharp memories. When memorised information is recalled, it is often reported exactly as originally stored (Olsen 1994). This was demonstrated by one of the Phokoane farmers who had participated in the very first presentation of the training programme. After seven years he recalled parts of the contents verbatim as memorised, in the consecutive steps exactly as he had learnt them. Since this way of recall was time consuming, we courteously asked if he could limit himself to answering our questions only. He tried his best, but was visibly annoyed for being interrupted halfway through his account (personal observation in Nebo District, 1997). This incident provided a valuable insight into the manner of recall among rural people – which could cause misunderstanding, and sometimes frustration between development agents and target groups if not fully appreciated.

8.3.3 System related variables

(i) Modern information resource systems

In chapter 5 we referred to Havelock's interactive model where the information resource system and the user system are introduced as two separate communities – that is, the resource community where most of the solutions to problems are developed, and the user community, which needs solutions to solve problems (Havelock 1986c). Both these systems are separated from each other by their boundaries, which are introduced

as membranes that are only partly permeable. Each system will allow exit or entrance of information through its boundaries according to its own terms. The Phokoane Case proved to be a typical example of these two systems. In the case of the Development Corporation, which acted as the resource community, there were a number of aspects that prevented effective transfer of valuable information to the user community in need. These could be ascribed to the following:

- From the discussion of Phokoane's case history in chapter 7, it became clear that there was dissatisfaction with the development approach followed by the Development Corporation of that time. This involved the input/growth model where the agricultural development corporations used to farm on communal lands on behalf of the local rural authorities. The small-scale farmers did not gain intellectually from the information in the resource community in the sense that they could not participate in their own development. The development was done on their behalf. Thus, the development approach prevalent at that time, as well as the policies followed by the developer, acted as system related variables that retarded the transfer of information.

- Another phenomenon present was that the information system used by the developer and the indigenous information system of the small-scale farmer were totally incompatible. The developer's information system was based on information recorded in print while the small-scale farmers were used to the indigenous information system based on oral transfer and storage in the collective memory. It seems that both parties were unaware of each other's information systems or could not find transfer mechanisms to permeate the boundaries of the two systems.

Considering the above, it seems obvious that variables present in the two systems were responsible for the ineffective flow of information. However, the transfer mechanisms used in the training programme showed that awareness of system related variables could be harnessed to enhance the transfer of information between the two systems present in rural agriculture.

(ii) Indigenous knowledge base

According to Adendorff's needs' analysis (Adendorff 1991), it is evident that the Phokoane small-scale farmers had a limited knowledge base regarding maize production for food security. The farmers were unfamiliar with modern farming practices such as using fertilizers, topdressing, pest control or weed control. Although the farmers possessed indigenous knowledge of cultivation, climatic conditions, what time of the year the growing season starts, plants and insects, they did not always understand the relationships between these things. They knew they had a problem but were ignorant of what caused it. As a result, indigenous knowledge of natural resources such as rain, wind, high summer temperatures and cold winter temperatures were used incorrectly at various stages of maize production, or they did not use the elements to their full advantage. Thus it seems that they lacked the ability to utilise existing indigenous knowledge to the optimum by relating cause and effect.

Additional knowledge regarding loans to obtain inputs, or knowledge about support services, such as ploughing and planting services or credit facilities, were almost nonexistent. In commercial farming practices there is an awareness (perhaps subconscious) of the impact of these different types of information on effective production practices. This related information is merely taken for granted in commercial practices in the developed world. However, the Phokoane case showed that these cannot be taken for granted when it comes to developing communities. The trainer or development agent needs to consider which additional information regarding related issues should be included in a development programme.

In order to solve the problem of the small-scale farmers' limited knowledge base regarding maize production, it seems evident that outside information should be related to their indigenous knowledge in such a way that it can be understood and accepted. This is then the role the training programme has to fulfill.

(iii) Transfer mechanisms of traditional cultures

A study of the Phokoane Case revealed a number of transfer techniques that proved to work well for transferring information to people who originate from an oral tradition. These techniques are of particular interest because the participants were used to them and they helped them to memorise factual information better. These techniques are also of interest because developers are concerned with the deliberate transfer of information rather than the dissemination of information to a vaguely identified group that might accept it should they become exposed to it – as in the case of transfer through mass media. The techniques used in the Phokoane Case are grouped as follows:

(a) Oral aids

Since most of the participants were illiterate, oral aids were predominant in the training programme. Oral aids included storytelling, acting, the use of metaphors and repetition of concepts. Many of the participants memorised the contents of the lectures by grouping objects like sticks and stones in certain patterns.

Acting – such as the lion (witchweed) sneaking up on the goats in the kraal (maize field) – is used to reinforce perceptions, or help to change impractical practices or negative attitudes.

(b) Revision of concepts

Revision of newly introduced ideas or concepts helped participants to memorise better. For example, concepts introduced during training sessions were repeated at the beginning of a new lecture to ensure that participants recalled correctly. Group members were encouraged to participate in revision sessions. During revision, individuals were asked questions and praised, encouraged to ask questions or make suggestions and their achievements were acknowledged with awards.

(c) Demonstrations in real-life situations

Visual aids – such as the demonstration with containers of how soil erosion can occur if fields are not ploughed properly – played an important part in linking facts to reality. Demonstrations of how to operate a plough correctly, or the correct measuring of fertilizer were held to enable participants to experience what they had learnt in the lectures. This visual experience helped them to memorise technical details better. Understanding the impact that weeds and pests have on crops was facilitated when their presence was pointed out during field visits.

(iv) People as boundary spanners

Due to the fact that small-scale farmers in the Phokoane area were mostly illiterate elderly people, who were used to obtaining information through oral means, it was imperative to use people as media to convey messages. The fact that most of the small-scale farmers were not even aware that (outside) information could help to improve their way of living, necessitated the deliberate transfer of information through training. The assumption that diffused information (ie information that was not deliberately transferred) would eventually be accessed and used by the potential users, would not suffice under these circumstances. Since small-scale farmers are no different from other inhabitants in a developing community, it can be assumed that the same requirements would apply for all inhabitants.

(v) Informal networks

The Phokoane Case revealed that informal networks were developed deliberately to transfer messages regarding the training programme. These were, inter alia, the group committees that were established, the regular field visits, and of course the meetings for lectures every fortnight. Although other informal networks might have existed through which information probably flowed, they were less effective for this specific transfer process. The development of informal networks for specific transfer purposes seems to be important in the deliberate transfer of situation-specific information.

(vi) Media and channels

The effective transfer of information is dependent on appropriate media and channels. Utilisation of these media and channels depends on the users' familiarity with them, as well as their ability to use them. The Phokoane Case showed that oral media such as oral presentations, acting, singing, praying and demonstrations were predominantly used to transfer messages and technology. This can be ascribed to the fact that the participants originated from an oral culture and were used to receiving information through these media and channels.

Channels used were also predominantly oral in nature such as the lectures where information was transferred verbally, and the field visits where information between the sender and receivers was exchanged informally within hearing distance. Wherever group leaders, group committees, local authorities and local headmen were used as channels, the information was transferred by word-of-mouth.

Considering the above and taking into account that most information from the developed world is transferred through print and electronic media and similar channels, it seems obvious that information needs to be repackaged when outside information is transferred to developing people. Therefore it seems that unless this adaptation is made – in particular, transfer through training to extend the existing knowledge base – information from the developed world will be less useful as a resource for development. Taking into account that the trainer (extension officer or facilitator) is the person who operates the interface between the developer and the target group, it seems obvious that this is where the big change in direction has to take place. This implies that trainers (extension officers or facilitators) need to be trained to transfer information in an appropriate manner to target groups in developing communities.

8.3.4 Information related variables

(i) Training

The Phokoane Case is also a good example of how information related variables can constrain the effective transfer of information. The small-scale farmers' indigenous knowledge enabled them to grow maize in the traditional way. However, changing population and environmental circumstances rendered the practice of this type of knowledge ineffective for survival. Only after the extension of the groups' knowledge base through training was the transfer of outside information possible.

(ii) Format

Format proved to be an important information related variable in the transfer of information to traditional small-scale farmers. In the developed world, all information accumulated through human experience is usually recorded in printed or electronic format and can be accessed by individuals. It is taken for granted that the potential user will know where and how to find information and will know how to implement it. The Phokoane Case proved how important it is that outside information should be repackaged in a format that is acceptable to this particular type of user who is not familiar with recorded information outside that in the human memory.

(iii) Language

In the Phokoane Case, language also proved to be a variable that could limit the transfer of outside information. Although information was transferred verbally and through demonstrations, the trainer had to make use of interpreters to ensure that the farmers understood the message correctly. The manner in which the message was conveyed, metaphors, comparisons, idioms, body language, and so on all helped to emphasise important issues regarding the contents of the lectures.

(iv) Criteria for acceptability

Apart from the qualifications mentioned above, information introduced from outside also had to comply with requirements of credibility, observability, relevance, relative advantage, ease of understanding and compatibility before it would be accepted by the

participants. In the Phokoane Case the impact of these variables could be seen in the following:

- The manner in which the information was introduced contributed to its credibility among the participants

- The visual difference in their maize crops before and after the training programme made the presence of the outside information more observable

- The participants experienced a relative advantage in the new way of growing maize, because they harvested more than was the case with their traditional practices

- The manner in which the message was conveyed made it easy to understand the outside information, because it was offered in a style the recipients were used to

To summarise, the many variables to be considered in planning an information transfer strategy become the facilitator's "toolkit", which should be ready and at hand when needed.

8.4 ROLE OF THE FACILITATOR

During this discussion it has become evident that the transfer of information from the developed world to developing communities is a deliberate action involving human intervention. Of all the human intervention involved, the involvement of the facilitator at grassroots level seems to be crucial for the successful accomplishment of the transfer process. In fact the Merger Model reveals what a key role the facilitator has to play. Unless the facilitator understands how to draw from both resource systems and how to manage the flow of information by deciding how to add value to information at what time for a specific situation, information transfer will be inefficient.

So, apart from any other competencies the facilitator may need (eg extension officer in agriculture, health worker or consultant for farming implements), the successful transfer of information for development purposes depends on the facilitator's knowledge, skills and experience regarding information, the receiver, information resource systems, the development environment, and the transfer process as a whole. From what we have learnt from a study of the literature and the Phokoane case study, it is now possible to identify some prerequisites necessary for facilitators to become the strongest link in the transfer chain, or the crucial building block to bridge the information gap between the developed world and developing communities in rural areas. These prerequisites are discussed below.

8.4.1 Information as a resource

From the discussion of information's attributes in chapter 4 it became evident which attributes are suitable and which less suitable for development purposes. The Phokoane Case showed how these attributes work in a real-life situation. For example: information regarding maize production increased the small-scale farmers' knowledge

base, it helped to enhance growth, self-esteem, and it increased perceptions among others. Implementation of the "new" information and its successful outcome acted as a dynamic force, which motivated potential small-scale farmers to participate in the training programme, or to learn other skills as well. On the other hand, information is dependent on the format in which it is packaged, and the way in which information is used is dependent on culture. The facilitator should be knowledgeable about the various attributes and how they can impact on the transfer of outside information. Prior knowledge of these attributes is crucial in the planning of an information transfer strategy, to avoid pitfalls and to utilise information effectively as a resource for development.

8.4.2 Information resource systems

The literature study and analysis of the Phokoane Case clearly revealed that both the indigenous knowledge system and the modern information resource system are made up of elements from which the illiterate participants can benefit. However, it requires a thorough knowledge and experience from the facilitator to know what to draw from the different systems for a specific situation.

Both the indigenous knowledge system and the modern information resource system have mechanisms to collect, store, retrieve or transfer information. Each of these systems has developed along lines necessitated by their respective user communities. The unique circumstances which have developed around rural people have resulted in a situation where both systems have comprehensive knowledge bases, but they are not always appropriate to meet users' current needs. That is why the facilitator is expected to understand both information resource systems and the functioning of their respective transfer mechanisms to know how to draw from both systems to facilitate the target groups.

Current demands require the facilitator not only to be aware of the demands of the two information resource systems, but that he or she should also know how to utilise the modern information system to the optimum – that is, to be information literate in order to use modern information tools and techniques to obtain the required information and to know how to repackage the collected information to meet the target group at their level of understanding.

8.4.3 Information transfer process

The discussion of information transfer confirmed how complex the transfer process is and that more is required than simply passing on information. The facilitator needs to understand that the transfer of information to rural people is a deliberate action of intervention, because rural people seldom realise that information is the missing resource that might help to solve their problem. The facilitator also needs to know that information is not always transferred in isolation. Most of the time information forms the underlying part of technology or other issues the recipient needs to be informed about. In the case of rural people who are not familiar with many related issues that could influence the use of information on a particular issue, information on related issues should also be transferred. For example, the optimum use of information regarding

maize production requires information on input resources such as seed, fertilizers and also loans and credit facilities. A lack of the additional information can render the core information less useful or valuable, because it does not have sufficient support.

8.4.4 Participants' information usage behaviour

The literature study and the Phokoane Case proved how important it is to understand the target group's information usage behaviour. This investigation revealed that the information usage behaviour of illiterate people in rural communities differs substantially from that of users of the modern society. The facilitator should also know which variables contribute to their particular usage behaviour. He or she should know how target groups make sense of outside information, and how this is influenced by their norms and values. In addition, they do not always have enough background knowledge to hook on new perceptions and they usually depend on others in the group as sounding boards for their own interpretation.

Circumstances within the environment of the target group causes them to develop their particular way of communication, mostly from person to person and by way of demonstrations, thus mainly based on requirements of the oral traditions. Therefore, the media and channels which convey information in developed societies are not equally effective for information transfer to rural people. Ignorance regarding the rural people's information usage behaviour can result in the implementation of transfer techniques and mechanisms that the facilitator may assume to be appropriate for rural conditions. Such an assumption may ultimately prove to be very costly and ineffective.

8.4.5 Impact of development approaches

It is of cardinal importance that facilitators should be *au fait* with current development approaches. For example, the modern trend is to involve rural people in their own development, to make use of what experience and knowledge they can offer. Ignorance of the latest developments can cause confusion and distrust and as a result poor collaboration from the target group's side. In the end the transfer process will suffer.

The facilitator should also be aware of the policies implemented by decision makers regarding development practices. In this way information transfer practices can be coordinated and many pitfalls can be avoided. On the other hand, knowledge of policies, legislation and politics can help the facilitator to communicate and negotiate on behalf of the target group. In this way the interactive transfer of information can be enhanced.

To summarise: the facilitator needs to comply with the requirements mentioned above in order to be able to plan, coordinate and manage the information transfer process in such a way that information becomes a useful resource for rural development. Therefore it seems that much of the value adding process lies with the facilitator. How well the facilitator is prepared for the transfer of information, will determine how strong or weak the last link in the information transfer chain is.

8.5 SUMMARY AND CONCLUSION

Analysis of the Phokoane Case in the previous chapter shed light on what happened during the successful transfer of information from the developed world to rural communities in the developing world. Evaluation of the manner in which the transfer process advanced in the Phokoane Case gave rise to the idea that the transfer system of indigenous knowledge and the modern information transfer system need to be merged through human intervention at grassroots level to ensure the acceptance and implementation of information from the developed world. This resulted in the devising of the Merger Model to transfer information to rural communities.

The Phokoane Case taught us valuable lessons about the linkage mechanisms and transfer techniques appropriate for target groups in rural areas where people are unfamiliar with the information systems of the developed world.

The processing of data through the method of pattern matching revealed a variety of variables that could constrain the transfer of information if not addressed properly during the planning of an information transfer strategy. Through pattern matching, it was possible to arrange these variables in four categories, namely: the approach to follow, the people involved, the systems that support the transfer process, and variables related to information itself. The Phokoane Case showed that these variables manifest interactively and are often difficult to distinguish from one another.

The Phokoane Case also showed us how important it is to have a profile of the target group which should be considered when planning a transfer strategy for the introduction of outside information to rural communities. Without such a profile many variables regarding information usage among people originating from a traditional culture can easily be overlooked to the detriment of development projects.

The investigation also revealed that an appropriate transfer strategy contributes in two distinctive ways to the upliftment of people in rural communities, namely, materialistic advantages as well as intellectual advantages.

The value of information was reflected in the successes achieved by the training programme. Although information is mainly an intangible resource it was concretised through techniques of maize growing. It proved to be a dynamic force that encourages people to change their negative attitudes of the past and to empower themselves through building up their knowledge base and learning new skills.

In conclusion, we can state that the Phokoane Case allowed us in-depth insight into the information usage behaviour of rural people including media and channels for communication that were not previously taken into account by developers. Investigation of the Phokoane Case also shed more light on the value of information as a resource for development that can no longer be ignored should developers wish to improve rural people's lives through the transfer of information and technology in their development projects.

Although the Phokoane Case was intended to teach small-scale farmers to grow maize for food security, it was in effect an information transfer project because it contained important elements of information. It provided us with valuable insights into the value of information as a resource for development. It can be used to establish guidelines with regard to the training of information workers and other field workers in a developing context, who need to empower target groups through the appropriate transfer of information.

As far as Information Science is concerned, we learnt from the Phokoane Case that the utilisation of information is not necessarily dependent on literacy for development. More important is the manner in which information is transferred, which determines whether or not it will be a valuable resource for development.

The next chapter will provide an overview of this investigation together with recommendations for a curriculum to train field workers active in development projects among target groups in rural communities who originate from an oral tradition.

CHAPTER 9

CONCLUSION AND RECOMMENDATIONS

9.1 INTRODUCTION

The purpose of this chapter is to determine to what degree the outcome of this investigation has complied with the aim and objectives identified in chapter 1, to indicate what theoretical and practical contributions this investigation made, to provide an overall conclusion, and to make recommendations regarding implementation of the outcome and further research.

9.2 AIMS

The aim of this project was to investigate the information transfer process as it manifests itself in rural communities, to determine whether information is an important resource for the development of rural communities. The aim has been achieved in that the investigation shed new light on how the information transfer process manifests itself among small-scale farmers in rural areas. Since small-scale farmers form an intrinsic part of the inhabitants of rural communities, the outcome of this investigation can also be extrapolated to other users of information in rural communities that experience similar conditions. Insight has also been obtained into the value of information as a resource for development.

Insight gained from the Phokoane Case has made it possible to develop the Merger Model, which represents the actual transfer of information in the interface between the developer and the participants at grassroots level. This could serve as a guide for developing information transfer strategies for similar situations.

9.3 OBJECTIVES

This section lists the objectives originally set in chapter 1 followed by a discussion of the outcomes, indicating whether or not these objectives have been met.

Objective 1: Define small-scale farmers as potential users of agricultural information

The literature study revealed that small-scale farmers – who are mainly women and elderly people – make up that part of a rural community which has access to land for farming purposes. Although there can be various categories of small-scale farmers, this study focussed on the category of those involved in farming for food production for own consumption and not necessarily for commercial purposes. These small-holders are mostly illiterate and do not have formal training in farming practices. Most of their knowledge and skills regarding agriculture, were passed on to them from previous generations.

The Phokoane Case proved that small-scale farmers in this particular category are eager to obtain information that could help them to improve their maize production. However, the most important requirement is that the information provided should be in a format they can understand, use and access when needed. Thus, for small-scale farmers originating from an oral culture, information should be transferred orally through human intervention. When the information originates from a resource base in the developed world, substantial adaptation is required to bring information down to a satisfactory level for acceptance by the farmers. It is most significant that these small-scale farmers are indeed potential users of information.

The objective has been met and the outcome has proved that small-scale farmers need not be literate to use information. However, in order to add value to information, adaptation and repackaging of the appropriate information for a specific situation is required before it can benefit potential users.

Objective 2: Determine the information usage behaviour of small-scale farmers

The literature study revealed that rural people originating from an oral tradition (including small-scale farmers) have developed a particular information usage behaviour which is compliant with the requirements of the indigenous information system of the oral tradition, such as oral transfer of information within hearing distance, memorising information, and depending on (or believing in) authoritative figures to make decisions. The Phokoane Case proved that information usage behaviour typical of the oral tradition is still prevalent among small-scale farmers. For example: storing of information, that is, memorising, is intensified by methods such as singing, dancing and storytelling. The group's opinion on matters is usually held in high esteem by individuals. In fact, it was the exploitation of the information usage behaviour of the small-scale farmers which in large part contributed to the successful transfer of agricultural information among participant groups in the Phokoane Case.

The investigation also revealed that there are many variables within the environment of rural people that have also contributed to their peculiar information usage behaviour, such as development approaches of the past which fostered dependency on outsiders when it came to decision making. Also the practices followed by Development Corporations of the previous homelands in South Africa, where sophisticated commercial farming practices were carried out on behalf of rural communities, to a certain extent deprived small-scale farmers of the ability to obtain or apply outside information themselves.

The Phokoane Case also proved that outside information will not easily be accepted unless the consent of opinion leaders or that of the group is obtained. The credibility of the person who communicates the information plays an important role in the information usage behaviour of small-scale farmers. If the group found the intermediator or facilitator trustworthy, the information would be accepted.

Since small-scale farmers are part and parcel of a rural community, it can safely be assumed that these variables will also be present among other groups (comprising

illiterate adults) in a rural community, who are also in need of the development of their knowledge base, skills and understanding in order to develop their own capacity.

The set objective has been met. It is further suggested that a profile of the information usage behaviour of rural people should be used as a guideline in planning an information transfer strategy for developing programmes or projects.

Objective 3: Determine the value of information regarding rural agriculture

The literature study revealed that information has a number of attributes that could make it a valuable resource for development purposes. It also has attributes that make it less suitable as a resource for development. However, the Phokoane Case proved that attributes less suitable for development purposes can be turned around by adaptation, repackaging for a specific situation, and the correct method of transfer. This leads to the view that information can be a valuable resource for development, but not unconditionally. It can act as a dynamic force which can bring about the desired change that is the ultimate aim of the development process, but the transfer process as carried out in developing communities should be carefully planned.

The successful maize production at Phokoane, after information was transferred through training, is proof of the value of information as a resource for development. The outcome of the training programme resulted in many positive changes among the participants.

The Phokoane Case proved that in a rural set up, outside information on a particular issue – such as maize production – is dependent on the availability of outside information on other issues which are related to the main issue for value adding. It cannot be assumed that rural people are familiar with information on related issues such as fertilizer, pesticides and loans, which are all necessary to ensure successful maize production.

The above discussion is evidence that the objective as defined was met. It is suggested that developers should seriously consider the various attributes of information when designing a transfer strategy to provide for the particular information needs of small-scale farmers.

Objective 4: Determine what the transfer process in rural communities entails

The literature study, as well as the Phokoane Case, showed that the deliberate transfer of information from the developed world causes the transfer process in rural communities to differ from that of the transfer process in the developed world. The investigation showed a few outstanding features of this transfer process. These include, inter alia, the involvement of a facilitator, the need for training of the participants to expand their knowledge, the adoption of transfer mechanisms from the indigenous knowledge system to make outside information more acceptable to the recipients, and good planning and coordination of transfer activities to fit in with other processes required during the maize production cycle (or any other practice for which information may be required).

The set objective was met. It seems important that developers who wish to contribute to the upliftment of people in rural communities should pay serious attention to the peculiarities of the transfer process as it manifests in rural communities.

Objective 5: Explore information systems to which target groups are exposed

The investigation revealed that rural people are exposed to information from the indigenous knowledge system as well as the modern information resource system. Information originating from the modern information system is less effective as a resource due to the fact that the potential users are not familiar with either the linkage mechanisms used for the transfer process, or the background from which the information of the modern system originates.

The investigation also revealed that changing circumstances within the environment of the rural people had a profound impact on the usefulness of the indigenous knowledge system as a resource to meet new information requirements. These were, inter alia, traditional people's contact with industrialised endeavours in neighbouring areas which lured people away for cash income. To compete in the modern sectors, different types of information and skills were required which could not be provided by the indigenous knowledge system. So, although the indigenous knowledge system contained valuable information, for particular reasons it was not in demand. This insight proved wrong the popular belief that the First World looks down on indigenous knowledge. It proved that there can be various reasons why the indigenous knowledge system has fallen into partial disuse.

The Phokoane Case showed that the indigenous knowledge system does indeed have valuable information that could be applied. It only needs a knowledgeable person to know what to draw from this system and how to combine it with information from the modern information system before it can be applied to a specific situation.

The fact that both information systems available to small-scale farmers, house valuable information that could only become accessible through human intervention, shows what responsibility rests on the shoulders of the facilitator or intermediary at grassroots level.

The set objective was met. However, it should be pointed out that human intervention requires that the field worker responsible for the merging of information from the two systems should be knowledgeable and well trained to ensure the successful transfer of information.

Objective 6: Identify factors that could influence the transfer process

Numerous factors that could influence the transfer process in rural communities have been identified. These factors can be related to attributes of information, cultural influences, people related factors and system related factors. The Phokoane case proved that a number of unknown variables which have to do with culture, (negative) emotions and perceptions of the participants acted as barriers to the transfer of information. Unawareness of what information entails and a lack of understanding of the different mechanisms for handling information, as well as ignorance among

developers of the requirements for accepting outside information by small-scale farmers proved to be major factors that could retard the transfer process.

The confirmation above is proof that the set objective was met. It should be valuable for developers to take cognisance of the influence of these factors to avoid pitfalls in future.

Objective 7: Identify appropriate linkage mechanisms for information transfer to small-scale farmers

The literature study carried out for this investigation revealed what type of linkage mechanisms are used in rural communities where the oral tradition still prevails. The Phokoane Case proved that small-scale farmers – who form an intrinsic part of the people in rural communities – are still using media, channels and other linkage mechanisms typical of the oral tradition as applied within the indigenous knowledge system. They are not familiar with linkage mechanisms of the modern information system and therefore cannot access information in a written or electronic format.

However, an analysis of the training programme at Phokoane proved that outside information from the developed world can become more useful provided that linkage mechanisms of the indigenous information system are applied to transfer outside information to small-scale farmers. This implies that human intervention – an intermediary who knows how to apply the traditional linkage mechanisms – is required to ensure that transfer takes place.

The objective as defined was met. However, it should be taken into account that the onus is on this facilitator or intermediary to decide how to apply the required linkage mechanisms within a specific situation and for the particular level of understanding of the target group.

Objective 8: Develop a model that represents the transfer of agricultural information in rural communities

From the literature study regarding the traditions, norms and values of rural people, it was already evident that rural people originating from an oral culture were used mainly to the information handling mechanisms of the indigenous information system only. Comparing knowledge of the modern information system and its access mechanisms with the above proved that the two systems to which rural people are exposed were incompatible. Insight gained from the Phokoane Case where outside information was successfully transferred by using linkage mechanisms from the indigenous knowledge system, proved that outside information could be made useful to rural people if qualities of the two systems could be merged to develop a mechanism suitable for developers to transfer agricultural information to rural communities. This gave rise to the development of the Merger Model, which is proposed in chapter 8.

The discussion above is evidence that the set objective was met. However, further research is needed to develop a curriculum for the training of extension officers who can operate effectively as facilitators in the transfer of agricultural information to small-scale farmers in rural communities.

9.4 CONTRIBUTIONS OF THIS INVESTIGATION

Reflecting on what has been envisaged in chapter 1 regarding the theoretical and practical outcomes of this study it is believed that this study contributed to the theory of Information Science, as well as the practical application of information as a resource for development, and information transfer strategies to be incorporated in development programmes. The contributions are as follows:

9.4.1 Contributions to the theory of Information Science:

- More light has been shed on the usefulness of information as a resource for development
- With regard to information transfer to rural communities the need for adaptation and how it should be achieved has been identified
- More light has been shed on the information usage behaviour of people originating from an oral tradition and how this can impact the transfer process. Previously very little has been known in this regard
- Techniques most suitable for information transfer to rural communities have been identified
- Underlying factors which can retard the transfer of information to rural communities have been identified. This would not have been possible without using the case study design
- A model for the transfer of information to rural communities has been developed

9.4.2 Practical contributions

- More light has been shed on the practical applications of deliberate transfer activities and the applications of appropriate techniques
- The need for planning and design of a transfer strategy has been identified
- The importance of interaction and participation by the target group has been emphasised
- The importance to acknowledge the impact of perceptions and attitudes in the transfer strategy has been identified
- The need for policy makers and development agencies to recognise the importance of an effective information transfer strategy for development endeavours has been highlighted
- Guidelines for the development of information transfer strategies have been developed

9.5 SUMMARY AND CONCLUSION

Lessons learnt from this investigation are that the transfer of information to rural communities is a long, complex, arduous and ongoing process which differs markedly from the transfer of information in the developed world. Authorities and development agencies involved in agricultural development in rural areas need not only be aware of the need for appropriate agricultural extension services to small-scale farmers, they should also have a thorough knowledge of the information usage behaviour of small-scale farmers, the functioning of their information resource systems, the value of information as a resource, and development approaches that could influence the entire transfer process.

Information as a resource for development can become an extremely powerful tool in the hands of development agents, provided they are aware of its value and know how to apply issue related information according to the usage behaviour of the target group to empower people at grassroots level.

It is evident that information is not the only input resource for development, but ignorance of its impact can retard development efforts and can contribute to inappropriate spending of funds for development, just as ignorance concerning the management of government fiscal resources leads to failure of development efforts.

Better understanding by trained participants can lead to a change of attitudes and change of unfounded perceptions that stand in the way of the upliftment of the target group. Training as a tool of transfer will remain a valuable partner for any development agency.

Apart from a thorough knowledge of the target group's circumstances and their information usage behaviour, the transfer of agricultural information requires careful planning, coordination of related activities, and skilful information management. The Phokoane Case proved that a sound information transfer strategy can translate development policy into action.

Lack of knowledge of modern agricultural practices among small-scale farmers makes the deliberate transfer of information imperative. It becomes a case of "information push", because there will not be a demand for modern information since the target groups are ignorant of modern practices to which they have not yet been exposed for whatever reasons.

This investigation showed that transfer of information to developing communities is interdependent on training, provided the training approaches comply with the requirements for acceptance by the target group. Transfer through training becomes imperative where receivers in the target group have no background knowledge of the environment from which the outside information originates. Training and trainers become pivotal in making outside information comprehensible and acceptable to users in the rural community. Human intervention is essential in the transfer process for the changeover from the one information system to the other. Consecutive steps need to be followed in a transfer strategy. Hence the view of the need for deliberate transfer of information instead of dissemination of information with no guarantee that it will be accepted and implemented.

9.6 RECOMMENDATIONS

Recommendations have been made throughout this dissertation as the implications for the transfer of information became apparent. However, those suggestions which appear to be of major importance are highlighted here. They are arranged in categories for ease of assimilation, but are not necessarily in order of importance.

9.6.1 Information Science

The literature study revealed that there is an awareness of the importance of information as a resource for development, but how and why is not spelled out clearly. It is suggested that more research should be done in the field of Information Science to point out the importance of information as a resource, specifically for the upliftment of rural people who are not literate and cannot access information with mechanisms of modern information systems. In fact, more research should be done to find out about the dynamics of the indigenous knowledge system and how it can be harnessed to benefit users in rural communities.

It is recommended that the sub field of user studies should pay more attention to the information usage behaviour of people originating from oral cultures. It is also recommended that the sub field of information management concentrate more on research programmes into the planning, coordination and development of information transfer strategies for rural communities.

9.6.2 Agricultural extension in rural communities

The literature study revealed that extension officers operating in rural areas in South Africa are not well equipped to transfer agricultural information effectively to small-scale farmers. It is therefore recommended that the following should be included in the curriculum for the training of extension officers:

- An introduction to development endeavours and development approaches and how they impact rural agricultural practices
- Background knowledge of other support services also operative in rural areas
- Background to information as a resource for development and the information transfer process in rural communities
- Introduction to the information usage behaviour of people originating from oral cultures
- Introduction to the functioning of the different information resource systems to which rural people are exposed
- The role of training in the planning, design and implementation of an information or technology transfer strategy for small-scale farmers in rural communities

- Compiling of information usage profiles of small-scale farmers, which could be used to design transfer strategies

9.6.3 Development agencies

It seems that unless policy makers and development agencies are aware of the value of information as a resource for development, or are aware of the importance of following a well-planned information transfer strategy, they will experience difficulties in launching programmes that could successfully support the development process in rural communities. It is therefore recommended that authorities and organisations involved in development endeavours in rural communities should be informed about the contribution this study can make to ensure successful implementation of development programmes in rural communities. Decision makers should also be convinced of the increased cost effectiveness of their programmes when a well-planned information transfer strategy is followed. They should be made aware of their indirect responsibility for information transfer within their development efforts.

9.6.4 Communication studies

It is presumed that the outcome of this study could benefit research in development communication – especially where governmental authorities responsible for the development of rural communities, nongovernmental organisations and/or parastatals involved in development projects are to be facilitated. There should be more awareness of effective methods to transfer information where participants are involved in their own upliftment, rather than being passive recipients of information. Awareness raising through mass communication alone will not ensure acceptance and implementation of information, which can make a difference in people's lives.

9.6.5 Support services in rural communities

For practical implementation of the outcome of this study, it is recommended that short courses are developed for field workers involved in support services (such as health services, social services, provision of water etc) operative in developing communities. The content of such courses should prepare field workers to communicate information more effectively within their field of interest, and also to ensure participation of target groups in their own development. Short courses offered in the field of Information Science can be designed in collaboration with officials responsible for development programmes.

9.6.6 Further research

The outcome of this study showed how rural people can be convinced to accept information of a technical nature, because they could experience the short-term physical benefits. However, little is known about how information that is intended to bring about a change in attitude should be transferred to be accepted and applied – that is, information from which the receivers do not experience any short-term benefit or personal gain. This type of information has to do with the prevention or spreading

of diseases, the preservation of natural resources such as water or forests, which are for the good of society in general, or even for the next generation. How can people who are struggling to survive from day to day be convinced of the importance of information on these issues? Further research is needed on the transfer of this kind of information to developing communities. A profile of rural people's information usage behaviour could serve as a point of departure.

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APPENDIX A

INTERVIEW SCHEDULE

Farmer no.	Land size	Average yield	Family size	Monthly consumption	Annual consumption	Average shortfall	Average supplus	Price of meal	Price of seed	Price of fertilizer	Where do you get inputs	Cultivars planted		When do you plough?	How many times?
												Maize (ha)	Sorghum (ha)		

Farmer no.	When do you plant?	When do you culti-vate?	Seed used?	Fertiliser used?	Top-dressing used?	Plough cost	Planting cost	Who ploughs for you?	How many times do you cultivate?	Do you do seed-bed prep?	How deep do you plough?	Are you afraid that we may take your land	Are you afraid we take your crop?	What fears do you have?	What problems do you have?

Excerpts from the Interview Schedule

APPENDIX B

EXAMPLE OF PLANTING PROGRAMMES

FARMERS CALENDER FOR 1991/92 SEASON			
DAY	**SEPTEMBER**	**OCTOBER**	**NOVEMBER**
1st	Arrange for seed bed prep	Start planting	Buy Thiodan 1%
2nd			Arrange labour for topdressing
3rd		Attend Group Meeting	
4th			Attend Group Meeting
6th	Attend Group Meeting		
7th			
8th			
9th		Arrange labour for hoeing	
10th			
11th			
12th			
13th			
14th		Start hoeing lands	Apply top dressing
15th	Prepare seed beds		
16th			Pay labourers
17th			Scout for stalk borer
18th		Attend Group Meeting	
19th			Attend Group Meeting
20th	Attend Group Meeting	Pay people for hoeing	Apply Thiodan
21st			Pay labourers
22nd			
23rd			
24th			
25th	Buy seed, fertiliser, transport		
26th			
27th			Scout for stalk borer
28th			
29th			
30th			

APPENDIX C

TIME TABLE FOR LECTURES

TRAINING PROGRAMME FOR 1991 -92 SEASON

DATE		MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
9/9/91 - 13/9/91	AM PM	Morgenzon Uitkyk	Tweefontein I Tweefontein II	Klipspruit III Suikerbos	Puleng Groenfontein	Kadishi I
16/9/91 - 20/9/91	AM PM	Tafelkop Sterkfontein	Potgietrshoop Sterkfontein	Lukau Boekenhtkloof	Boschpoort Vergelegen	Kadishi II
23/9/91 - 27/9/91	AM PM	Morgenzon Uitkyk	Tweefontein I Tweefontein II	Klipspruit III Suikerbos	Puleng Groenfontein	Kadishi I
30/9/91 - 4/10/91	AM PM	Tafelkop Sterkfontein	Potgietrshoop Sterkfontein	Lukau Boekenhtkloof	Boschpoort Vergelegen	Kadishi II
7/10/91 - 11/10/91	AM PM	Morgenzon Uitkyk	Tweefontein I Tweefontein II	Klipspruit III Suikerbos	Puleng Groenfontein	Kadishi I
14/10/91 18/10/91	AM PM	Tafelkop Sterkfontein	Potgietrshoop Sterkfontein	Lukau Boekenhtkloof	Boschpoort Vergelegen	Kadishi II
21/10/91 25/10/91	AM PM	Morgenzon Uitkyk	Tweefontein I Tweefontein II	Klipspruit III Suikerbos	Puleng Groenfontein	Kadishi I
28/10/91 1/11/91	AM PM	Tafelkop Sterkfontein	Potgietrshoop Sterkfontein	Lukau Boekenhtkloof	Boschpoort Vergelegen	Kadishi II
4/11/91 8/11/91	AM PM	Morgenzon Uitkyk	Tweefontein I Tweefontein II	Klipspruit III Suikerbos	Lukau Boekenhtkloof	Kadishi I

APPENDIX D

ORAL EXAMINATION

PHOKOANE PHOKOANE PHASE I - 1990

ORAL EXAMINATION

Q = QUESTIONS
A = ANSWERS

1	Q - Name three ways as to how we can control witch weed. A - (a) Plant early (b) Fertilise correctly (c) Crop rotation.
2	Q - What is fertiliser? A - Food for the plant.
3	Q - Name the most important types of fertiliser for maize. A - Phosphate and Nitrogen.
4	Q - When do we apply Phosphate? A - When we plant.
5	Q - When do we apply Nitrogen? A - 4 to 6 weeks after planting.
6	Q - When should I start ploughing? A - When the soil is wet, preferably in Winter.
7	Q - What are the advantages of ploughing early? A - Being prepared to plant early and to control couch grass.
8	Q - How deep must I plough and how many times should I plough? A - Plough 10" deep and plough once only.
9	Q - Why must I plough 10" deep? A - For healthy root formation and moisture conservation.
10	Q - When should I use lime? A - When my soil is sour.
11	Q - What should the Ph be for maize? A - Ph: 6 - 7.
12	Q - What should the Ph be for beans? A - Ph: 6,5 - 7.
13	Q - What does sour soil do to plants? A - Holds back the food (fertiliser) from the plant.
14	Q - What is the function of grass strips? A - Soil conservation.
15	Q - What are weeds and what do they do? A - Thieves. They steal the plant's food and water.
16	Q - What is the function of contours? A - Soil conservation.

17	Q - How many types of weed do we have? A - Two: sheep and goats.
18	Q - When should I start with weed control? A - As soon as I see weeds.
19	Q - Name three methods or ways to control weed. A - I) Hand hoeing ii) Mechanical iii) Spraying
20	Q - How deep must I plant beans? A - The depth of a match box.
21	Q - How far apart in the row must they be planted? A - 3" apart.
22	Q - Name three advantages of planting beans. A - I) Control witch weed ii) Later planting dates iii) Build up N in soil.
23	Q - How are you aware of stalk borer infestation? A - See windows in the leaves.
24	Q - At what stage do you expect your first infestation? A - As from four weeks after planting.
25	Q - What does the stalk borer do to the plant? A - Cuts off the plants food supply.
26	Q - When must I treat for stalk borer? A - As soon as I see windows on the leaves.
27	Q - When should I plant maize? A - End September/beginning October.
28	Q - How deep do I plant my maize? A - Four fingers deep.
29	Q - How many plants per hectare? A - 25 000 plants.
30	Q - Is it correct to hold back maize for seed? A - No. This seed will not produce.

APPENDIX E

TEST RESULTS

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Phokoane F.S.P. Phase I Training 1990

Results of Oral Examination

Pass Mark = 70 %

Answers to Question 1-30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total	
J. Maabane	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✗	½	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✗	✓	24.5	82%
E. Malope	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	30	100%
E. Thokoane	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	½	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	28.5	95%
R. Tsima	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	30	100%
A.Thokoane	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	30	100%
M. Maredi	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	½	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	28.5	95%
R. Rampedi	✓	✓	✗	✓	✗	✗	✗	✓	✓	✗	✗	✗	✗	✓	✓	½	✗	✓	✓	✓	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	18.5	62%
L. Mashamaite	½	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	½	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	½	27.5	92%
S. Mashamaite	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	½	✗	½	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	½	27.5	92%
K. Motsweni	½	✓	✓	✓	✓	✓	½	✓	½	✓	✗	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	½	✓	✓	✗	✓	✗	✓	✓	✓	23	77%
R. Lekwana	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	30	100%
F. Makaba	✓	✓	½	✓	✗	½	✓	✓	✗	✗	✗	✗	✓	✓	✓	✓	✓	✗	½	✓	✗	✗	✗	✓	✗	✗	✗	✗	✓	✓	15.5	52%
P. Rampedi	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✗	½	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	½	✓	✓	✓	✓	✓	27	90%
J. Mmotong	✗	✓	✓	✓	✓	✓	½	✓	✓	✓	✓	✓	½	✓	✓	✓	✓	✓	✓	✓	✓	½	✓	✓	✓	✓	✓	✓	✓	✓	27.5	92%
J. Mokwana	✓	✓	✓	✓	✓	✓	½	✓	✓	✗	✗	✗	½	✓	✓	½	½	½	½	✓	✗	½	✗	✓	✓	✓	✓	✓	✓	✓	21	70%
J. Mogayana	✓	✓	✓	✓	✓	✓	½	✓	½	✗	✗	✗	½	✗	✓	✓	✓	✓	✓	✓	✗	½	✓	✓	½	✓	✓	✓	✓	✓	22.5	74%
J. Tau	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✗	½	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	26.5	88%
M. Thokoane	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	25	83%
M. Mankuruane	✓	✓	½	✓	✗	✓	✓	✓	✓	✗	✗	✗	✗	✓	✓	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓	✓	✗	✓	✓	✓	21.5	72%
J. Paledi	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	27	90%

APPENDIX F

GRADUATION PROGRAMME

PROGRAMME : M.C. - Ephraim Mokhine

CERTIFICATE PRESENTATION KADISHI CO-OP

DATE : 2 August 1991
TIME : 10h00

10h00 - 10h15 OPENING : Prayer

10h15 - 10h25 WORD OF WELCOME : Regional Director Dept. of Agriculture

10h25 - 10h45 INTRODUCTION OF GUESTS : Mr. P. Seerane - Manager : Kadishi Co-op

10h45 - 11h00 FARMER REPORT-BACK : Local Farmers

11h00 - 11h25 QUIZ MATCH : Mr. J. Adendorff - Technical Training Manager

11h25 - 11h35 TRADITIONAL POEM : Kadishi Farmers

11h35 - 12h00 SPEECH AND PRESENTATION OF CERTIFICATES : The Honourable The Minister of Agriculture and Nature Conservation - Kgoshi K.P. Phasha

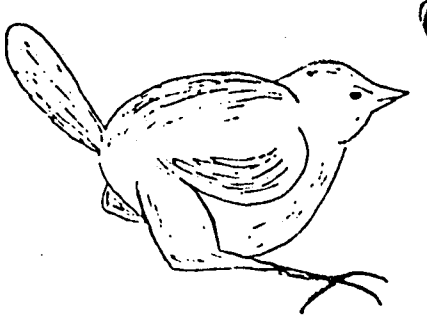
12h00 - 12h10 ACKNOWLEDGEMENTS : Mr. A. Jurriaanse - General Manager L.A.C.

CLOSING WITH PRAYER

12H30 LUNCH

APPENDIX G

GRADUATION CERTIFICATE



Phokoane Agricultural

Co-Operative Ltd.

Training Certificate

Boy Mokwana

Completed a course in

Maize Cultivation

Training Official

Chairman

6th August 1990.

Date

LOSKOP PRINTERS GROBLERSDAL, TEL 4059

APPENDIX H

GRAPH OF MAIZE PRODUCTION