

CHAPTER TWO – KNOWLEDGE ELICITATION

In contrast to the later stages of knowledge base creation which will be described, knowledge elicitation does not need to conform to a specific set of guidelines. Indeed, approaches to knowledge elicitation that are appropriate in one context may be inappropriate in another. The contents of this section should therefore be regarded as suggestions and examples of approaches, to be adopted as appropriate to circumstances.

2.1 DESIGNING A KNOWLEDGE ELICITATION STRATEGY

Generally, it will not be possible to elicit knowledge from all appropriate sources when creating a knowledge base, particularly when eliciting information from a local community. Therefore, a sampling strategy must be designed. This should enable the efficient development of a knowledge base that is representative of the knowledge of a defined community, or set of communities. The sampling strategy should also incorporate a return to the source community to test how well the new knowledge base represents the knowledge of the community as a whole.

2.1.1 A FRAMEWORK FOR DESIGNING A KNOWLEDGE ELICITATION STRATEGY

The framework is divided into four stages:

- **Scoping**
- **Definition of the domain**
- **Compilation and**
- **Generalisation**

The important feature of this four stage strategy for knowledge acquisition, in terms of sampling, is the separation of knowledge base development (the first three stages) where a small purposive sample of people are intensively involved, and the generalisation stage, where a large randomised sample of people is drawn from the target community to explore how representative the knowledge base is.

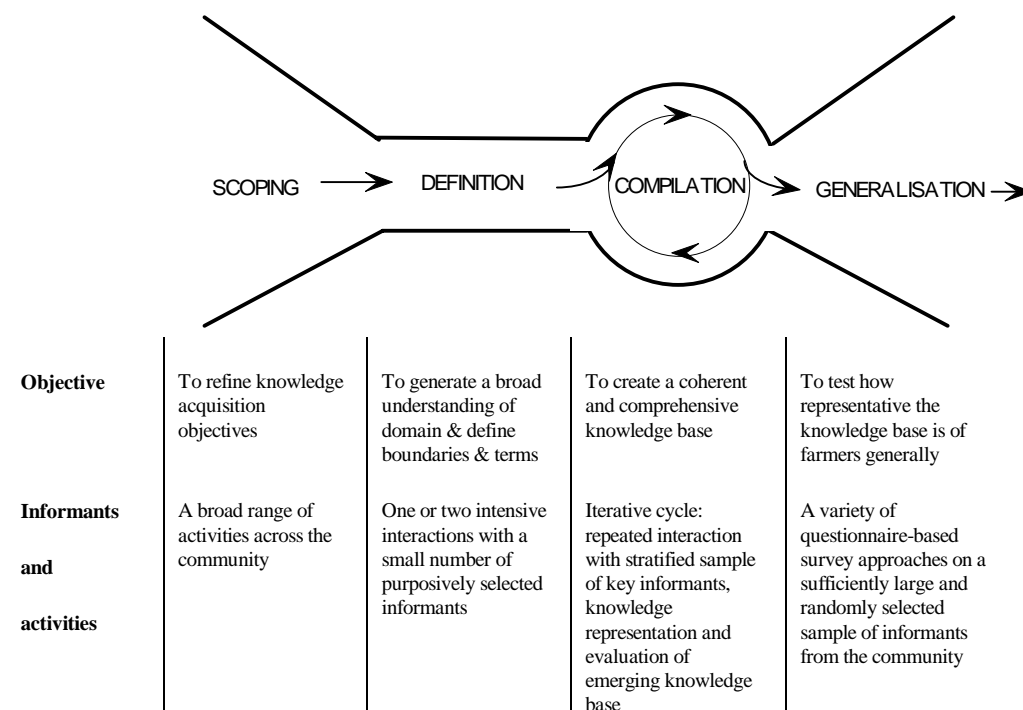


Figure 2.1 gives an overview of the four stages in the knowledge elicitation process.

2.1.1.a Scoping

The detailed design of a knowledge elicitation strategy is best undertaken during a period of introduction and establishment with the source community. Attempts to design a detailed knowledge elicitation strategy prior to fieldwork are inappropriate. The scoping period serves to:

- familiarise the researcher with the source community (when applicable), and vice versa;
- allow adjustment of the basic objectives in knowledge base creation through refinement of problem specification;
- provide a preliminary assessment of the basic and universal information held by the community on the topic in question;
- help to identify suitable informants for later stages (where applicable); and
- identify parameters within the community that might account for differences in knowledge; these parameters may then be used as variables for stratifying the local informants.

Rapid rural appraisal techniques such as household surveys, resource surveys, questionnaires and mapping have tended to be used at this introductory stage. However, scoping does not necessarily require formal surveys and in some cases a few informal conversations with local people may be sufficient to identify the key determinants of variability (i.e. the different strata) to be explored and the key informants for the definition stage.

2.1.1.b Definition of the domain

The definition stage is used to develop an overall understanding of the domain in question, defining boundaries, identifying terminologies and creating a framework.

Sources are purposely non-randomly selected from the source community. These 'key informants' are selected on the basis of interest, articulateness, depth of knowledge and willingness to participate. Key informants known to be in some way significantly unrepresentative of the community as a whole (for example, school teachers in local farming communities) have tended to be avoided, although they are often helpful in identifying other key informants.

Because the definition of the domain has a significant impact on the shape and content of the final knowledge base, an adequate spread of key informants is desirable to maximise the chances of developing a representative framework within the time available for this stage of knowledge acquisition.

2.1.1.c Compilation

The compilation stage of the knowledge elicitation strategy is used to record detailed knowledge within the framework developed in the definition stage and to indicate the variability of knowledge over the community as a whole. The focus at this stage is on talking to a few knowledgeable people in depth, rather than attempting to obtain statistically representative samples. As repeated interview of the same person is of paramount importance in obtaining deeper explanatory knowledge and resolving inconsistencies, willingness to participate must be an important criterion for selection of key informants.

For local communities, a small, stratified random sample from the source community is appropriate. The purpose of stratifying the selection of informants is to ensure coverage of knowledge about the domain where different classes of people may have different knowledge. Key determinants of variability in knowledge relative to research objectives may be gender, education, occupation, location, religion, ethnic group etc. Appropriate strata combining these

factors to allow assessment of the influence of these factors on the distribution of knowledge are identified. Within each stratum informants are then purposely selected.

A similar approach can be applied to professional communities (by discipline, for example). However, the relatively small size of professional communities or bibliographies mean that in practice the distinctions between definition and compilation may be blurred.

2.1.1.d Generalisation

Having obtained a knowledge base from a few informants, the generalisation stage involves testing the representativeness of this knowledge across the community as a whole. This requires a random sample that is statistically representative of the community as a whole, typically upwards of 100 people who have not been previously interviewed. This phase has one or more of the following objectives:

- To validate the knowledge base as representative of the knowledge held by the community as a precursor to using it to inform research and extension programmes;
- To explore the distribution of knowledge amongst people within the community; and
- To augment the knowledge base with details not recorded in the compilation stage.

Approaches to assessing representativeness are discussed in more detail in Chapter 6.

2.1.2 SAMPLE SIZE

The number of informants selected for each stage of the knowledge elicitation strategy depends on the nature of the source communities, the size and quality demanded of the knowledge base and the time available. There are no fixed rules on how many informants should be approached in the scoping stage and it depends entirely upon the methods used for scoping (see above 2.1.1.). From the definition stage onwards, the number of informants grows at every stage. So six – ten key informants in total might be adequate for the definition stage, five for each identified stratum in the compilation stage, and 100 for generalisation in a relatively homogeneous local community. In general it has proved more productive to speak to fewer people on more occasions than to cover a larger number.

2.2 CONSTRAINTS UPON KNOWLEDGE ELICITATION

Interview technique is a skill which is best developed through experience. This section cannot provide a prescription for how to interview informants, but outlines a few important considerations. Useful discussions of interview technique can also be found in Werner and Schoepfle (1987a & b).

Problems of knowledge elicitation can arise because people often fail to recognise that they have knowledge, let alone how they use it (Hart, 1986) and thus informants often find it hard to give detailed descriptions of their knowledge and how they use it. Indeed, the process of closely questioning an informant can interfere with his own perceptions of what he does. This is because much knowledge is tacit; that is, it has been learnt through observation and experience, and is understood, but is not generally expressed.

In a similar fashion, the status assumed by the researcher in the study community will also influence the elicitation process since all attempts to reduce social and intellectual barriers, and improve understanding will enhance knowledge elicitation and co-operation. If the researcher assumes the role of learner his reception by expert informants will differ markedly to the one he may encounter if he presents himself as 'scientist' or 'planner', or otherwise assumes an elevated status.

The role of communication skills, both in researcher and informant, is an essential element in knowledge elicitation, and is of particular significance in cross-cultural work (see Werner and

Schoepfle, 1987a & b). The familiarity and skill with which words are used to express concepts and procedures will affect the quality of knowledge elicited through interview. Although people identified for interview may be 'experts', it is unlikely that they have previously been required to describe their knowledge and decision-making procedures. Additionally, much knowledge learnt through experience may be used without a conscious awareness of explicit details (Hart, 1986) and even conscious knowledge may not be expressed in a way that it can be recognised as such (Breuker and Wielinga, 1987). This necessarily has implications not only for the elicitation process but also for the subsequent process of formally representing the knowledge for use by others.

2.3 INTERVIEW TECHNIQUE

Developing a representative abstraction of local explanation of the behaviour of an agroforestry practice or system is a significant undertaking and may involve interviewing 50 or more informants, four or five times each. Approaches to interviewing are well developed and documented (see for example, Cordingley and Betsy, 1989, Diaper, 1989, Cooke, 1994). Ethnographic techniques of knowledge elicitation as used by anthropologists (such as participant observation etc.) have been recognised as useful in the development of expert-systems because they capture insider knowledge, or knowledge described and explained from the informant's point of view (Benfer and Furbee, 1990). An investigation designed to access the insiders' knowledge without relying on shared assumptions and presumptions is known as an 'emic' approach (Werner and Schoepfle, 1987). This approach is important if knowledge is to be gathered in a way that reflects the structure of the indigenous knowledge system and allows the representation of that knowledge system to remain intuitively 'correct' to the informant. The alternative approach is an 'etic' one, which seeks to understand local practice using external scientific explanations that may have no internal logic for the indigenous informant (Knight, 1980).

2.3.1 SOME GOLDEN RULES FOR INTERVIEW TECHNIQUES

1. Send a formal letter to farmers requesting interviews. The time and location of the interview should be arranged to fit in with the interviewee's schedule.
2. The interviews should be conducted in the field rather than in the interviewee's home, because farmers often need to point to things that they cannot express.
3. It is important to consider whether the season in which the interviews are to be carried out is appropriate. Farmers will typically have more time when the harvest is in, than at the beginning of the growing season.
4. One interview is seldom enough, a key informant will need to be interviewed 3 – 5 times.
5. An interview should never go beyond an hour, as the interviewee will lose interest.
6. All interviews should be tape recorded to ensure that the interviewer and interviewee can concentrate on the discussion during the interview and no important points are missed while writing statements. The background and contextual information remain intact with the recording, which may be used for future reference.
7. At the knowledge compilation stage, no structured questionnaires should be used. The basic questions 'How?' and 'Why?' are asked during discussions and more questions are framed as the discussion progresses until the farmer cannot explain any further.
8. Preliminary analysis of answers from one interview should be used to set up topics and questions for the following interview with the same informant.

9. Knowledge gained from one interview may be verified through the process of knowledge elicitation with other informants to resolve conflicting information and to assess whether an item of knowledge was idiosyncratic or consistent for the group.
 10. Where there is some serious contradiction between farmers' statements which cannot be explained by differences between the selected strata, it is possible to carry out group interviews and put the contradictions to the group for elucidation.
 11. The attitude of the interviewer towards the farmer is all important, and should be one of respect. This cannot be overemphasised. The interviewer should:
 - a) Approach the farmer as a student desirous to learn from a teacher. Approached in this manner the informant will be more inclined to teach and explain all he knows.
 - b) Keep an open mind and suspend judgement during knowledge elicitation as indigenous knowledge may be tacit, and the interviewer may not know what there is to know.
 - c) Minimise his or her own influence and encourage informants to express knowledge in their own terms.
 - d) Avoid leading informants into formalising their expressions for the convenience of knowledge structuring.
 - e) Make the interview atmosphere as relaxed as possible.
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Key points of Chapter Two:

A knowledge elicitation strategy should contain 4 parts:

- Scoping
- Definition
- Compilation
- Generalisation

For knowledge acquisition, the informant population may be stratified according to gender, age, ethnic origin, economic status etc. in so far as belonging to one or more of these strata will affect the scope of knowledge of the informants.

The sample size depends on the size of the source communities, their homogeneity, and how much time is available. In general it is better to interview a smaller number of people more often, than a larger number of people only once or twice.

Interviewing techniques are more an art than a science but can be improved with practice. The crucial issue is the attitude of the interviewer towards the informant. A student-teacher relationship is likely to be far more fruitful than a 'top down' approach, on the part of the interviewer.

