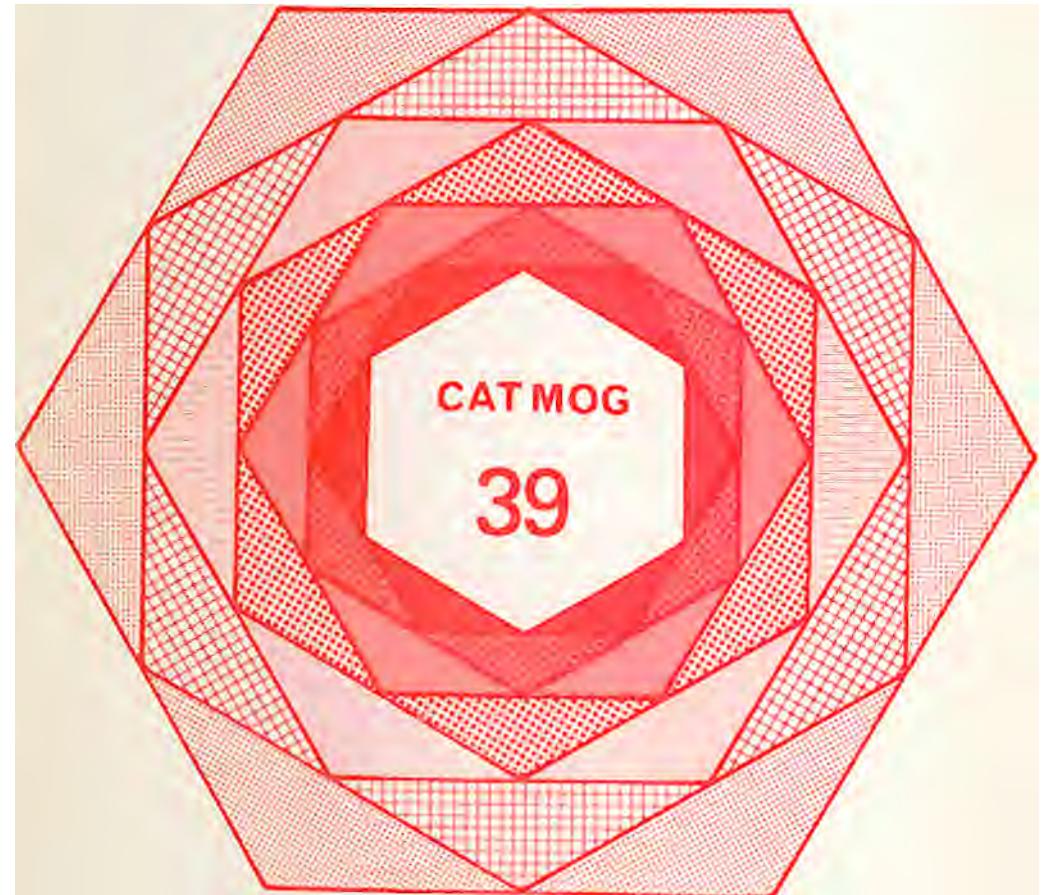


SURVEY RESEARCH ON UNDERDEVELOPED COUNTRIES

Chris Dixon and Bridget Leach



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SURVEY RESEARCH IN UNDERDEVELOPED COUNTRIES

by

Chris Dixon (City of London Polytechnic)

and

Bridget Leach (Thames Polytechnic)

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I. RESEARCH DESIGN

(i) Background

Many situations in underdeveloped countries presenticobleols—will'c'h can be illuminated by the detailed collection of survey data. Increasingly, in newly independent countries there is a desire to monitor change, to determine existing circumstances, or to unravel the connections between aspects of the local economy and society.

Sound social research depends on a thorough understanding of the environment, people, culture, economy and society, but it is through the research itself that the social scientist derives that knowledge. This is the paradox for the researcher starting on a new project. The formulation of meaningful questions for a survey depends on a substantial initial grasp of a situation, and yet were that grasp perfect, there would be no need for the survey. Understanding of the political and economic situation, and the historical background to it, is essential.

We would not argue for a wholly survey-based research strategy, the positivist assembling of as much data as possible, but set out to provide guidelines to help those who want to use survey techniques in areas where they have been as yet little used.

The researcher will find a growing body of literature and official material and statistics, and will have to assess their quality and interpret their meaning. Considerable ingenuity, imagination and flexibility is required to decide where to go for semi-published material, for surprising departments and institutions will have useful resources and helpful staff. Pre-conceptions about the interests of specific bodies will often prove wrong and may well provide sources at a visit which would never be traced through the post.

Sufficient first-hand local knowledge must of course be obtained prior to survey data collection'. Girard (1963, p.13) concludes that '*every survey must be preceded by a thorough sociological study or by the necessary research on cultural anthropology*'. Time and money constrain the amount of preliminary work that can be done in the field; there is pressure to arrive, organise, collect some 'data', and return to base as quickly as possible. Much of the discussion between academics and consultants centres on the most cost-effective, time-effective, way of collecting the bare crucial facts, making rapid appraisals without omitting vital information. This is the search for the '*optimality somewhere between the full-scale survey on the one hand and casual empiricism on the other*' (Institute of Development Studies, 1978). Many researchers argue for '*quick and dirty*' approaches, which cut corners in terms of the most rigorous sampling and survey methods. However, it is clear that until the more detailed, rigorous work has been done, the academic is unable to assess the prospects for a more rapid appraisal. If he has done a large scale survey in one area, he may want to assess the situation in an adjacent area by asking basic questions of a few individuals, perhaps not even chosen with any pretence at probability sampling. This would seem acceptable, although those reading his report would have little evidence to

judge the worth of what they were being told. In general, and certainly in a new area, the period of the survey itself should be short in relation to a period of time in the field taken up with observation and less formal work. For a foreign researcher the problems are greater. Murphey (1973, pp.75-76) summarises the overall effort needed:

'Sound area studies rest in most cases on a mastery of the area's language and culture, of its scholarly literature, and of the work of scholars in a variety of other disciplines concerned with the area. The acquisition of such mastery may well be the continuing work of a life-time, as opposed to the acquisition of a mere technique.'

Courses in colloquial language, as opposed to classical or tourist languages, are hard to find, and as in Britain language varies with class and region, so that in any case formal lessons can only provide a starting point. A minimal knowledge is sometimes supplemented by the use of interpreters, but the possibility of bias is great, as consciously or unconsciously the interpreter may be anxious to impress, to present his country favourably, to be helpful and interject his own understanding of the situation, or to provide the researcher with the information he appears to want (Bibliography section R).

The principal danger for research is of superimposing inadequate knowledge or experience from elsewhere on the data, and this is clearly most likely to occur when the researcher is new to an area. Findings which do not lend themselves to interpretation within the realm of his understanding may be rejected altogether. Inexplicable facts, for example the phenomenon noted particularly often in Africa of expenditure exceeding income, are not necessarily a case for questioning or rejecting the data but perhaps for spending longer informally investigating the situation which gives rise to the observation.

(ii) Appropriate techniques

The fundamental determinant of the methods appropriate to a study is the purpose of the research. The techniques must be suitable for the area, the data required, the resources available and the sponsors of the study, and they must not be allowed to dictate the project. For example, the choice of survey method limits the kinds of data that can be collected, and for many purposes more could be found out by other means. The researcher must satisfy himself that he has chosen the best approach to his problem.

In some circumstances, multiple visits to respondents, or even getting respondents to complete diaries or records, can be used in preference to a survey which is inevitably a cross-section in time used to infer something about a dynamic process. Return visits can be taxing for respondents, and require a large field staff so that only a small number can be followed up in this way. It is usual, therefore, to use the method preceding or following a one-off survey of a larger population; if the basic survey is undertaken first, the selection of respondents to the longer phase of the study can be made on a purposive basis, although clearly a sufficient number must be chosen in each category to allow for those from whom complete data are not collected, for any one of a number of reasons. It should be remembered when it comes to records of production and so on that literacy is rarely clearcut; many people who could not keep diaries could record numerical totals on forms, and a pictorial format can be devised to help. Younger members of families, who

have had more education, can also be used to keep records or diaries of farm activities provided the approach is made tactfully and the fieldworker who keeps in touch with the recording procedure is sensitive and can maintain interest in the project.

The research design must take into account the team available to carry out the work. Where there is only the principal researcher himself or herself, the number of interviews he can carry out will be limited, unless he is prepared to collect data over such a long time period that there may be major differences between the first and last interviews. It is also clear that after conducting a large number of structured interviews using the same schedule, a research worker becomes careless or disinterested, or presumes answers on the basis of earlier interviews. A lone researcher can combat this effect in himself by using a combination of structured and unstructured techniques, by broadening out in a more qualitative way from a checklist or short interview, which enables him to focus particular interviews on parts of the subject matter. In general, though, if a researcher is going to have to work without paid helpers, he will have to devise data collecting methods with ingenuity to overcome his own limitations, or interest other people in his work so that he does have some unpaid help for certain aspects of it. Working alone, he may want to spend more time interviewing, and less time finding his respondents, and be tempted to use non-probability methods to select his sample. It is a more universal problem, though, that no research team wants to spend more time and effort than is necessary on finding a selection of respondents, and there are a number of techniques which are better than interviewing the first people that come to hand (section IIIi). A lone researcher who could not afford any of the probability samples might choose to carry out less structured work, or explore ways of collecting information of a higher quality from a smaller number of respondents.

Large surveys have to be carried out by more than one investigator, each one executing a specified number of interviews with an identical schedule. This situation presents the research designer with the problems of organising and co-ordinating a team, in order to use the facilities in the best possible way to obtain the information required by the research problem.

How many respondents are needed, where they are to be located, and how the field staff will approach them and obtain the information must be decided in the light of the kind of people who are to be interviewed, what kinds of data are being sought, and so on. Equally important is the interaction between the interviews, the interviewers and the subject matter. For example, certain respondents require special types of interviewers, trained in particular techniques, familiar with a particular technology, or simply fluent in a dialect or language. Teams of interviewers borrowed from a government department cannot ask certain kinds of questions; each area and type of respondents will have its own sensitive issues, things about which it is hard to ask questions at all.

Sometimes the research strategy falls neatly into place. For example students going back for their holidays to their home areas, sent to interview local officials, provide a dispersed, though not strictly random sample, interviewed over a short period of time, as Saylor (1970) reports for Tanzania. He obtained interviews with 1,202 officials in 39 districts. This method may work well at the level of local agricultural extension workers, but might well not work at higher levels of officials, or with a less readily defined target

population. It also relies on the co-operation of the students, and on minimal training, and it is rare for such convenient methods to present themselves.

However small the scale of the project, too, there should be field tests of the instruments to be used in their entirety, that is, interviewers and schedules together, on a population as like the final target population as possible. The pilot data thus obtained can be used to select and train interviewers and to develop hypotheses and refine the questioning procedure.

Scheuch (1968, p.179) notes that *'one of the most surprising experiences of doing cross-cultural survey work is that so much of the technology of the data collection phase appears transferable'*, and although there are problems with using specific techniques, that is broadly true.

Even middle and high income groups in under-developed countries are not easily surveyed by post; response rates below 20 per cent are generally reported even in countries with good postal systems where addresses are clear and respondents are in groups likely to be literate. Illiteracy generally precludes the use of respondent-filled questionnaires, and may also fundamentally alter the presentation of questions. The number of choices in a multiple-choice question with precoded categories which are read to the respondent should be kept small, but this is true in any situation, not only when the respondent cannot read them for himself. The main effect of illiteracy is to increase the gulf between interviewer and respondent, which may distort some answers, but the fieldworker will have to use approaches which minimise his strangeness or apparent superiority with many respondents.

All the standard works on survey research (Bibliography section B) contain valuable material that can be used in the under-developed countries, but because they use examples which seem remote from the context, the researcher may feel tempted to depart from their guidelines in designing his own project. A clear definition of what is to be found out and familiarity with the area are essential; if a researcher is so bewildered by a place or an issue that he puts rigour to one side and concentrates on getting some information on the principle that may be caricatured as *'never mind the quality, fee/ the width'*, then clearly he is not ready to undertake survey work in that area.

Appropriate techniques need not necessarily be more qualitative, or samples purposive rather than probability based. Those techniques have a place, but they are not necessarily more appropriate because an area lacks a long tradition of social science research. The likelihood of dealing with small areas, and the probability of obtaining a high degree of co-operation and thus a high response rate, mean that the research in under-developed countries can and should attain a very high standard indeed.

(iii) contacts and co-operation

Interviewing with a structured schedule is always artificial and requires respondents to look at things in a new way. The researcher has to think more carefully about explaining his work and what he wants from the interview. The initial contacts which a researcher has or makes in a country or an area will greatly affect the data he collects. These contacts will usually depend at least partially on his sponsorship, and the perceived rationale for the research. A foreigner will generally need the co-operation of the

government to permit research in the first place. Contacts with central government officials, university staff, United Nations or other national or international bodies may facilitate entry into the field area, and indeed make the foreign researchers' stay in the field more pleasant, but the researcher may not have the experience to know how they are affecting the observations he makes (Ward, 1964, pp.65-66). Identification with an expatriate, propertied or urban elite may preclude advice and respect for integrity from officials lower down in the hierarchy as well as those outside it altogether. It is almost certainly necessary to have co-operation and good relations at various points in the official stratification, but an approach which is too obviously chameleon may be as bad as one which is clearly associated with the highest levels of authority.

While people appear co-operative, subtle biases may have been introduced by the perceived status and viewpoint of the researcher. The degree to which this occurs will depend on the society, the relation between the study's respondents and the government, and the nature of the research; the extent to which the effect is taken into account will depend on the sensitivity of the researcher. However, he should be alert to the possibility of a *'courtesy bias'* which provides him with answers he desires (or appears to favour) and superficial friendship. Whatever data are being sought, a general rule must be to avoid being associated with a government which is liable to levy taxes on land, property and income, or to conscript, or even to be associated too closely with the authority responsible for providing irrigation or other schemes, since it is also possible for the prospect of advantages ensuing from a 'favourable' research report on an area substantially to alter the responses. It is usual, therefore, for researchers who are academically oriented to stress their university or academic links, even if they are introduced through official channels, using visiting cards or letters of introduction as appropriate. Researchers should be aware that even casual contact with officials after data collection has begun may arouse suspicions about the veracity of their *'independent'* or *'academic'* standing.

While co-operation is likely to be more readily forthcoming if the survey results are presented as being immediately *'useful'*, rather than purely *'scientific'*, often it is a matter of useful to whom, and for what kind of *'planning'* activity.

Favourable publicity, for example in press and radio, can help in gaining acceptance, and it might be helpful if local dignitaries are sufficiently favourably impressed with an impending study if they announce it, for example as one Thai abbot did in a sermon which discussed the benefits that would accrue, both irrigation and *'merit'* for co-operating with a land use questionnaire. Equally, any criticism should be answered as fully as necessary.

However, contact within the village with one group, almost inevitably the more propertied or educated group, or the clique of the teacher, headman, priest, principal land-owner or village council, can alienate the researcher from other groups before he even knows of their existence. Some researchers have reported the bias caused by initial contact with one gender group in a locality with a pronounced sexual division of labour. A long period of contact may be necessary for sufficient understanding of the biases which might go unnoticed in a shorter period in the field.

Background data, published and unpublished, will be an early concern of a researcher. He may find it necessary to contact many different organisations and departments before being satisfied that he has identified what is available; it is particularly likely that central bodies will be unaware of locally available material, lists, and so on. The researcher will ultimately have to use his own judgement to assess the accuracy and value of the various sources.

(iv) Practical considerations

It is essential not to go into a research area with preconceptions, but the advance planning must take into account likely difficulties and allow a margin of time for the unforeseen. Researchers rapidly acquire the imagination necessary to overcome practical obstacles, and we only mention some here to indicate that planning will have to face details.

Accommodation for a research worker or team in the field may be hard to arrange, and its availability may affect the length of time that can be spent in the area. Staying in a town and conducting rural fieldwork nearby seems undesirable, both in terms of gaining rapport and full understanding, but it may be essential for large teams. Dividing the team into smaller units which can be accommodated in the village seems preferable, even if the accommodation is too cramped for adequate evening report-writing; spending some nights in the village and then going away for a few days may be preferable to trying to commute over bad roads or after dark. Disease and wild animals are hazards in some areas, and local advice should be taken about sensible precautions.

The climate may not only make some roads impassable at certain seasons, it also affects when local activities occur, and constrains the timetable of research. If the subject of interest is the agriculture itself, the timing of the farm year is crucial. A full survey of the farm year is only possible when it is completed, or by a full year's observation, but many crops are harvested over a longer period, or left in the ground until needed, so that complete harvested totals, for example, cannot be easily calculated. It is obviously important to choose an interviewing time which avoids a labour peak; in some agricultural systems there is no clearly defined slack time, and it would be necessary to interview in the evenings when the day's work is done. This presents problems of lighting, local customs, and the exhaustion of respondents; at less busy times there will be festivals, visits to relatives, pilgrimages, migration for temporary employment, or unforeseen events like deaths which are likely to affect all the potential respondents in a small community.

Practical considerations will include necessities as mundane as document reproduction facilities and transport. Schedules will usually have to be finalised in the field, and printed or duplicated very quickly. If the survey is being carried out a long way from the home or host institution, arrangements may be made to borrow a typewriter and duplicator in a nearby school, college or local administration office. The diffusion of the offset litho machine means that higher quality reproduction is more widely available, and this method is particularly suitable for a variety of scripts. If more than one written language is being used in a study, typewriters with appropriate scripts will have to be located; writing in another script may be possible for languages not normally written, provided the field staff can read the

transcription easily. Paper and other materials may have to be brought from the main institution as a local one may lend equipment but have no paper to spare, even if it is paid for. The finished schedules will need to be legible in poor light, and have a good surface for writing on. A small incidental consideration will be the writing implements. Red is a good contrast with black on the schedules, but is hard to see in poor light. Pencil, the easiest to use, cannot be recommended, as it will invariably become illegible after the amount of handling the schedules will receive, and also it is too tempting to erase and alter a pencilled answer that seems unlikely. If a fieldworker changes an answer, it should be obvious, and have a note explaining the reason.

Secure, dry methods of transporting large numbers of schedules must be found, as until they are coded they are irreplaceable, and even after they may be referred to in certain circumstances. Government officials may help with many practical problems in the field but there is no surer way of being identified with a department than to use their stationery or be seen driving in one of their vehicles, and in small areas private vehicles are well-known too. Appropriate transport in some situations would be a boat or a bicycle, or a small motor-bicycle, and consideration must be given to the availability of fuel and a mechanic.

All these practical factors as well as time and money available limit the duration and size of a planned survey, providing constraints within which a research design must be constructed. That so few surveys can be repeated, and that returning to the field to check points omitted is usually impracticable, are arguments for the most careful research design. Where a foreigner is finding his feet in a strange area, the length of time adjusting in the field, and the possibility that developing understanding will redefine the problem during the fieldwork mean that original estimates of the amount of work that can be conducted may be inaccurate. The research is also more likely to be terminated abruptly than similar work in developed countries. Thus, while research design should be thorough, it should also be flexible.

One way of ensuring flexibility is to have an *'interpenetrating sample'* design. This means that, instead of one sample, the researcher has drawn two or more, each of which, although it is smaller than the total aimed at for the final calculations, covers the whole target population of the study (Kish, 1965, pp.127-132). Each sample can constitute a relatively self-contained phase. In the event of a sudden termination, one or more of these samples should have been completed, and can be salvaged. There are additional benefits. The project produces preliminary output from each phase, which is good for morale. Field data analysis, producing rough tabulations of variables from each phase of the enumeration process, will also be a useful economy with this sort of sample design, as it permits some redirection in the light of experience. It may be possible to prune interview schedules in subsequent samples of variables found to have a low level of variability within the sample population; equally, it would be possible to insert questions on topics which emerged as important relatively late in the evolution of the study. Although this would mean that some variables had not been collected from the whole population, population estimates could be calculated from the smaller sample, and relationships with other variables and attributes of the population studied within the smaller sample.

(v) Cross-cultural studies

The bibliography (section D) provides a starting point for the literature on the specialised topic of conducting studies which attempt comparability between cultures, which is not covered in this monograph. Very considerable problems are faced even when dealing with closely related societies such as are found within one continent, because of different definitions, the difficulty of deciding what are equivalent concepts in different cultures, translation difficulties, and the approach to and reaction of the respondents, and it is unlikely that anyone would attempt a cross-cultural study without the resources of long experience and a team with a history of large-scale survey work.

II STRUCTURED AND UNSTRUCTURED METHODS

(i) Observation

All social scientists observe their research area, the agricultural practices, or whatever is the subject of investigation. For some, traditionally anthropologists, observation plays a large part in the overall research strategy, and questioning arises in the course of participant or non-participant observation.

Observation and more casual conversation is clearly essential to the initial phase of any investigation which is going to use a structured instrument, a fixed schedule for the main body of data. Many anthropologists now also collect more quantifiable data, both because of the demand for more readily verifiable '*evidence*' and because of the pressure for shorter periods of fieldwork.

All social scientists need to maintain both the quality of their observation and the standard of their interviewing.

The bias introduced by the presence of the observer needs to be understood, even if it can never be wholly compensated for. In certain studies, particularly of work, timing is important, but the observer is likely to find out how fast a process could be carried out, rather than how long it usually takes, or find that his estimate is biased in the other direction by an undue interest in his presence. Various strategies of spot checking, observing from a greater distance, or appearing more interested in other activities, can reduce, but rarely eliminate, these effects.

There are other dangers, too. Observation alone provides descriptions, rather than explanations, and superficial similarity to observations made elsewhere can be misleading. Groups most easy to participate in, or to observe, may be atypical; in particular, they may be the elite or richer groups with whom the researcher is most readily associated.

Researchers aware of these problems can make certain attempts to overcome them, but there can be no short cuts to experience of the particular area and acceptance of the researcher, which are the main factors.

(ii) Participant observation

While it is rare for a research worker to embark on a project as a full participant, it is usual for him to try and share as fully as he can the life and experiences of the community. This may involve him in helping with the harvest, growing his own vegetables, or whatever seems feasible and appropriate. It should be said that many academics start unqualified for participation in agricultural activity.

The observer is limited generally in what he sees and whom he contacts; he may observe at one season only, focus on the males or elite, rather than the females or the poor, he may make contacts most easily with the settled population, but not meet the landless, homeless or migrants. And it is also likely, too, that he will be near a main road, or in an area where there is already some modernisation scheme or a development project is planned.

The initial or key informants, often the headmen, teachers, local officials, the better educated, more articulate or wealthier, play a decisive role. Asking the same questions of others in order to cross-check may result in offence, or in the same '*wrong*' answer given by those unwilling to contradict. Young and Young (1961, pp.147-148) report that where evaluation, interpretation, inference, explanation, or even information of '*typical*' behaviour in the community is sought, the level of reliability of key informants is likely to be low, however anxious they are to provide the correct answers. In some circumstances informants can be selected by taking a random '*transect*' across an area, observing events or talking to people in the fields in a straight line from a possibly randomly selected starting point and bearing. However, these respondents will be equally unable to inform the researcher about local '*average*' or typical yields or behaviour if these ways of thinking are new to them, and they are as likely as the '*elite*' to have reasons for giving more prestigious answers about their community. In a very unequal society indeed, the researcher should beware the '*meaningless mean*'.

Through as much casual conversation as possible, the researcher tries to avoid imposing a rigid structure of his own devising on a situation. Richards (1978a) reports an example of studying a grasshopper in West Africa as a pest, without finding out for at least two years that it is also an item of diet. Many researchers would be less honest about similar incidents, and many a visiting expert would have failed to correct his original perception of the situation because he would not have found himself in the situation of eating with the local people and being offered the pest as a delicacy.

Lipton and Moore (1972, p.37) point out:

'Once a questionnaire has been produced, a structure has been placed on the type of data to be collected. The pilot survey ... is of little use, since this is normally oriented to perfecting the questionnaire. The ... problem ... will usually become evident only after a great deal of fieldwork has been done.'

Thus the researcher who elects to use a formal questionnaire must ensure that the process of observing does not end when the formal questions have been formulated. Marginal notes to, and conversation resulting from, a structured interview may illuminate the analysis of those formal data.

(iii) Group discussions

If a researcher has considerable experience of a language (and that means of a culture and context too), he can sometimes make use of group discussions to obtain information. It can provide insight early in the research process, in the pre-survey period, or after the survey to follow up particular issues raised. Village history might be explored in a group discussion. Where privacy is difficult to obtain, an expensive survey can sometimes produce apparent individual opinions which are in fact highly influenced by the group around. If it is the group consensus that is required, large amounts of information of a less personal, individual nature can be rapidly obtained by assembling a group. The researcher may, for example, be interested in the group opinion about the number of children women would like to have; he would not expect that this would invariably be the same answer he would obtain from interviewing women in private (Stycos, 1960, p.387).

If the researcher is interested in understanding aspirations of a group, then assembling that group may be the best method of obtaining that information. He may want to direct the discussion, asking questions in a set order from a checklist, or allow the discussion to take its own course; he may want to observe which individuals dominate the group, and what they are saying. The notion of studying individual *'attitudes'* in isolation from the social context in which they are formed and applied is one which must surely come under increasing criticism, for the idea derives from an individualist ideology in which the inter-dependence of people is given second place to the individual drive and solution.

It is not necessarily the case that a group interview will avoid the individualist approach, but if the group assembled is one whose interests are genuinely common, then the researcher must surely derive a greater understanding of that interest than simply by studying isolated units. The social situation is not composed of the sum total of the sample population and their opinions and circumstances.

(iv) A strategy for structured and unstructured techniques

Before using a complex survey instrument, a researcher needs to know about the area. Typically a researcher will move from less structured to more structured approaches as his fieldwork develops, but in certain circumstances it can provide a valuable introduction to the area to start by some very simple structured work. Mapping, compiling genealogies or measuring production, provided they are not threatening or offensive to the respondents, clearly establishes a field of interest for the researcher, in the context of which other information will be forthcoming. It may also provide a sampling frame (section IV vi). When a researcher arrives in an area with no defined tasks and appears to wander round, it can lead to rumours and also can be very disturbing for the researcher who feels that he is not making progress.

How he records unstructured information is problematic; some researchers can use tape recorders, others prefer notebooks with card indexes for cross references, so that the notebooks follow a time sequence, but comments pertaining to particular topics can be rapidly assembled. A tape recorder may seem the ideal instrument for some conversations, even group discussions, because the respondents usually forget the machine is there and do not feel inhibited by it for long, but without an exceptionally high quality recorder

and microphone background noise can be more than distracting. It can be surprisingly difficult even to determine who was speaking at any time in a group discussion, and the problem of unwanted sounds is increased in this situation because in order to capture many voices, a noise cancelling microphone which would concentrate on localised noise sources clearly cannot be used.

The research with which this monograph is concerned is that which carries out at some point a detailed, structured survey using a standardised instrument (usually an interview schedule). Researchers should be aware, however, of what Paul Richards (1978b) has called the *'tyranny of the questionnaire'*, and of the danger of disproportionate accuracy, of obtaining highly detailed data on one part of the system under study, for example, the exact volumes of the inputs to a farming process, but obtaining only estimates for the products, or failing to see the wood for the trees. The constant interaction between a formal instrument and sensitive discussion is not something which can be prescribed, but it is surely the requirement for illuminating research.

III SAMPLING

(i) Probability sampling

Areas with a poor survey tradition provide a poor learning environment for the researcher who is unclear about the basics of survey work, and it is in the sample design that he is most likely to make elementary mistakes, especially if he is thrown off balance by being alien to the culture. While an experienced worker should be able to adapt from one situation to another, the less his experience and the more foreign the situation, the more difficult and incomplete this adaptation may be.

Probability sampling, in which each element in the population being studied has a known chance of inclusion in the sample, is fundamental to the collection of quantifiable data which are to be subjected to statistical testing. The underlying principles of probability sampling should be grasped before any attempt is made to incorporate them into research design; here a basic acquaintance is assumed with the notions and terminology of the statistical underpinnings, universal in their applicability (bibliography section F).

The most important feature of a good sample is that each potential element in the sample, each member of the survey's *'target population'* has an equal (or if unequal, known) chance of selection. Bias in the selection process, introduced consciously or unconsciously, is to be avoided; unconscious bias is combated by rigorous procedures which leave no choice to the survey team.

Finally, the sample must be of sufficient size to enable meaningful statements to be made about the target population. A sample of less than 30 is generally too small to be considered a probability sample, and the more varied the population, the larger the sample needs to be (section III iii).

(ii) Defining the target population

Sampling is not just a stage in the research design, it is intimately related to the whole study. In no aspect is this so clear as in the definition of the target population, those elements which are to be the concern of the study. Establishing the definition is a prerequisite for establishing an adequate sampling frame and how a sample is to be drawn from it, but the delimitation of the area and the boundaries deciding which elements are in and which out of the relevant population will also depend on practicalities and the nature of any sampling frames from which the sample could conveniently be drawn. The flexibility to redefine the target population in line with these considerations will depend on the object of the study, and possibly requirements laid down by the government, international agency or sponsor of the study, but it is often possible to meet these requirements by using a more limited definition of the study population. The simplest example is the usual exclusion from studies of the population of those in institutions such as hospitals, or monasteries. Studies of businesses might well want to include, however, the very ones excluded from any official lists, and the target population might well be one not covered by any straightforward frame. In some circumstances, studies of farming can be made by concentrating on farmers participating in a village or co-operative meeting, at which a sample could be drawn.

Before drawing the sample, the researcher will need to assemble as much information as possible about the target population. Its total size may be needed to determine the sampling fraction, and the best available estimate from censuses, local lists or informed guesses may have to be made where there is doubt.

Administrative units may not make the most suitable boundaries for populations studied, as they may bear little relation to the pattern of settlement, or economic, cultural or linguistic groupings. A changing economic situation, particularly the transition to capitalist economic formations, may make the definition of economic categories, for example, factories, workshops, subsistence or commercial farmers, and so on, problematic; it is usual, when it would not create an overwhelming volume of extra work, to include at an early stage elements whose categorization is dubious, for they can readily be omitted from further consideration or analysis if it is found that they do not meet the criteria for inclusion, while subsequent inclusion of individuals missed out will be difficult or impossible. Internationally applicable definitions might be adopted for comparability, but pre-survey work may be needed to decide if the standard definition can be applied in a meaningful way in the survey area.

Care must be taken in choosing the relevant sampling units; frequently households or farms are used, but aside from definitional problems it is worth considering the extent to which these are appropriate. Because they have been used in official data, they should not be adopted uncritically, for genealogical, locality or other economic groupings may be more relevant for the particular investigation. Superficial studies using inappropriate units may indeed be able to gather data, while failing to elucidate other, perhaps more crucial, operating units, or to observe the change from one set of operating economic units to another in the transition to a new economic system.

Similar arguments may be made against the use of the term 'village', for

in many areas it is not possible to demarcate spatially separate settlements. For agriculture, kinship or other groupings may be more important than spatial proximity. Even where a clearly demarcated pattern of nucleated settlements exists, the concept of village land may be absent, with the holdings of several villages intermingled. The project may require bounded areas of agricultural land to be studied, irrespective of the village where the cultivators live, and each survey's requirements in this respect will be different.

The final definition of the target population should be such that a clear decision about any individual element's inclusion or exclusion can be readily made. It should also be such that coverage is complete. For example, it may be that the target population is the rural inhabitants of an area. If the sampled units are then restricted to particular villages, it must be possible for each individual to be uniquely allocated to one village, and for those in isolated dwellings to be included with the nearest settlement unless there is a clear divide between villages.

If there is doubt, make a firm decision, a rule to apply, and then the problem can be discussed, perhaps in a footnote, in any final report.

Like all the pre-survey tasks, the time spent defining the target population will not be wasted, and will be instructive in a wider sense. Inadequate attention to this work may reduce the validity of the research findings, and in extreme cases the project will be terminated without the researcher realizing important limitations, for example, that he has written about a village in an area where there are none, or purports to write about all the firms in an area, when many were excluded from consideration and their existence never even noticed.

If resources and time prove inadequate for the desired sample size, because of unforeseen aspects of field conditions, there will be a considerable temptation to ignore imperfections in the sampling frame from which respondents are selected. Good research design depends on accurate estimates of the determinants of sample size and the cost-effectiveness of different methods. If the information which the survey is to provide cannot be obtained without a long schedule, the level of accuracy required is high, and the variability within the population likely to be considerable, the researcher will have to economize on the time spent finding the sample or sacrifice coverage over a wide area or every section of the population.

(iii) Sample size

The final sample size is usually determined by cost and administrative convenience, but researchers should be aware of the need for samples of a certain minimum size to obtain reasonably accurate estimates of attributes and variables, and of the general relationship between the degree of variability and the size of sample needed, as well as the need for sufficient numbers in each sub-group or category within the overall sample if they are to be compared in the analysis of the data (Dixon and Leach, 1978, pp.7-11). Less than 30 elements from one settlement is probably of little use. In general, researchers try to increase the total number of elements included in the sample, although the effect of sampling homogeneous clusters may cancel out the benefits of increasing the absolute sample size.

In order to reduce the confidence limit, (the range around the observed statistic within which the population parameter is expected to be found), from 10 per cent to 5 per cent, given a coefficient of variability of 50 per cent (a reasonable assumption for many social variables), the sample size must be increased from 100 to 400 (Dixon and Leach, 1978, p.10). While the costs would probably not increase fourfold, the time needed to execute and process the survey would increase in something approaching this proportion. These factors suggest that the lone researcher in particular needs to be wary of carrying out a tiny survey from which generalization will be unjustifiable.

Costs will be reduced by ensuring that the fieldworkers spend the greatest possible amount of their time interviewing rather than travelling. If they encounter a large number of refused or postponed interviews because they have been sent out at unsuitable times, if checking work is slow because the schedule is badly designed, or if they are frustrated in trying to identify or locate respondents from the list provided, the sample size will be smaller than it could be. Attention to practical detail and good estimates of the size of the field staff's task will ensure that any local clustering of the sample genuinely saves time (which usually means that each group of interviews must be completed by one or two enumerators with a minimum number of visits), and that there is a constant flow of work for each team member. Where living or travelling conditions are difficult, or respondents are hard to contact, nothing will be gained in the long run by over-optimistic workloads; the aim must be to see where time and effort can be saved.

The number of interviews that can be conducted in a day will vary greatly with the schedule length, the local conventions, and the speed with which respondents can be found and persuaded to co-operate. In rural areas, or using complete enumeration of small areas, finding respondents may be easy, but courtesy may require a certain length of time with each interviewee, not so long that it disrupts his work, but long enough to indicate a genuine interest in what the respondent does or thinks. In urban areas, the brisker '*doorstep*' approach and interview used in developed areas may be more acceptable, and interviewing can proceed in a more '*business-like*' way, with no attempt made to integrate into the local society. Between 20 and 60 interviews per fieldworker each week may be expected; only pilot work can improve on estimates made by taking the examples of similar studies and calculations based on travel and schedule length.

The original sample should contain a proportion of elements, perhaps 10 or 25 per cent of the total sample depending on the expected level of co-operation and the stability or mobility of the population, who can be included. If selected respondents cannot be interviewed. No other substitution is permissible. The temptation to substitute more easily contacted or interviewed individuals for those who refuse, cannot be found or are remote or elusive, must be resisted. The researcher may genuinely feel that the person he includes may be a reasonable alternative to the one in the sample; he may, after all, be dressed in a similar way, or have a similar land holding. However, there is no way of knowing what biases are introduced by even the slightest deviation 'from the probability sample selected. Sometimes, it is true, a probability sample will be a poor representation of the population from which it was drawn, and a researcher might wish to select respondents on the basis of what he knows of the population, but he cannot then use the statistical assertions about the probability of his sample corresponding to the whole population. The most likely effect of allowing selective

substitution is to damp down the variation in the sample, to make the findings tend more to the mean, but even if this were not the case, the departure from the strict rules of procedure for drawing up the sample would not be justified.

The hardest people to interview, and possibly those not interviewed at all, may be very different from those more readily included in the survey. Information obtained about the non-respondents may indicate whether they are very different from those included. In some cases it may improve estimates of certain variables for the whole population if those who were found with most difficulty are weighted, over-represented in the calculations, to counter-act those absent from the sample altogether. This procedure is, at best, empirical, and any such calculations would have to be offered to the reader with appropriate qualifications. Information about individuals who are not seen must also be treated with particular caution, as it is often hard to check. Reasons for absence, too, may be inaccurate or euphemistic.

There are practical limits on the size, coverage, accuracy and hence the level of generality of any survey, and these should of course be made clear in any discussion of the results. A survey in a single village or area may give some indication of trends in a larger region or country, but this generalization cannot be assumed valid without some justification and evidence, usually provided by comparing trends in the area through key variables.

The selection of the primary study units, the actual settlements, for example, is often governed by practical considerations such as access, time and cost. If the settlement can be identified on maps or by name, and on the ground, (not always straightforward if '*official*' names bear little relation to local usage, or indeed if official divisions into village units are for administrative purposes unrelated to local practices) and if none are seasonally abandoned or inaccessible by usable means of transport at the times when the survey is to take place, the settlement or settlements in the sample can be chosen by probability methods, as one would choose clusters. Otherwise '*representative*' areas must be selected using the best available information. Essentially both these methods, in spite of the attempt to treat information from sampled areas as indicative of the situation in a wider area, are delimiting the target population. The resulting study will be in practice a study of the areas from which the sample was drawn. Some studies, recognizing this, may prefer to report the findings of several sub-samples separately, rather than aggregating the data to represent the population of a wider area. Essentially, the researcher must explain to the reader the limitations on his sample, and substantiate any generalization.

Just as comparing the sample with census data or any other variable population parameters helps the reader of a research report to draw conclusions about it, so the calculation of standard errors and confidence limits for some key variables in the study is a useful exercise. It tells the researcher and his readers how much confidence - in both a statistical and a practical sense - he can place on the data. It is also an essential part of the survey tradition, and will help future researchers to design, execute and evaluate their own work.

(iv) Sampling methods

In general, simplicity of sample design will pay dividends. More complex designs rest on thorough and fully digested background knowledge, particularly about the distribution and parameters of key variables. Such information is seldom available, reliable or up-to-date.

Simple random sampling assumes the presence of a suitable sampling frame (Section IV vi), and also has the disadvantage that the sample drawn at random is likely to be scattered all over an area. Clustering, drawing the elements from a limited number of (randomly chosen) sub-areas rather than across the whole area, makes interviewing easier. Its effect, however, is usually to reduce the variability in a sample, assuming that the sub-areas are more homogeneous than the area as a whole, and to exclude possibly vital information. It is normally only adopted where practical considerations of travel from one part of the area to another, for example, outweigh the principles of good design. In some developing countries, particularly in rural areas, there is less spatial segregation on socio-economic lines, and it might be the case that clustering has less effect on the quality of a sample than elsewhere. A researcher using this as a justification for clustering would, however, have to demonstrate that this was the case in the area studied.

While a researcher may wish to have his sample conveniently located for ease of fieldwork, it is also common to require even coverage across an area. It will also be necessary to have reasonably large parts of the sample in each category or area which is thought to be significantly different from others. The sampling frame might thus be stratified, using such strata as parts of a settlement or area, individuals located at different distances from a town, settlement centre or main road, or '*ecological zones*'. Simple random samples are generally drawn within such strata, and the resulting sample has the advantage of not only providing the coverage of sub-groups, but also of providing generally better estimates of population parameters than a simple random sample of the same size.

Stratification, the principal technique used to reduce the total sample size needed to produce good estimates for the total population, assumes that there is good information on which to divide the population into strata which are substantially homogeneous and different from each other. It is a useful technique to ensure that areas which are very different are all included in the sample in their correct proportion. It is, however, the case that strata which are homogeneous on some variables are extremely heterogeneous for others equally important to the study, and for these the stratification would not improve the estimating ability of the sample. As soon as the simple random sample is abandoned in favour of a more complex one, estimates of the standard error and test statistics are harder to calculate if the sampling effort is not spread evenly into the strata, and population estimates will require weighting. Many researchers use statistics as if the sample were a simple random sample, and indeed also ignore the weights, particularly if they are small, in other words, the sample was not very unevenly distributed; if this is to be done, the researcher must demonstrate, by presenting examples of different types of variables for which calculations using and ignoring the weightings produce similar results, that he is not distorting population estimates.

The problems caused by strata which are homogeneous for some variables, and heterogeneous for other features, also affect the procedure known as post hoc weighting; the allocation of weights to parts of the sample on the basis of demographic or other criteria, which are used instead of the simple numbers to produce means and other statistics for the population as a whole. The aim of the weighting is to make the sample more representative of the whole population, by applying weightings based on the distribution in the population census or some other authoritative source. It might be interesting

to see what effect post hoc weighting has, but it would be rarely used as a basis for all figures presented in a research report. One application might be where one group, for example women, has been greatly under-represented in the sample, but since those interviewed are likely to differ from those who were not, extreme caution would have to be adopted in assuming that weighting those included really did improve the estimating ability of the sample.

The simplest way of ensuring even coverage across an area is to use a form of systematic sampling, taking every n th element from a list (or perhaps better still, to avoid any possibility of coinciding with a periodicity in the frame, every individual at an interval of $n + r$ where n is the desired interval and r is a small random number added or subtracted from each interval). If the settlement layout is suitable, and no dwellings are obscured from view (and it is easy to determine which buildings are dwellings, and how many dwellings they contain) it may be possible to select the sample from a '*postman's walk*' route around the settlement. The method has the additional advantage of being ostentatious, so that everyone can see that the method is '*fair*'. The main problem associated with the method is the temptation to '*cheat*', or subconsciously exclude individuals or dwellings which look uninviting. If no-one is found to be interviewed at the first visit, it will of course be necessary to call back, just as if the house had been selected from a sampling frame. An appropriate method will be needed to identify the place for the return visit, and it should be sufficiently unambiguous for someone other than the original fieldworker to be able to make the second or subsequent visit. When fields or buildings are not numbered, it may sometimes be possible to mark them in some way, but this will depend entirely on local co-operation - the arrogant colonial census method was to chalk or paint on the wall, or pull out a frond from the roof as an indicator that the premises had been included. These methods could hardly be recommended:

The usual principle of good sample design is to spread the interviewing effort evenly across the survey area, but there is much to be said for complete enumeration of small areas. This avoids the need for a sampling frame and ensures even coverage of all social and economic types in the area. This method of one or more censuses of small areas is particularly useful when intra-village or intra-area variation is greater than inter-village or inter-area. In these circumstances, quite likely in many communities in under-developed countries, the degree of clustering will actually increase the precision of the sample. The method raises questions, though, about how far it is possible to generalise about the whole area from the survey.

The researcher is able to study a community as a functioning unit in an intensive way which may provide more insight about an area and processes which are relatively new to him or little studied previously. A relatively inexperienced research worker would almost certainly learn more from the completeness of several full censuses than the more usual sample which provided no comprehensive picture of any one settlement.

The extra insights gained by the less superficial contact with particular places, as well as the saving in time and costs of travel which may increase the total number of interviews possible, may outweigh the disadvantages of looking at restricted areas. On the other hand, a complete enumeration of small areas of this type should not be a substitute for the more informative study based on a longer pre-survey study during which a sampling frame is checked, amended or constructed (Section III vi).

The high degree of differentiation in many parts of the less developed world means that a large proportion of a small population would be needed to ensure precision. A sample of less than thirty from one settlement is too small to make assertions about the character of that settlement, as distinct from any other, and thirty is the smallest size for which statistics based on sampling theory could reasonably be calculated. If the sample is to be divided into sub-groups for analysis, an even larger number may be needed. Where villages or parts of towns contain little more than fifty households, a complete enumeration seems a more efficient use of resources than attempting to create a sampling frame and selecting a large fraction.

Within larger settlements, complete coverage of parts or segments, perhaps areas bounded by roads, can be more efficient than a more dispersed sample. Small areas, each containing between twenty and fifty eligible elements, can be identified on maps or aerial photographs, and allocated numbers. The sample blocks can then be chosen at random or systematically, perhaps using a fixed interval on blocks numbered in a sequence spiralling out from the town centre. This would ensure inclusion of sections in various directions and at different distances from the centre.

The more dispersed the sample, the more time, proportionally, has to be spent locating reluctant respondents. If the fieldworker does not have to identify individuals in advance or to try to relate the inhabitants found to a list, he can, with the minimum of travelling, interview first whoever is available and work in any order within his allocated segment until the task is completed. He will not have to explain the apparent discrimination of a random sample. The problem is to determine when the task is complete, and what the final response rate is. A map, usually just a rough sketch map, will help to determine when all the elements in the area have been accounted for, if the settlement pattern is complex, or there are many buildings containing more than one eligible household, or business. It is small consolation that in such cases any sampling procedure is likely to experience difficulties.

Within the principles of probability sampling, great ingenuity is often necessary to obtain the most effective sample with the least effort. The solution adopted must be chosen in the light of the particular local circumstances. There are few areas now where researchers start in uncharted territory; most situations have now been surveyed, both by academic and government or planning work. A new researcher will, therefore, have some guidance, although it is possible that planners studies have been both rapid and particular in their purpose, so that their methods cannot be adopted. The potential for good samples in less developed countries is high, because while sampling frames may be less readily obtained, and little tested by previous research work, the chances of checking and updating them, of identifying problems associated with them, and of evaluating them, are greater than elsewhere.

(v) Selecting respondents within units

The elements about which data are collected frequently include more than one individual who could supply the researcher with the information he seeks. This would be true of households, farms, firms or other economic units. It is often preferable to decide in advance to interview the head of the household, the oldest male, or whatever seems appropriate. This by no means

eliminates the problem. In many situations the members of the sampled unit cannot or do not apply the researcher's definition. We would also expect different qualities of data from different individuals, for example, men might report less handicrafts, or women might over-report these activities to conform with the norms of local behaviour. The easiest solution to apply in the field is to interview any competent adult person in the unit, but the position of the respondent should be noted, so that it is possible to process the data by sex, age and position, to see if there are consistent differences attributable to these factors.

Sometimes a researcher has a list of corporate units from which he wishes to select specific individuals about whom data are to be collected. Here the problem is rather different, because he wants to ensure that each individual has a known chance of selection, and that he does not consistently choose one type. If he created a cumulative list within all the units in the sample, households, let us say, he could regard this as a sampling frame, and then select respondents using random numbers, or alternatively taking every nth report from a random start. This has the disadvantage that some smaller households will be visited unnecessarily, because no-one in them will be included in the final sample. Kish (1965, pp.398-400) suggests a method using a version of Table 1. It is necessary to list everyone in the household,

Table 1. Kish's table for selecting impartially one individual from a group

Lines (one of which is allocated randomly to each group selected)	Number of eligible individuals found								
	1	2	3	4	5	6	7	8	9 or more
Line one	1	1	1	1	1	1	1	1	1
Line two	1	1	1	1	1	1	2	1	1
Line three	1	1	1	1	2	2	2	2	2
Line four	1	1	1	2	2	2	3	2	2
Line five	1	1	2	2	3	3	4	3	3
Line six	1	1	2	2	3	3	4	4	4
Line seven	1	2	2	3	3	4	5	5	4
Line eight	1	2	2	3	4	4	5	6	5
Line nine	1	2	3	3	4	5	6	6	6
Line ten	1	2	3	4	5	5	6	7	7
Line eleven	1	2	3	4	5	6	7	8	8
Line twelve	1	2	3	4	5	6	7	8	9

usually in a standardised order, and then, depending on the number of eligible individuals found and the line of the table randomly allocated to that household, the numbered individual is selected. For example, the fieldworker arrives at a household to which line four of the table has been allocated. He lists the number in the house, finds there are seven people who meet the requirements of inclusion in the sample, lists them, and interviews the

third one. This method ensures that people will be included, no matter where they may be in the lists, with a chance inversely proportional to the number of people eligible in the unit. Thus the individual in the example will be given a weight of 7. Kish suggests that in many situations the weights can be omitted, as they do not improve the ability of the sample to estimate for the total population, but this would have to be verified in a particular case.

(vi) Sampling frames

In any context, lists or other potential frames should be treated with caution. In countries with an established survey research tradition, major sampling frames, such as electoral registers, have been frequently used by researchers and their problems and inaccuracies are well documented. Without such documentation and directories of sources in a country with a limited data collection tradition, establishing the existence of listings of the population of interest may depend on luck and informal advice from local administrators or other researchers, and it will require persistence to determine the basis on which the list was compiled, essential to evaluating its utility.

Errors in sampling frames comprise multiple or duplicated entries, exclusions of eligible elements and the inclusion of ineligible. The purpose and context for the original compilation will indicate likely errors, as will the status of the compiling agency and its relationship to the population listed. How the list was compiled, and the motives and opportunity of respondents and recorders to distort the list must also be considered. Incomplete knowledge, unsatisfactory definitions, inconsistent work and vested political or economic motives must be considered.

Lists of households, adults or landholdings have frequently been prepared for local taxation, and while some researchers have found them satisfactory, others conclude that they are hopelessly inaccurate. Their usefulness will depend on the method of collection and recording as well as the prevailing attitude to the tax itself. Under-registration of wealth or land for taxation may be general but differential, and the holdings of influential families may be more or less likely to be reported, depending on the kind of listing.

In many areas lists of households are prepared by various branches of the local administration, especially where there is a 'headman' system, or for special purposes, such as family planning programmes. Headmen compiling their village list may be influenced by prestige for their own family, associates and friends. However conscientiously an official prepares his lists, he may be subconsciously reluctant to delete the names of households or migrants who have gone; he may omit the 'undesirable' elements, or the homeless, landless, nomadic, squatters or slum dwellers, or even immigrants or inheritors of land. The subdivisions of holdings or amalgamations following marriage may be unrecorded or partially recorded.

Lists of workshops or farms selling to particular agencies may include the entire target population unless some sell elsewhere, or the non-sellers or non-producers are equally important to the research project.

Adoption of a particular list, even if it is to be up-dated before the sample is drawn, may identify the researcher with the agency which prepared it, for respondents are likely to ask where the researchers learned their names. Tax lists, of course, are particularly suspect.

In addition to these original errors of the list, it will be less accurate as it 'ages'. How serious this will be will depend on the date of compilation, the nature of any revisions, but more importantly, on the rate of change in the area. An old list may suffice for a static population.

Many lists which seem at first to be inadequate can be revised or adapted more easily than a wholly fresh list can be prepared. Key informants can help up-date lists, and cross-checking with maps or aerial photographs of dwellings or land tenure can identify units for which the list provides no information. Much depends on the size of the population - and area - under investigation.

If several lists exist, compiled for different purposes, they can be used together. The lists are ranked in order of completeness. A sample is drawn from all the lists, but those chosen from all but the most complete list are then checked against the lists higher in the rank order, and those in a lower list are included only if they occur in it for the first time. Thus, each individual has only one chance of selection, and this depends on his first listing. While, in theory, this method is straightforward, in practice it may prove extremely difficult to establish double entry. The use of different names or addresses for the same individual, ambiguity because of incomplete names or addresses, households listed under different names or 'household heads', all cause problems even within a single list, and in spite of a stringent examination with the help of knowledgeable informants, problems may go undetected.

The degree of error in any sampling frame can only be established accurately from a screening survey. Since this is unlikely to be undertaken, steps must be taken in the survey itself to minimize problems. Fieldworkers should be alert for ineligible individuals included in their allocation of interviews; they are less likely to notice duplication, but if it is possible they should watch for this too. Any elements identified during the course of the survey which are not included on the original list from which the sample was drawn can be incorporated simply. For example, at each interview the investigator can determine the household next door in a specified direction; if this is not on the list, another interview is conducted. Once again, the next household is found. Thus each household not in the frame has one chance of selection for the sample, because it is linked to its neighbour; if the neighbour is chosen, so is it, and if the neighbour is not chosen, nor is it.

In small communities, it may be relatively easy to find named individuals without the full addresses of larger places. In most other respects, however, using a list as a sampling frame presents greater difficulties than in developed areas.

(vii) Constructing a sampling frame

In many situations if no usable sampling frame exists, the researcher will have to use some of his resources to construct one. While this is an onerous task, the additional insight into the society and economy gained

in the process might prove of even more importance than the advantages of increased validity from a purpose-built, up-to-date frame.

The usual object of construction is an exhaustive list of the target population laid out in the most convenient way for sampling and for finding the individuals selected for the sample. A short schedule may be used to establish how many units (firms, families, or whatever) exist in each building, how many individuals are in each, the occupation or type of enterprise, age, sex, or some other key factors to be used for stratification. The information collected may enable individuals to be sampled, rather than households; genealogies, land holding or other information may be collected at this stage, providing a complete census of key variables against which to compare the final sample. The pre-survey information may also provide valuable background to the survey which enables it to be evaluated. Any misconceptions about the important units - households, kinship groups, and so on, may be found out at this stage. It is vital for such discoveries to be made before the survey begins.

The initial listing can be used to produce a sample which systematically covers crucial types, if the listing is made in order and a regular sampling interval used throughout the list (from a random start). Two or more digits allocated for different factors considered important to be covered evenly can be allocated to households, and the systematic selection made from a list in ascending order. For example, the first digit could be four or five size categories (1,2,3,4,5,6 or more, for example) and a second 5 or 6 occupation categories. If the sampling fraction is large, and the number of categories small, a reasonable coverage can be obtained of household sizes with all the occupation permutations found within them.

In most settlements the only effective way to be sure that all households have been encompassed is to map and enumerate them. In agricultural communities, the production of a tenure map, although time-consuming, not only provides a potential sampling frame, a cross-check on an existing list of land-holders, or a basis for stratification, but will provide invaluable insight into the socio-economic structure.

With small settlements and an orderly layout an annotated sketch map and list are easily produced. Each dwelling can be given a number incorporated in an identifying number for each respondent. In more complex situations, particularly in urban areas, an existing base map will be of enormous value; even an out-of-date map can provide a base. A researcher will doubtless have explored all possible sources of maps when selecting the settlement, and will have found surprising agencies holding maps of areas where it might initially appear that no authority - or perhaps only a military authority - held maps. Most obvious are health authorities, or those responsible for sanitation, who in many countries have large scale maps and considerable detailed knowledge to supplement them.

Aerial photographs can also be used instead of maps, and have particular advantages as they are more easily interpreted by people who are not used to the conventions of maps. Large numbers of fruit trees or storage barns which resemble dwellings from the air may make the task difficult, but rarely impossible. Indeed, in some areas fruit trees can be used as indicators of dwellings, and a surrogate measure of population density. If the sample is to consist of all or some elements from a number of clusters, then aerial

photographs, provided they are relatively recent, can be used to group houses in non-nucleated or uneven settlement patterns into blocks of approximately equal size. Selecting a small number of clusters and only constructing a sampling frame within them will expedite the task.

Researchers will need to devise methods of listing and annotating that will relate unnumbered buildings on the ground to maps or air photographs. Local informants whose interest is aroused by the photographs may be able to provide useful identifying features, colours and so on which will amplify the lists.

Aerial photographs have a short field life, and they can, like maps, be reproduced cheaply in multiple copies by dyeline printers if a diapositive print or negative is obtained. An alternative is to cover them with transparent materials which can be drawn on.

The inclusion, in a sample of all households or fields within a randomly selected square, of a regular grid cannot be recommended, for two reasons. First, there is the difficulty of relating the grids to the features on the ground, and determining whether particular units are in or out. Fields or buildings whose southernmost point is inside, for example, could be included, and all others overlapping the boundary would be excluded. The second difficulty is that if the elements are unevenly distributed across the area, the final sample size could not easily be estimated before the grid squares have been selected.

In urban areas, buildings may well contain more than one household or small firm. Kish (1965, pp.301-358) discusses the construction of aerial sampling frames in the United States, and much is relevant in other urban areas. A map or aerial photograph is used as a starting point, and extensive field mapping is undertaken, either of the whole area or smaller parts identified from the map, in order to number the dwellings (shops, factories, workshops or whatever) and identify them for subsequent sampling.

It is often desirable for the initial observation and preparatory period of fieldwork to have some clearly defined tasks, because this structures the investigator's activities and reassures him that work is under way while indicating to the local people what interests he has, and demonstrating that he is a methodical worker and neither a tourist nor a spy. Thus the time spent constructing the frame is also the time during which explanations are given, rapport is established, and the first understanding of the community is obtained. It goes without saying that sampling methods which require most detailed personal information or field measurements for stratification could have the opposite effect from establishing good and professional relations.

The nature of the sampling frame, how it was compiled and its discovery or possible defects are essential components of the research report; no frame is perfect and the validity of the findings will be strengthened rather than undermined by such an appraisal. Future work in the area, too, will be helped by accumulating knowledge of frames.

(viii) Rapid appraisal and non-probability methods

Where time and costs are major constraints, preliminary investigations (or speedy appraisal for comparison with more thorough work elsewhere or in

the same place earlier) must sometimes be made without the strictest application of sampling theory. Rapid, but obviously superficial, impressions can be obtained in this way if there is no problem of obtaining co-operation, but it is clear that the researcher who knows little of the area as a whole could be drastically misled by this type of work. General impressions, rather than figures open to rigorous statistical testing, would be the outcome.

However speedy and superficial the work, care should be taken to avoid bias, and to ensure that as far as possible individuals have an equal chance of being interviewed. Talking to the first farmer you encounter every mile along a main road, for example, would under-represent those in areas of more dense agriculture, and those further from the road, or who happened to be away - at market, for example. Sampling along routes, however much spurious rigour is introduced by spacing the observations, excludes vast interstitial areas, and cannot be recommended. On the other hand, it might be possible to use a transect starting from a random point and heading in a randomly chosen direction (where random means, as in all probability work, chosen by a method which allowed the researcher no choice, for example, choosing a grid reference or compass bearing using random number tables). The fieldworker could interview at every building intersected by the line, or in every field (provided that fields are of similar size).

If the settlement form makes the use of a straight line impossible, a random walk could be devised to guide his path round the area. Once again, to be random this must be a walk which allows no judgement, and in which the decision to turn to right or left is denied him. There will probably be problems in deciding what is a viable route, and what is a dead end, but wherever possible he should adhere to the rules and interview at every nth building he passes.

Naturally the quality of the sample will be greatly affected by the likelihood of finding respondents at home, and the timing of the walk will be crucial. If he is able to stay long enough to note the houses in the sample and call back, then he may be able to claim that his sample is a genuine probability sample, with a measurable response rate, although a less than ideal frame.

Quota samples, used extensively in market research in developed countries, are seldom practicable and hardly ever desirable. In the absence of reliable population parameters, the 'correct' proportion of respondents in such categories as matrimonial status, sex, age group, religion, house type, ethnic group or occupation cannot be ascertained. The argument against quota sampling in general is that the researcher has no way of checking on the representativeness of his sample. While it might correspond to the population as a whole in terms of the variables used to define the quota, it is likely to be highly unrepresentative as the individuals most easily found and interviewed will have been included. Modifying the quota method, for example specifying that the elements included must be found by calling at houses separated by a particular interval, or within delimited areas, may improve the sample but will reduce the speed with which the sample can be drawn, negating the main attraction of the method. It will not, on the other hand, make it any more possible for the researcher to make statistically valid assertions about the representativeness of his sample, as he could for a probability sample. In certain circumstances, especially if there is no time to build a frame, it may be the only possible method. People using a market, for example, might be a quota sample.

(ix) Special sampling frames

There may be research projects whose specific needs suggest or dictate unusual target populations which require unusual sampling frames. In most cases these involve some form of tracing from a known point or individual.

For example, a study of migration or employment opportunities might trace school leavers from a village school. In many under-developed countries, the approximate location of most individuals from a recent generation would be known. Obviously a great deal of co-operation would be required, and possibly the logistics of following up the individuals to interview them would be prohibitive, but in this kind of case, the sampling frame and the location of the respondents would interact, so that it would not be a case of drawing a sample from a frame in the usual sense.

A similar form of sampling frame is provided by a snowball method. This is applicable in cases where the researcher is interested in identifying all the members of a particular group who are likely to be known to each other. Members of particular religious groups might meet this requirement, users of particular things, those selling particular crops or products, or immigrants from a single community to a larger one. A variation of this theme is the genealogy sample, where everyone related to one individual is traced. In some cases this provides a cross-section, in others it shows what has happened to people who started in a similar place or circumstances.

It is impossible to suggest rules for these idiosyncratic samples; researchers in particular subject areas will know if they are applicable, and will have to test out through experience if they can be operable.

(x) Matched samples

Research occasionally centres on the differences between two groups or situations, for example villages with and without an irrigation system, users and non-users of artificial fertilizers, and so on. Occasionally, two distinct areas or villages are used, sometimes attempts are made to 'match' the groups or areas on a number of other variables.

However, it is possible that by controlling for particular variables, key explanatory variables have been left out. Some statisticians suggest that as few variables as possible should be used in the matching, thus allowing for the greatest variation between the pairs. Others suggest that pairing is, in general, unreliable and separate sampling frames should be used to produce distinct samples, each representing the full range of variation within the group. Various ingenious methods of pairing may be useful in particular situations; for example, asking immigrants to a town from particular tribal groups to match themselves with a brother, half-brother, other relative or acquaintance of similar age, status and education who had not migrated. The advantage of the method is that the need for a rural sampling frame is obviated. If one is available, it is preferable to use it, to avoid the problem of differences between otherwise well-matched pairs on variables of importance.

(xi) Longitudinal studies

A criticism of much of the research in under-developed countries is that in areas of extremely rapid change, as subsistence gives way to incorporation into the market, or as new industrial development takes place in response to world conditions, most social science research has been based on a single, cross-sectional survey with a conception of the changelessness of under-developed areas and conservatism of rural people. There have been all too few longitudinal studies, in which researchers are based for several years in one place, or make annual visits.

In extreme cases, the presence of the research team has transformed the area; in Thailand, Ban Chan, the subject of a Cornell University research programme since 1956, is now a 'model' village, with electricity, irrigation, education and observable 'loyalty' to the government and so on, quite unlike the surrounding area. To a lesser extent, and usually to an unknown degree, the actual process of conducting the research changes the respondents and the area, so that the effects of the survey itself form an unmeasurable part of its content (Campbell and Katona, 1953, p.29).

The problem of repeating the survey with the same respondents is perhaps even more severe than in developed countries, where there is considerable sample 'mortality' as respondents move out of contact, or refuse to continue participating in the survey. In loosely structured and mobile societies, or in urban areas, it may be hard to identify the unit again. If what is being sought is the same individual, then it presumably is clear whether or not he has been found and he may be more easily traced even if he has moved; if the responding unit is a household, a farm, a factory or workshop, under what circumstances can the researcher be sure he has found the original unit? By fission or fusion, land sales, product changes, ownership or financial changes, the unit may be transformed. The longer the period between the surveys, the less likely it is that the researcher will be able to trace the connections between the economic units he finds now, and those existing when he was last interviewing.

An operational definition will be required, perhaps by taking a key individual and identifying the economic unit in which he is operating as the successor, in spite of the difficulties which that might present if he is no longer living, or in the vicinity. Another way is to number the buildings on a map or list, and consider the household in the same dwelling to be the successor to the original unit, but this is clearly a method suited to rural areas in which households build and maintain their own dwelling, not to urban areas where houses, flats or rooms are rented.

An alternative would be to draw a fresh sample in which there might be some overlap if the sampling fraction was a very large proportion of the population. The rather different nature of the statistics produced in this way would not necessarily render this a second-best solution where in-depth studies of particular units are not required, and the real object of study is aggregate changes in the population of the area.

IV INTERVIEWING

(i) Timing, co-operation and reliability

Many surveys in under-developed countries have reported response rates of 100 per cent, or that all except absent or ill members of the sample were successfully interviewed, a phenomenon virtually unknown in developed countries unless a 'captive' population (for example in a school) is under investigation. Many people enjoy answering questions, provided they have the time, and there is no reason to suppose people in under-developed countries are particularly reluctant to discuss their affairs. Where non-co-operation is found, therefore, it is likely to stem from failure to arrange interviews at a suitable time of day or period of the year, or from anxiety about the purposes of the survey.

Initial reactions, however, can take any form between excessive courtesy and a desire not to contradict or correct the researcher, even when he is saying something erroneous, to temporary evacuation of the village in order to avoid meeting him at all. How the researcher progresses from the first impressions to a successful structured data collection exercise is largely a question of tactful adherence to local customs and clear exposition of the intentions of the study. Clearly the researcher has no control over bad weather or serious crop loss, which may make the respondents apathetic or hostile to discussing their agricultural affairs, but persevering with tact and understanding in this situation may lead to stimulating and illuminating discussions in which the data obtained are high in reliability, whereas in the euphoric period of a good crop or advantageous sales, an immediate agreement to participate in the survey may produce hasty answers and inaccurate impressions.

The 'courtesy bias' from a high degree of co-operation has been found to be misleading in studies of a wide variety of subjects, but it is perhaps most noticeable in those of controversial topics, or ones on which, like birth control, the respondents have come to expect the research team to take a definite view with which they consider it polite or politic to agree. There may be a case for seeking ways of determining opinions other than asking the standard 'attitude scale' questions (section V viii). Respondents are particularly likely to agree to interviews by interviewers who appear to have a greater status than the respondents, and then be particularly likely to give biased answers.

Lipton and Moore (1972, p.90) conclude that:
'It is difficult to attempt to specify time needed to spend in villages to establish rapport. It is even more difficult, and perhaps impossible to tell someone how to establish rapport.'

Early Indian village census monographs were based on a total period of about ten days in each village, and subsequently this was found to be less than adequate and was lengthened to a duration of four to six weeks. The more sensitive the type of information which the survey wishes to probe, the longer it might appear that the researcher needs to be in the area - but this does not necessarily mean that the survey should be the end of the study, for it is probably easier to ask, and to be told, things which are embarrassing or sensitive as a relative stranger than as someone who is, or is becoming, a friend. It may be useful to establish a very professional approach in the

actual interviewing, and to re-establish a degree of distance between the researcher worker and the respondent for the duration of the formal questioning.

There is clearly an optimum point at which the research worker is established enough for rapport, and to understand whether the answers he is getting are those he really wants, and what they mean, and before he is too well known. Serious problems of organisation and co-operation result when the data sought are spontaneous answers, or those not '*polluted*' by the presence of a research team. The research team which arrives in southeast Asian villages and attempts to study '*communist sympathies*' in one-off group discussions is unlikely to '*find out*' very much at all. There can, though, be justifications for '*quick and dirty*' rural appraisal in certain circumstances, but only because more scholarly work is precluded for some overriding reason.

(ii) Introducing the survey

Simple explanations of the purpose of the survey and its relation to any planning activities must be given. If the survey has any immediate, long-term or indirect benefits to the community, these should be mentioned, but without inflating or inventing. The concepts of survey research, even of sampling theory, are by no means impossible for respondents to grasp. Everyone uses sampling; to test rice by a few grains, or cocoa by a fistful from a sack, are proverbial. Where farmers cannot be convinced that agricultural research will have an effect on their economic well-being, it is usually a rational response to past experiences of economic planning, and not simply that they associate the research with tax departments.

The use of incentives, fertiliser, money, gifts, badges or whatever, to encourage response has been suggested but stems from a paternalistic attitude - and almost certainly leads to polished responses which the respondent expects to lead to more gifts. The tension between the recipients in the sample, and the non-recipients outside might be counter-productive, and certainly trying to obtain information subsequently without such bribes would be impossible. Market researchers habitually give gifts of a simple product, and in that specific branch of research it has been found to raise the response rate. Market research is a special case, though, for it operates on more stringent timetables and with less pre-survey time in the field; often response rates in the under-developed countries are lower than in developed countries for market researchers, the opposite of academic research.

When custom requires gifts to be given to community leaders, these should be made, but it would generally be more desirable to make a token gift to the community rather than to individuals. This is particularly important in longitudinal studies, where the research team is going to return and the respondents may feel that they have given a lot of time and seen no results. In most cases academic research meets with goodwill, and a very little public relations work and an outgoing readiness to participate in the activities of the community will be more productive than gimmicky gifts.

Relations with the elite of the community may present an ongoing problem to a researcher anxious to avoid finding out only what one section of society wants him to know. He needs to maintain his independence, but establish goodwill. Courtesy visits and informal discussions may be sufficient. It may be necessary to conduct '*dummy interviews*' with them when they do not conveniently appear in the sample; they might perhaps be used as a final test of the interviews before the real sample is surveyed. However, the principles

of sampling are not unknown, particularly to farmers who constantly judge soil or crops by examining only part of it, and it should be possible to explain tactfully that only a proportion of the community are to be included. Village leaders may call a village meeting at which the sample can be seen to be drawn openly.

When influential individuals insist on being present at the interviews of others, the researcher will need to be firm in his demand for privacy, although he may compromise by carrying out a few preliminary field test interviews as requested; he may be able to allay real fears about the threatening content of the interviews. Subsequent interviews, he can then emphasise, will be carried out without troubling anyone but the respondent, and in places scattered or unsuited to the presence of the individual concerned.

It is always possible that particular interviewers, either in or outside their enumerating duties, upset the local community to such an extent that they have to be withdrawn. In extreme cases, which will be very costly, that part of the sample will have to be abandoned. In general, however, the interviewer should have established '*functional rapport*' - which relates the respondents to the survey and the whole research team, and the failure of one interviewer can be seen as an individual failure, and he or she can be replaced without prejudicing the survey.

(iii) Contacting the respondents

Establishing contact with respondents can be problematic and time-consuming, both in urban areas where the addresses may be less precise than in developed countries, and in rural areas where people may be working in fields at some distance from their homes. On the other hand, the layout of settlement and communications may make the contact remarkably easy. The common misconception that people, particularly rural people, in less developed countries are under-employed results in researchers expecting to be able to track down respondents who, without an appointment, will abandon whatever they are doing and give an extended interview. It is true that if interviewing is being carried out in the slackest time for agriculture, many respondents will be prepared to be interviewed immediately, but this should not be taken for granted. Because of the overall cycle of activity dominated by the crop seasons, there will be events during the slack period - it may, for example, be the dry season when the roads are passable, and when any ceremonies, pilgrimages, and so on, take place. Appointments can be made for times during the next two or three days. However great the researcher's rapport with the community, he must be prepared for broken appointments as agricultural or other economic and social activities take precedence over the survey.

In developed countries, it is usual for interviewers to make two or three attempts to locate an individual before considering him unavailable. A minimum acceptable number of call-backs in less developed countries might be nearer ten, with the fieldworker persisting until some definite information is obtained.

If interviewing has to take place during a busy time, the interviewer must be very flexible, and take first the comfort and convenience of the respondent. He may have to be prepared to interview in the fields during breaks, or when heavy rain has interrupted work, or late in the evening. This can be done, if for example the unexpected onset of rain has brought an early start

to field preparation, but clearly no research designer would want to plan work which placed such a strain on interviewer and respondent.

Officials and community leaders can be invaluable in locating respondents, or in some cases bring the respondents to the interviewer, but this clearly emphasises the higher status of the interviewer and will perhaps tend to produce stereotyped answers, or ones which are oriented to the 'establishment' view. Various local 'field-guides': schoolchildren, drivers, or whatever, may be useful in finding the respondents, but clearly the exact nature of the location problem will depend on the type of sampling frame being used (section III vi). Where such 'guides' are used, care should be taken that their place in the community is not such as to bias the answers, or that it does not appear that advantage is being taken of voluntary goodwill.

(iv) Interview location and privacy

Successful interviews can take place anywhere where the respondent feels comfortable and relaxed, and where it is technically feasible for the interviewer to make his notes. Familiarity with the schedule should enable him, certainly late in the survey, to interview in poor light, as he should be able to 'read' each question accurately without examining it minutely, and the layout should be such that he can record information readily. Suitable portable lighting, clipboards, and so on, should be provided.

Interviewing could take place in or near the respondent's house, or place of work; where the subject matter concerns the latter, it can be useful for the interview to take place in the factory or field where the work takes place, as this not only helps the respondent to remember things, it also enables him to define crops, demonstrate processes and terms which may be unfamiliar to the interviewer. It may alternatively seem desirable to conduct interviews at a central point, perhaps wherever the research team is staying, or at a school or community building if one exists. This can set the scene for a business-like encounter, which may be usefully distinguished from the social visits and conversations which have a less direct research component.

The extent of the need for privacy, for the interview to be a simple dialogue with the interviewer, using precise words on his schedule, will depend on the topics covered. There are many questions which will concern information of common knowledge in a small community, but there is no reason to suppose that an individual wants to talk about his financial affairs in front of neighbours, the local elite, or even other members of his household, even if they do not interject and 'correct' his answers. In general, if there are other people present, the interviewer should suggest walking off, either to another part of the building or away from the buildings if that is appropriate.

Many researchers report that for opinion surveys, '*when farmers sit together they give more or less the same answers to all the questions*' (El Hadari, in Kears, 1976, p.154), and that they argue between themselves over the answers. For a survey which aims to elucidate individual attitudes, this is clearly wasting time; for a survey designed to investigate community values, individual interviews are not useful.

In a dispersed settlement, private interviews can probably be arranged more easily, but the more nucleated form, or central work locations, which appear to present more problems, can be used to make initial contacts, to

explain the purposes of the survey, and to make appointments or agreements for subsequent interviews. Community gatherings could be used for the same purpose - although the problem of finding the respondents after will still remain.

The problem of 'third party' interference in the interview can sometimes be solved by team interviewing, in which one or more members of the team carry out the completion of the schedules with the chosen respondents, and another entertains or discusses generally with the assembled crowd, who may include people waiting to be interviewed. The activity may provide much additional information and insight, and can be a useful occupation for a researcher who is responsible for supervising the work of several enumerators. Other ways of discouraging observers are to ignore them, to refuse to continue while they are there, or perhaps best of all to explain the survey and the real reasons why outsiders are not welcome at the interview.

(v) Interview length and procedure

It is probably more usual for surveys to produce too much information than too little, usually because of a carelessly designed interview schedule in which data has been collected on variables thought vaguely related to the main topic. The process of interview schedule design is a process of pruning from a virtually infinite list of potential topics and questions to those which will yield the core of information pertinent to the research purpose. Items which can be found out more easily in other ways should be excluded, and some may be listed on an 'observation' or ancillary data sheet attached to each schedule. The interviewer can make notes of indicators which can be coded and may prove informative, for example house size or building material. Unstructured notes written immediately after the interview provide a check that the interview was conducted, show problems encountered, provide an outlet for the interviewer's creativity and desire to communicate his interpretation of the interview, and may give clues to solve inconsistencies in the interview data itself. For example, observations of new purchases may provide confirmation of a good farm year and determine that an apparently high production figure is correct. Since shorter interviews will be less taxing for both interviewer and respondent, and more can be carried out in the same time, thereby increasing the possible sample size, it is counter-productive to include questions which are likely to produce answers of low quality, or on matters about which few respondents have information.

The practical length of time for interviews will depend on the time the respondent has available, the interest he has for the particular topic, the place where the interview is conducted, and thus the perceived effort involved in completing the interview. Normally a thirty-minute interview would be considered a good maximum, but many studies have succeeded in obtaining extremely detailed information from schedules taking two hours or more. At certain times of the year, and where the schedule is designed carefully so that it 'flows' in a conversational and interesting manner, a respondent may not become fatigued or annoyed by discussing for this length of time. It would be unwise to design a survey which from the outset required such a volume of data, but at the other extreme, in many societies, a fifteen-minute interview would appear abrupt and discourteous, once co-operation had been obtained.

For collecting very large data sets, which will sometimes be needed, a flexible approach might include breaks for refreshment, or sub-division into sessions. Several short visits may be even more annoying to the respondent than a long visit, because the commitment to the research may seem to be interminable. Repeat interviews, though, can help build rapport, as well as showing changes and consistency from one visit to the next.

There are alternative research designs in which it is not necessary to obtain every piece of information from every respondent. Provided that there is overlap between all variables and all other variables on at least a minimum number of schedules, it should be possible to probe relationships between any pair of variables, although the more complex multivariate techniques will be precluded. Where particular pieces of data are expected or found from pilot studies to have a high degree of variability from one respondent to another, they can be included in a larger number of schedules. It is clear that the overall sample would have to be very large to make the most use of this technique, and this, combined with the long interviews, would make this a most expensive survey method which would only be used in special circumstances.

In many circumstances, finding the respondents may occupy an apparently disproportionate amount of the interviewer's time, and it may be necessary to budget the fieldwork period on as few as four interviews a day per interviewer. Using quota methods, or a systematic sample where any responsible adult can be interviewed at a selected address, this figure might rise to ten, with considerable variation between the early phase and the final period of calling back on empty dwellings to try to secure an interview.

V QUESTIONS

(i) Coverage and order

The final set of questions used in a survey embodies the research objectives. Much time and effort is needed to define the topics to be covered before attempting to operationalise them into questions. Premature question wording before adequate background fieldwork has been undertaken, and before the nature of the material really needed in the survey has been identified, imposes a structure which may be preserved even when evidence suggests that the answers from that question will not be germane to the study.

The process of question design may be more demanding in under-developed countries because of the need for extensive background fieldwork, or for translation, and because of the paucity of well-documented surveys and methodological literature on many topics and regions, but the attention to presentation, coverage, order and language is universal. There is no need for surveys conducted in under-developed countries to disregard the basic principles of design set out in the standard works just because there are additional problems to surmount (Bibliography section B and P).

Learning how to ask questions is the most crucial skill which a researcher can acquire. Experience, knowledge of the field of investigation and comparable research, examination of the target population and its environment, and above all constant revision of exact wordings and alert piloting of various formats will all play a part in producing a good interview schedule.

No matter how thorough the design and piloting, faults will remain, for there is no interview schedule that is not capable of improvement by a researcher prepared to learn continuously.

Any of the standard survey technique books will show how to set out questions. 'Closed' questions, with a limited range of pre-coded answers, can only be designed if the researcher is sure of the range of answers. They are, though, easier to tick off in the field, and easier to convert to numeric codes for data processing than 'open' questions, where each response is written in. The usual format is a compromise - pre-coded categories with an 'other' space for non-conforming answers which are coded afterwards.

All research is a compromise between what is desirable and what is possible. There are always a large number of alternative ways of asking a particular question which may be equally appropriate, and other versions which will antagonise the respondent, produce misleading answers, or information about something different. Only exhaustive piloting can support the final selection. Problems of reproducing the schedules in the field may create a reluctance to pilot and revise, and prematurely fix the survey instrument. The project will have to find ways round this difficulty, and if absolutely necessary be prepared for hand alterations at the last possible moment. Essentially all questionnaire work is concerned with linking the respondents' concepts with those of the researcher. The exact approaches will vary from one culture to another, but no difference of principle exists.

Factual questions are always more straightforward than those asking about opinions or attitudes, and the greatest problems are usually definitional ones (section V iv). Any attempt to probe attitudes should be treated with great caution, particularly where translation is involved - although paradoxically, the process of translation may, by revealing the imprecise nature of terms being used, be a useful stage (section V iii). The order of questions will need consideration; in few societies is it polite to raise the most sensitive or serious questions abruptly, and a careful progression from the most neutral, but clearly pertinent, topics must be found. No matter how thorough the design and piloting of a schedule, faults will remain. They will have to be taken into account in analysis, because the more ambitious statistical exercises would be structured on insecure foundations. In the writing up, any qualifications or reservations about the data should be made.

(ii) Presentation

It is possible to use questionnaires which are filled in by the respondents in under-developed countries, in special cases where the respondents are officials in widely scattered offices, for example. However, even when accompanied by an official letter, a number of reminders and even a personal visit may be necessary to obtain a high response rate.

Occasionally diary and farm account methods, or schoolchildren observing the agricultural practices have been used to provide more detailed information on selected respondents, but clearly there are limits to the general application of such methods. Some work has utilised semi-pictorial sheets completed by respondents over a period of time, with frequent visits for checking, a special form of the drop-and-collect diary. Numeracy, and numerical literacy, is more common than verbal literacy, and many 'illiterate' respondents will be able to fill in amounts. Nevertheless, for the vast majority of survey

work in under-developed countries, as indeed for population censuses, the use of enumerators to ask the questions set out on the schedule and fill in the answers is mandatory.

The circumstances in which the interviewing is to be carried out will affect the order and effect of questions. A variety of question forms may be more lively, and visual material may be introduced where it is not distracting. Binding, printing, paper quality, writing materials and the subsequent storage of the completed schedules must all be considered; cardboard may make a serviceable schedule where the interviewer has to work in unsuitable conditions, but how the schedule is to be printed after reasonable field trials of the pilot version must be considered.

(iii) Translation

Schedule construction is exacting in one's native language, and clearly even more so in another, even when one is fluent.

The first problem may be to decide which language or languages need to be used for the target population. For immigrant groups, or in many countries with distinct ethnic groups or dialects, it may be first necessary to establish which language a respondent speaks. Both interviewer and respondent are likely to be reluctant to admit that there is a communication problem between them if the matching between interviewer, schedule and respondent is not good, but there is supposed to be a common language between them. Many people are habitually multilingual to some extent, particularly where there is an 'official' or 'high' language, but if the schedule is dealing with matters of everyday life, then the terms of the official language may not be understood sufficiently well. The research team will have to include native speakers of the unofficial language, and may end up with a compromise situation where interviews are conducted in the official language with terms explained in the other. Clearly this procedure would be unacceptable for opinion surveys, for here many concepts may not have exact equivalents, and it would be impossible to assert that interviews conducted in different languages could be analysed together.

In Thailand there is a folk song about the officials who come and ask about livestock using words that the farmers do not understand, so that they think the Agriculture Ministry has some entirely new and wonderful animals in mind.

Translation by officials or members of an urban, or elite group may prove unsatisfactory in the field, because from habit, prestige or ignorance they have used 'high-brow' terminology or forms. Background field study will be needed to reveal the extent of this problem, as the researcher himself has probably learned the formal version of the language.

Professional interviewers may be used to centrally produce schedules in the official language, and making ad hoc field translations, but if the researcher is working in an area with a uniform language, then he should use that, irrespective of its status nationally.

Extra problems will occur if the target language is not written, for spoken and written patterns will be very different. Special training, tape recording interviews, and perhaps even a simple notation for the spoken

language may be needed; only for the most simple factual questions could an interviewer read a question in the written or formal language and say it in the local or informal form, and even then training would be needed.

A foreigner can rarely write good questions in another language, and he may write the questions in his own tongue and then have them translated, either by an individual or a team of native speakers of the target language, or he may outline the topics to be covered and then finalise questions in collaboration with the translating team. This second process is generally preferable, as it is more likely that questions will be rooted in local concepts. In either case, it is essential to have the final product 'back-translated' into the researcher's language by someone else; the differences which emerge will highlight any problem areas and check on the clarity of the concepts.

Translation difficulties arise when words which are the same, or appear to refer to the same concept, are in fact different. This is likely when, as in many societies specialising in a particular crop, there are many more terms for it, and for its various states, than in countries where the crop is not grown; family terms are also very different, since they depend on the particular kinship structures. Deciding which terms to use can be rewarding in itself, as areas in which the researcher is lacking precision may be shown, or those in which he is trying to impose more categories than are meaningful locally.

Different syntax may prevent straightforward translation of sentences, and the more complex the question the more likely is a bad translation. However, a complex question is frequently a carelessly written one, and one more likely to confuse the respondent and produce misunderstanding.

Particular care needs to be taken when there are distinct language forms for different social strata; even pronouns may be specific to age and status relationships between speakers. Phillips (1960, pp.305-6) points out that translators must match the intensity of words, for example the difference between 'turned away' and 'ran away' must be kept, that verbs such as, 'does, wants to do, and should do', and 'doing' and 'thinking of doing' must be checked, that indirect objects must not be allowed to sneak in, for example 'he gives good advice' must not become 'he gives me good advice'. He recommends simple words ('greedy' rather than 'covetous'), suggests that apparently redundant words should be included in first drafts, possibly to be removed later, and that parenthetical comments may be needed for poetical expressions, *doubles entendres*, or probable or possible implications. Phillips says the dictionary should not be used, except for unambiguous words such as the names of plants or animals, but even with these checks should be made to establish local usage. A phonetic rendering of an untranslatable word, with a parenthetical definition, may be used in initial stages of a translation.

Brislin et al (1973, pp.32-58) suggest that 'translatability' is aided by avoiding long—Tell-fences (more than 16 words), passive verbs, pronouns when nouns could be repeated instead, metaphors, colloquialisms, the subjunctive tense, adverbs and prepositions telling where or when, (like 'frequently', 'beyond', or 'upper'), possessive forms, a general term like 'livestock' when a more specific one like could be used, vague words such as 'frequently' and 'probably', and sentences with two different verbs. They suggest that it is preferable to add phrases which clarify by giving the context even if this makes the sentence a little wordy.

(iv) Definitions and measurement

The set of internationally used definitions and terminology with which a researcher needs to compare his findings is likely to be very different from that used by the respondents. The researching team can be trained to use unfamiliar concepts, but respondents will be puzzled or frustrated by novel or complex definitions, or conversions into unused standard weights and measures, even when they have encountered these standards before. Generally, therefore, data will be recorded in the respondents' terms in the course of the interview, and converted at leisure. The research team can then discuss the best way of performing the necessary calculations.

The task of conversion will not be helped because many definitional problems are at root problems of measurement. Many farmers speak of sacks, which could vary in size. Common brands of fertilizer and similar products come in standard packaging, and it should be possible to establish what varieties and sizes were supplied. A visit to the local market or merchants could form the basis for compiling a conversion table, or a chart containing sketches or photographs which could be used in the interview. Containers of different sizes can be filled with various commodities to the locally usual level, so that numbers or volumes, as usually reported, can be converted into the more generally comparable weights.

The interviewer can have a range of containers to show the respondent if he is interviewing at his own base; in the respondent's home he may be able to see the containers in question.

The existence of national terms or standards for quantities should not be taken as confirmation of their local application; national figures often apply an average size to the local bags, baskets or other containers which may have considerable regional or local variation. However, the introduction of ubiquitous containers such as petrol cans and cigarette tins have had a considerable standardising effect.

Nationally published population figures, too, may adopt particular definitions to conform to international conventions; this cannot be taken as a prescription for local use. The transplanted terms may appear to fit, but in fact mask differences in application. Even the seven-day week, regarded as universal, and certainly adopted internationally, may mean little or nothing in rural areas, and some societies retain four-day or other length cycles.

Similarly, terminology which appears self-explanatory may present problems. The researcher brought up on the concept of a '*green revolution*' may not realise how vague is the expression '*new varieties*', for the most recent innovations only may appear new to farmers more used to selective breeding and change than the literature has suggested. It may be tedious to add a definition just before or in the wording of a question, but it is the only way to ensure mutual understanding.

Questions should generally avoid reference to '*normal*' conditions, harvests, work inputs and so on; the respondents' view of normality may be long or short term, and it may be unduly modified by the stronger memory of recent events.

The Bibliography section(s) lists some of the most useful sources of advice on definitions in particular subject areas or regions. In the section which follows we indicate the kinds of problems which may be encountered; initial contact with a particular society should suggest which questions are likely to present difficulties and where careful work both before and after entering the field will be needed.

(v) Definitions: some problems

Data on occupations and participation rates in economic activity are often misleading, because they borrow from industrial economies where work and work categories are sharply defined. Many studies of rural '*unemployment*' or '*under-employment*' ignore the seasonal distribution of days worked, or the age at which participation in economic activity begins. What appears as a body of unemployed people at particular times may be an essential reserve in case a disaster threatens the crop. House and garden work, too, clearly cannot be separated from other economic activities, and it seems preferable to collect information about all activities rather than trying to distinguish work outside the house from work inside. Paid labour, or work repaid in a variety of ways, or fieldwork, if that is the central concern of the study, can be identified, but it is likely that ancillary tasks related to fieldwork (livestock rearing, butchering, threshing, for example) might require special treatment. Similarly, activities such as the production of handicrafts for sale may be ignored, particularly if it is primarily or solely the preserve of women. Rural households whose main source of income is outside agriculture may still need to be included and asked specifically about fields and gardens, and in towns researchers may need to be aware of links with other members of the family in rural areas as the distribution of labour between the two places may be a crucial element in the economy.

The related subject of defining income is even more difficult than in developed countries where investment, tax, welfare benefits and so on are more common problems. The subsistence farmer is not the only one to have a substantial part of his income in kind, and exchanges of various sorts are hard to quantify. Some studies have attempted to measure and price subsistence crops at their market value, but there are enormous problems of measurement and deciding which of countless prices for the commodity is to be used. In many countries surveys have discovered households whose money expenditure seems to exceed their income, and this merely highlights the problem of applying the concepts of one economic situation to another. It may be possible to compare incomes or wealth in a limited area, but even there different degrees of incorporation into a commercial economy may present problems. The researcher will have to make decisions about income data primarily in the light of his own needs, but it is unlikely that he will feel confident about making international or even intranational comparisons.

The appropriate unit on which to collect income, labour or other economic data may be a family, household or farm, but in some societies the dwelling unit and the production unit may be very different. Husbands and wives may operate as effectively distinct economic units. Among the many terms defined for international work by the World Census of Agriculture (FAO, 1970) are dwelling unit, household farmer, holding and parcel of land, and it is worth considering how their definitions relate to the needs of a specific study.

If tenure and ownership are of particular interest, researchers will need to investigate the numerous forms of leases, sharecropping, communal arrangement, allocations, government ownership and various rights of use, purchase, gifts, allocations and the complex topic of inheritance. Even where this is not considered central to the subject, problems arise because the land worked by an apparent economic unit may not be owned by it, and thus not reported if the questions used refer, implicitly or explicitly, to ownership. Fields and forests, especially if there are wild trees for fruit or timber, may not be the property of the respondent, and there may be forms of collective labour to maintain roads or irrigation systems, or reciprocal work arrangements, existing alongside incipient capitalist relations in which labour power is a commodity.

There are forms of agriculture in which fields are not clearly defined, or in which crops are grown so intermingled that it is extremely difficult to designate boundaries. This, together with the problem of ownership, makes it hard to determine such standard items as the number of parcels of land, the amount of land under each crop and even the total holding size. A minimum field size appropriate to the local cultivation system may be as small as 25 square metres, but in other areas this might scarcely be considered a garden.

The plot around the house may need to be included as a plot of land. Having established this size, all the plots worked by the respondent may be determined. Smaller areas of valuable or vital crops can sometimes be included in the larger plots of the main subsistence of commercial crops, for they may be the edges of fields, patches within fields with special soil (such as termite mounds, rich in calcium), or along rivers or lakes. Fragmented holdings are frequently under-reported, and a tenure map of the whole area may be a vital cross-check. This might be particularly difficult if the land of several villages is intermingled, or only a sub-sample has been surveyed. If a farmer has a large number of plots and details of the land use and economy of each is required, the number will have to be established first, and it will almost certainly be difficult to obtain great detail without knowledge from a tenure map or visiting the fields.

A preliminary to any detailed questioning on a field-by-field basis, or even for the total holding, will almost certainly be a visit to the fields and recording a reference number on a map or even with a tag in the field, if this does not cause offence. The shape and location, the soil, the distance from the house, and so on, which may explain yields or labour inputs can all be recorded at this stage, and can be used as background in the subsequent interview.

In some circumstances, tenure can be established in group discussions using large scale aerial photographs or maps. It is easiest to measure area from these maps, this being less labour intensive than surveying.

Measuring the fields can be carried out by simple surveying techniques; the use of chains or steel tapes for measurement is generally not necessary. Methods include pacing the sides, wheeling a bicycle and counting the number of times the value goes round (although where there are tree stumps or other irregularities, this method is unsuitable), together with some elementary levelling. A quick cross-check is to sum the angles and compare it with $\frac{1}{2} 180(n-2)$ where n is the number of sides; if the two figures differ markedly the field should be re-surveyed. Many pocket calculators now have simple

surveying programs incorporated or easily available. It is often necessary to have local help with surveying, not only because it could cause anxiety and resentment, but because boundaries are not always clear to all outsiders. In areas with very marked relief, plots may be measured differently from the air than on the ground, but it is unlikely that the difference (less than 5 per cent for a 25 per cent slope) would be significant; of more importance might be the decision about including or excluding paths, irrigation channels and other associated features, which could make a difference of 10 per cent or more. In a subsistence society, there is clearly a minimum land holding, per capita and as a viable unit, and respondents who have less must be accounted for.

In some situations there may be a relative knowledge of sizes, but even in the highly commercialised agriculture of the developed countries field sizes may be very imprecisely known. The most important feature of a field is probably a combination of size and productivity under different or particular crops. Utilising this, there are indicators to measure closely related variables, of which the most obvious are the volume of production, the total labour input or the time spent on crucial key processes, such as ploughing. Clearly intensity of cultivation or the amount of land held per capita will affect these measures and they are generally applicable only to fields used for a single crop or crops cultivated with similar methods, but the researcher may be satisfied with the information collected by these surrogates, recognising that he is not strictly measuring size.

Research may require measurements of total production over a specified period, either of crops or from a factory or workshop. Asking for estimates may prove satisfactory, provided it is clear at what stage in the harvesting or processing the measurement occurs (shelled or unshelled, fresh or dry, live weight or edible portions, boxed or loose, and so on). There may be a tendency for producers to correct their estimates in the general direction of an average, thus concealing variation by region or season, which may be a vital factor for the study. Tree crops producing over a long season, anything continuously harvested, crops left in the ground until needed like cassava or potatoes, many crops primarily for subsistence use, and crops used in different ways at different points in the maturation process (for example, maize, used as a vegetable when young and later as a grain) all present problems of definition and measurement. The only reliable way to find out must be objective measurement at the time of production or harvesting. Provided the researcher knows enough about the agricultural processes and the varieties grown, the density of stubble, the number of harvesters and the time taken, '*heap counts*' and a measurement of an average heap size may all provide better estimates than, or a check on, the respondent's report. Where this has to be relied on, separate questions on amounts sold, gifts and payments in kind, for rent or labour, the amount retained for seed or kept for domestic use may prompt the memory where crops are partially subsistence. Quick calculations of the number of '*eating units*' in the household and the likely amount consumed can be helpful, too, although the number of people (and animals) fed by a household cannot be assumed, and specific questions must be asked about it.

Where possible, many agricultural researchers like to examine experimental sample quadrats placed in the fields, cut the crop within them, or weigh all or part of the product. There are standard techniques for estimating the output of trees by sampling branches and removing or counting the fruit on the sample branches, which are then weighed and counted and multiplied by the

total number of branches. Defining branches, and indeed counting fruit, is by no means easy, but with practice a reasonable estimate of the fruit can be made. All these methods require a high degree of co-operation from the farmer.

Labour is usually measured in '*man-days*' but unless workers are being paid by the hour or by productivity, the actual measurement must be more complex. Where possible, enumerators should fill in details of who worked when; harvesting, for example, might involve several full man-days with full or half-days' help from women or children, who may be counted as equivalents of men for some jobs and not for others. A twelve year old may well do an adult's work, and nimble younger children may perform specific tasks as well as any one. The researcher must recognise that the figures can never be precise, but the best possible decisions about transforming reported work into figures may be made after the interview provided sufficient information has been recorded during it.

Estimates of normal labour inputs for particular areas of crops will also be only approximate, as in practice soil, topography, moisture, time available, the composition of the labour force and a host of other factors affect the time spent on a given task. Fieldworkers should, having established normal maxima and minima, beware of altering figures which fall outside them, rather than probing for an explanation. There is usually an explanation - disaster striking the crops, or poor health might explain apparently slow work.

Definition of processes, too, could be causing problems. The simple word '*harvest*' may translate in a way specific to one crop, usually the staple. There may be no consensus about which parts of the picking, cutting or uprooting, cleaning and preparing of a newer or less important crop is included in the term. Group discussions might be useful to clarify this point, but it might go undetected until the data are tabulated and a curious range of answers found, when the only solutions will be to ignore the variable or apply a rough and ready conversion factor.

Researchers may find that they have data of very disproportionate accuracy, knowing exactly the amount of seed and fertiliser obtained, and the output sold to a particular agency, but knowing only very approximately about informal disposal within the village or family. There may be arrangements whereby indebted farmers sell fertiliser or seed to larger landowners which they would not report readily. Measurement of yield or returns therefore, would be difficult. The occurrence of apparently normal yields, output or input can indicate practices the researcher's simplistic view of the farming system had not suspected; he may be able to probe them or simply feel dissatisfied with his original measurements of holding area and so on. It might be concluded that a single survey, rather than a study lasting throughout the agricultural year, in which the farmers would be seen working in the various fields, would be unwise to attempt too complex calculations, although sufficient information might be obtained for generalisation about the main trends.

Livestock present a number of special problems, even in the simplest case of large domestic animals associated with sedentary cultivation. Many animals have more than one use, perhaps meat, milk and draught, and the farmers may need to be asked about age and sex categories of animals. They may in fact use distinct terms for these categories, and finding out the words may help determine the important categories. Breeding stock, improved or foreign animals may need to be asked about specifically.

The herd size may fluctuate enormously if the animals are used in a variety of ways; in many societies livestock are bought in good crop years and sold or eaten when harvests are poor. Similarly, the ratio of draught animals to holding size may vary because the same animals have other functions. Some farmers may rely on co-operation with their neighbours to produce a complete plough team, others may have enough draught animals of their own. These patterns will need to be elucidated; by comparison, the obvious difficulties of nomadic or transhumant situations may be more easily solved.

Small domestic animals may be problematic, especially if they are free ranging. Dogs may represent important domestic consumers; wild animals such as rats caught and fattened over a short period may be a significant source of food that falls between hunting and rearing. Production of eggs, and the amount of meat slaughtered cannot be easily calculated in a survey, as households are unlikely to remember the annual total, and clearly the previous week's total cannot be multiplied by 52 to give a meaningful figure. Where possible, longitudinal studies or the results from different respondents throughout the year can give useful estimates.

Animals slaughtered for domestic use are unlikely to be weighed, and unlikely to conform closely to an average. Farmers may be able to describe size relative to beasts that the researcher can see and weigh or measure, and rough calculations performed to allow for inedible parts and so on.

The household composition reported in surveys may include migrants temporarily away or exclude babies; questions should ask specifically about babies and may want to establish criteria for deciding whether absent members are still part of the household. Their remittances may be a significant part of the income, and information about them may be needed.

Many surveys collect data on the age and sex composition of the population. The international convention of five year categories for age (0-4, 5-9, 10-14, and so on) is clearly desirable in any reports, but it may be easiest to record actual or estimated ages and categorise them later. Most people have some idea of their age, but longitudinal studies have shown how erratic the ages given are likely to be; the same individual can firmly give his age as several years younger or older in surveys conducted a year apart.

Where accurate ages are not required, an overall picture can be obtained in a small community by taking a few individuals as reference points and ranking everyone else as either older or younger. Major historical events are the usual way to calculate ages, in the way that Kipling includes in *Kim*, when the birth coincided with a great earthquake. Censuses in every continent have used this technique, and issued enumerators with a list or calendar of significant events. In Buddhist countries every year has an animal name on a twelve year cycle, and only rarely will it be necessary to use the significant events method to place an individual in the correct cycle if they have reported the animal of their birth year.

In some situations the stage in the life cycle may be more important than age in determining an individual's relationships, and questions will have to be worded accordingly. Ethnocentric notions about the family and significant relationships will be stopped short by the inability to translate the terms. The United Nations (The Economic Commission for Asia and the Far East, 1967, p.13) recommends analysis in terms of '*conjugal family nuclei*', married or

consensual unions or a single parent with or without their never married children, but in some circumstances larger family units will be operational. The concept of the head of the household may be problematic, yet can be particularly important in determining whom to interview. It is possible to take the family's definition, or to apply specific criteria to the household; whichever is easier to put into practice will be chosen.

Demographic variables lend themselves to evaluation against logical principles, but very large numbers would be needed before an age-sex pyramid could be expected to be even. However, we can usually expect to find similar numbers of married men and married women, and that their ages will tend to be close, although the actual relationship of the ages will follow a cultural pattern. Discrepancies caused by epidemic diseases, wars and migration are added to poor reporting.

Precise questions need to be asked if one needs to know about language and nationality, for more than one language may be understood, and boundary changes as well as migration may affect citizenship. Birthplace may be less relevant than the place where a respondent grew up.

Sensitive subjects are not universal, and responses may not be forthcoming on a range of topics which are specific to one culture. Income, wealth and debt may be easily obtained in some societies, falsified or concealed in others. Superstitions logically rooted in past or present conditions may inhibit answers to questions about farm size in Nigeria or buffalo milk production in Egypt (Yang, 1955, p.63) and the researcher will have to decide if the problem is a local superstition, or is based on concern for his connections with taxation, on land or crops, or arises from inadequate education which could perhaps be allayed. Drinking in Moslem countries, slaughter in some Buddhist countries, commercial dealings by monks, priests or churchmen, the growing of some taxed crops, or a range of illegal activities such as growing marijuana, brewing or distilling would not be topics about which a stranger could enquire.

(vi) Memory, recall and reference periods

The reference period for any survey, for example, the past year, or month, the last complete crop year, or whatever, is largely determined by the research topic, and is related to the timing of the survey. Behaviour, diet, employment and many other aspects of life are markedly seasonal and it will be unsatisfactory to use a short reference period just before the interview, but equally if data are requested for a period which is too long, the respondent will have forgotten. The existence of markedly differential rates of memory decay is well documented in the survey literature of developed countries, but Lipton and Moore (1972, p.103) could find no comparable body of work in under-developed countries. The general principles can be expected to apply, that significant or less frequent events are remembered longer than more trivial ones, and that the memory decay over the initial period is very rapid, and becomes increasingly less so as time elapses.

There is a premium, therefore, on minimising the need to recall over very long periods. Some studies are repeated at several points through the year. Many agricultural studies are based on a complete year, and this suggests that preliminary work should be undertaken towards the end of the year's cycle of cultivation, so that interviewing can begin as soon as possible after the twelve months over which the respondent will be asked to recall. There

may be marked differences in memory ability for those interviewed late on in the survey, a serious problem if the fieldwork team is small in relation to the number of interviews. If interviews start before the end of the agricultural year, data can only effectively be collected for the last completed year. Definitions will have to be made precisely, recognising that crop sales do not take place at a single time, and that immediately after the harvest a farmer may not know even how much of his product will be sold. Aspects of the agriculture, for example livestock rearing, do not work on an annual cycle anyway.

Routine minor or continuous activities, for example domestic chores, feeding or watching animals or making handicrafts, may well be omitted from a listing of all activities, and the extent of reporting them will depend on which member of a household is questioned where one interview is used to find out about members of a household or economic unit. An interviewer could prompt, asking about these categories, which will depend on local knowledge. He should mention members of the family, particularly the older members and the children, especially when schools are closed, asking specifically about tasks entrusted to them. Similarly, there may be some surrogate measures of continuous activity, for example, if the same quantity of rice is milled at each visit to a mill, the total quantity consumed by a household can be determined from the number of trips they have made in a given period, when clearly they would be unable to remember the totals actually cooked. Estimates of continuously picked crops may be made from the number of rows or the area emptied over a time period; only a knowledge of the actual way in which the harvesting is performed will indicate the optimal method of making these informed guesses.

For both short and long time periods, the construction of a calendar of significant events covering the whole reference period and usually a little time before it will aid recall. Weather events, national and local happenings, can often be listed after a few discussions. It may be necessary to fix dates to the coming of the rains, or of local festivals by reference to outside information, if accurate timings are wanted for individual data, but in other cases the significant events may be used to determine the number of days on which, or times that, certain things were carried out or happened between the events, in order to aggregate them for the whole year. Noting significant events on the day of the interview can aid recall in the event of a re-interview or for checking.

Local time periods should be used as far as possible; the seven day cycle of work, food consumption and activity common to western societies may be meaningless and translations of hours and minutes would generally be unsatisfactory. In Moslem areas the use of the prayer times can provide an accurate method of establishing the timing and duration of activities, but in general the sub-divisions within a day will be problematic. It is worth mentioning that under-developed countries are not unique in this respect, and that the time periods used to collect data in developed countries influence the results and tend to give an aura of spurious accuracy to the timings and durations reported.

(vii) Maps, photographs and visual aids

A variety of visual aids can be used to prompt respondents to clarify questions or answers, either by providing definitions (of fertilizers, diseases, equipment, measures) or by providing material to which the individual responds. Photographs, drawings, models or actual objects can be used.

The use of maps to identify settlement locations or land may involve a novel skill and is very abstract. Aerial photographs, on the other hand, can be very interesting to the respondent and have generally met with successful use once a few key places have been pointed out.

Other methods may be adopted in particular circumstances. Barker (1978) reports the use of the mancala board in West Africa, suggesting that because respondents are accustomed to placing seeds in the holes when playing that game, a modified board can be used for a variety of scaling and ranking procedures, or to discuss allocation. Experimental work of this nature might be very useful, but it is unlikely that this would form more than a small component of any one research project.

(viii) Attitudes and opinions

Attitudinal studies have gained in popularity in underdeveloped countries, particularly because they seem to provide a firmer basis for monitoring development projects and innovations. Many distorting factors are possible, and it is clear that it is a spurious science which treats as '*fact*' the responses of individuals to a set of questions and then uses them to justify certain actions or to explain failure in particular areas. The underlying assumption is that each individual's opinion has equal weight, but this is clearly not the case in a class system.

Simple indicators of attitudes or of which factors an individual thinks important are, however, collected as a component of many studies; it is usual to try and determine how strongly opinions are held. The techniques used vary, and it is clear that the concepts used, and to some extent the questioning method itself, must be rooted in the local culture. A cotillion situation is to ask a general question; a hesitant respondent, hearing the list of pre-coded responses read to him as a '*running prompt*' may reply affirmatively to all or the first of them. Provision should therefore be made for a respondent who has no opinion on a subject to say so without feeling inadequate. Hypothetical questions, asking for example, how a win on the state lottery would be spent, produce data which must be treated with caution in any society.

Some research has used short stories, in which, for example, two individuals behaved in very different ways, spending their money on different things, or orienting themselves to long or short term goals. The respondents are then asked to choose which they thought to have acted correctly or wisely. The problem is that this consciously neutral approach, which implants no undue preference for one course of action or the other, may not be as neutral as the researcher would wish, because the respondent has already taken into account what he thinks, rightly or wrongly the researcher favours. Attitudes, too, may be latent, developed during the interview, vary with the seasons and other experiences, or constantly evolving; to measure them in this way implies that they are fixed and that Each individual genuinely does have an '*attitude*'. Before asking an opinion on some topics, it is useful to ask some questions to filter out respondents who have no opinion, or no knowledge of the subject at all. The discussion which an individual has in attempting to solve the problem set by the short story may be more revealing than pressing him for an instant response. It is because of this problem that interest is now being shown in repertory grids.

(ix) Repertory grids

Repertory grids are used as a scaling or ranking procedure for concepts which the researcher derives in some way from the respondent himself, and are an attempt to scale and discuss concepts or entities in the attributes which are important to the respondent. They are considered by their practitioners to avoid cultural bias, by overcoming the '*tyranny of the questionnaire*' devised by the researcher with his alien background. They have the advantage that work can proceed immediately, without devising a schedule, piloting and then starting the survey proper.

The technique has the problem that it requires a high degree of language skill and understanding. The cultural bias may remain, in that the choice of concepts, the entities and indeed the attributes remain that of the researcher even though he uses the language of the individual. Even the notion of polar opposites on a scale may be foreign to the individual. There is also the problem of analysing matrices produced from this individual-based technique. It may be that eyeballing is as revealing as a more sophisticated analysis, but this is a field in which much work is currently in progress, and it is possible that researchers will want to experiment with the technique. It should be noted that use of repertory grids at an early stage of a research project would not preclude a survey of a more conventional character later, and equally it is possible that once a factual survey has been completed, much additional material could be obtained from the use of repertory grids with a small sample. Oppenheimer (1966, pp.204-211) sets out the procedures to be followed.

VI INTERVIEWERS

(i) Teamwork

A researcher who has mastered a language and culture might complete a small number of interview schedules unaided, but he is unlikely to be able to cover a large enough sample to provide meaningful generalisation. Even if he is prepared to interview over a protracted period, he has problems - '*pollution*', the interaction between early and late interviews and the effect of the researcher's presence and activities, the lengthening period of recall, and the possibility that circumstances will change significantly before the survey is complete. Many topics make it undesirable for a foreign researcher to carry out interviews, even if he has the language ability. It is also apparent that many otherwise competent social scientists make poor interviewers even when - or perhaps especially when - their knowledge of the field of investigation is considerable.

When the survey is conceived and conducted by one person, there is the danger of new hypotheses opening up during the interviews, so that standardisation is lost as the researcher takes off down new avenues. There is an ever-present danger, too, of the lone researcher, probably unconsciously, obtaining the answers he wants or expects. Where a doctoral student must carry out his fieldwork alone, a more qualitative approach might be preferable, or at most a series of very short interviews.

These are all reasons why an interviewing team is both usual and desirable. A high priority must be attached to finding and preparing a good field-work team, for a careless or incompetent interviewer is a weak link at the most vital point in the survey chain. It is necessary to check on the quality of the interviewers constantly, and also on the interviews as they are done.

(ii) Selecting interviewers

When populations are heterogeneous, it may be necessary to have a similar level of heterogeneity among the interviewers, particularly where interviewer and respondent need to be matched for language. Certain types of interviewers are appropriate for specific situations; most obviously, women may be needed for some studies of birth control, but there may be problems when young people interview old, or obviously urban dwellers interviewing rural people.

The choice of interviewers is often limited and unless the question is tackled early in the research design, the project may be obliged to use the first source that presents itself. Some researchers have access to students who may undertake a certain amount of interviewing in connection with their courses or for only nominal payment as part of their training. This may be the best solution in some cases, but students in general do not make good interviewers, particularly as they are likely to suffer from the same problems as the lone social scientist conducting his own project, pursuing their own lines of enquiry and refusing to be bound by the confines of the rigid schedule. It may seem that social science students should know how to carry out interviews, and specific training often will be omitted, which is a serious mistake.

In many countries government as well as many institutions have enumerator teams. For some purposes these teams can be made available, either at a 'charter' rate, or for expenses only, or even free, if the research is of great interest to the body maintaining the team. When setting up a research project from a distance, vague offers of borrowed teams should not be relied on without corroboration. It should be remembered that if the timing of the research project is changed because of the patterns of economic activity or the weather, borrowed or seconded teams are unlikely to be free at the time the project wants them. These eventualities should be prepared for in the original budget and design.

Co-operation between the researcher's parent institution and those in the research area can be invaluable in obtaining interviewers. Professional teams are attractive, because they have some experience and are usually mobile and prepared for field conditions, but there are a number of problems which are often overlooked. Seconded official teams may have divided loyalties which cause friction; they identify the project with a particular department, as it is unlikely that the employing body would remain unknown.

More important, trained enumerators may have fixed ways of carrying out surveys or asking questions, and the researcher may find retraining difficult and resented, especially if his inexperience in the area is obvious. The interviewers may persist in asking questions their way, perhaps rephrasing questions which the researcher insists should be asked in a particular form,

or they may refuse to ask questions they consider irrelevant or inapplicable. Agricultural extension agents, seconded on a full or part-time basis, or trainees in this field, can be invaluable interviewers because of their knowledge of the area, culture, dialect and agricultural practices, but they may have fixed ideas about the responses they expect, and, in effect, fill in the answers before they have asked the questions. Where this occurs, estimates will tend towards the average, concealing variation and aberrant cases.

The researcher will need tact, and to demonstrate that he has knowledge and insight that deserves the respect of the team; there is probably no short cut, for he remains an outsider faced with a permanent group used to working together.

There are many factors which the research programme leader will take into account in selecting interviewers. They will need to be pleasant, outgoing people, with the ability to mix with the rest of the team and with the respondents, whom they must put at their ease. They must be intelligent and observant, with a good memory and a knowledge of the appropriate part of the world, be it commercial, agricultural, industrial or whatever. Educated speech, caste, religion, urban manners and western dress, indeed any characteristics or attire which makes them particularly noticeable may all be barriers in certain situations. For some survey work, respondents and interviewers will have to be matched, and the team must therefore consist of the right mix of sexes, language groups, or whatever characteristic is to be matched.

Marked regional language and cultural differences, and the gulf in conditions between urban and rural areas, can create problems, both for the quality of the interviewing itself and for the ease with which the team adjusts to life in the field. Experience of the area is probably more important than experience of interviewing. However, it is better not to use enumerators who originate in or are well known in the area, and to respondents, because of the doubts this would cast on the confidentiality of the interviews. The relations between the interviewer and the respondents must be professional. In addition the researcher may not fully understand the effects of a local interviewer who may have, or have had in the past, other jobs which have particular associations which colour the interview. It is difficult to substitute a new interviewer if the first one is unsuitable or encounters problems, and will remain in the area after he has been replaced. It is usual for all these reasons to employ locally recruited field staff in areas adjacent to their own.

Interviewers will need to exercise discretion to avoid over-emphasising their educational advantages over their respondents. While the interviewers need to have attained a reasonable standard of education, highly educated people find it hard to conduct routine questioning accurately. In general, the more educated people are, the more careless they are likely to be in recording answers and the more likely they are to become bored and leave the survey, which causes serious disruption to the programme of work. Unemployed graduates, who abound in many countries, may feel that the job is beneath them. Students in particular make poor interviewers for schedules consisting largely of precoded 'closed' questions, although they may be suitable for schedules which are less tightly constructed in which open questions are used or discursive answers are required. They also have the disadvantage that they are only available during college or university vacations.

In developed countries, mature educated women are found to be persistent, dependable and consistent in following instructions, as well as universally accepted in the professional role as an interviewer. The same conclusion is reported for India (Wilson and Armstrong, 1963, pp.51-58), but for many topics women would be at a disadvantage, and educated women are not present in every society, nor could they necessarily be sent into field areas away from home; in developed countries, they are usually locally based, but would be unlikely to confront anyone they knew in urban areas.

Local assistance may be needed to contact potential team members, and informal approaches may be more effective than advertising on local broadcasting channels or in newspapers whose circulation may be limited. Stycos (1960, p.38) suggests that local experts should make the initial choice of interviewers and the foreign researcher choose from among those they approve, thus ensuring that the team is the worst of the best, or the best of the worst (although some might argue that it would be the worst of the worst). Clearly, whatever a foreign researcher's skill, he will be dependent to a high degree on local help and support in recruitment.

Much can be deduced from informal talks with the applicants, although if the researcher's linguistic ability is limited this task will have to be delegated. Actual or potential interviewing skill, or the way in which the candidate will interact with the rest of the team and with the respondents must be estimated from these informal interviews, and perhaps from simple tests in the local language or dialect of the target population, elementary arithmetic, accurate observation, and short factual report writing. An attitude test designed to elicit attitudes to the area and people who are the subject of the study, or the extent of motivation for the job, may be revealing (Kearl, 1976, pp.119-120).

No matter how carefully selected the interviewers, some are likely to prove unsuitable or to withdraw either in the training period or after the survey has begun, and where the budget permits a small allowance should be made for this by recruiting more than are needed. A probationary period may make it easier to terminate arrangements without ill-feeling. Once the survey is underway, some projects offer incentives in the form of a bonus, or letting the interviewer keep a bicycle or other equipment used in the study, if he remains until the end, but clearly an interviewer whose only motivation is a bonus is unlikely to be satisfactory.

(iii) Interviewer training

Even an inexperienced researcher can conduct a training programme, for himself or for his team, which ensures that the interviews will proceed smoothly in the field. The first element of training involves motivation, making the interviewers acquainted with the purpose of the study, and ensuring that they feel that their business is legitimate. The fundamental principles of interviewing, the necessity of accurate recording, and standardisation of questioning, must be explained.

The selection, training, instructions, checking and supervision of interviewers, together with re-interviewing and analysis is designed to minimise interviewer bias; the object of the survey is for the respondents to answer the questions on the schedule consistently, whoever asks them. The interviewer must be prevented from 'helping' the respondent, or making the answers

fit his own preconceptions or his feelings of pride in his own area. Few interviewers are dishonest and fabricate answers; if their interviewing is too difficult, or they find that respondents are hostile to their survey, they may be tempted to act in ways which will make their task easier, perhaps omitting questions they find embarrassing or altering the wordings subtly. They must understand why it is essential to avoid these things, and be helped to overcome them; if tempted to take short-cuts they should feel able to discuss them with the rest of the team, and be given support from them, and advice on solutions.

Interviewers whose manner causes resentment may mellow; interviewers who over-represent the loquacious can be encouraged to draw out the reticent, if they practise enough interviews with dummy respondents acting in particular ways. Interviewers who are credulous can be taught enough about their interview topic to avoid being open to fooling. Experience will teach them when a respondent is tiring and needs encouragement to continue; training will provide formulas for relaxing respondents without being so friendly that professionalism is lost.

While it is never possible to eliminate the effect of the individual who actually asks the questions, if the interviewer understands the effect his perceived social status may have, or his foreign way of speaking or living, understands rumours he could dispel, and so on, he will be able to watch his own work more critically.

The relationship between what is written and what the interviewer actually says must be controlled. Permissible elaborations and clarifications must be included in the schedule.

The major component of a survey training programme, however, is specific to each study. The interviewers must become thoroughly familiar with the schedule, and how to present it, and each individual question. Consistency of asking questions must be ensured, and the interviewers encouraged, if possible, to suggest modifications as a result of field tests in conditions as like the real survey as possible. The detailed attention paid to the inter-action between the interviewer and respondent will almost certainly improve the original design, especially if the schedule has been translated. If the schedule has already been finalised and reproduced, and the final training is being conducted immediately before commencing data collection, as is very usual, a manual or supplement to the existing manual may be simply typed up in the field. This would operationalise the existing schedule, supplementing it with changes or permissible elaborations in the wordings of questions.

Manuals for interviewers and supervisors are helpful in ensuring consistency and emphasising high standards. Even in the smallest survey it is helpful to set down any definitions, conversion tables for weights and measures (to be applied after recording in the respondent's own terms), and in complicated surveys rules and reminders of procedures for each question. A guide to any specialised term or local vocabulary, pictures of local implements or containers, brand names, and so on, may all find a place in the manual.

Where it is necessary for interviewers to be mobile, and they are supplied with bicycles or motorcycles they may be given instruction in maintenance. Practice with technical equipment such as tape-recorders will be necessary.

The length of time needed for training varies from three days to three weeks, depending on the experience of the team, the complexity of the schedule and the alienness of the conditions. An additional period may be needed to arrange accommodation and settle in the locality.

In a long survey it will be necessary to have reporting, discussion and *'in-service training'* sessions to maintain interest, monitor progress and ensure continuing consistency. The supervisor will also be trained during the initial phase, and his role will be maintained here too.

(iv) Interviewers in the field

In large surveys a senior member of the team may precede the interviewers into the field and organise travel and accommodation as well as carrying out public relations work and possibly observation, mapping or sample frame work. Morale may falter and problems multiply if the interviewers are left isolated from other members of the team. The supervisor has to encourage the interviewers to maintain curiosity and interest and spot inconsistencies, inaccuracies, or areas where further exploration is needed, by discussing preferably all, but certainly some, completed interview schedules in detail, as soon as possible after the interviews. Large surveys will have to choose and train supervisors from the locally recruited staff. He should maintain contact by regular and irregular visits. The interviewers task will be impossible if they feel unhappy or neglected. If the number of interviewers is large in relation to the supervisors available, or if they are very scattered, they may prefer to work in pairs. The interviewer's task must not be so difficult as to be discouraging; bad layout of a schedule will place an unnecessary strain upon him, as will the need to select the houses or individuals within them. He can be taught to follow complex procedures, but will need to see the reason for them, and the importance of rigid adherence to his instructions. If his allocation of work is too great or too little, he will not work well, particularly if he is dissatisfied about payment or the amount - or location - of free time. From the outset, the method and timing of payment, provision for subsistence, travel and insurance must be laid down and adhered to, and if the researcher intends to withhold all, or part, of the payment until work has been completed, or checked, then this must obviously be agreed in advance. Some fieldwork is inevitably twenty-four-hour work, and allowance should be made for this in payment and in clearly defined and frequent breaks, possibly well away from the field area.

(v) Checking reliability in the field

Field organisation should contain provision for checking, so that missing, incomplete, illegible or unlikely answers can be spotted. Interviewers should read through their schedules as soon as possible after completion, preferably with a supervisor. Good design and layout, as well as a systematic checking procedure, will ensure that the interviewer does ask and record the answers to every question, and the most likely correction is to a mark in the wrong box, poor handwriting, or to convert unusual measures or figures, leaving the original legible for cross-checking of the calculation.

In rare circumstances, the respondent will be available after or during the checking procedure, and can be asked to clarify an answer. Re-interviewing selected respondents, either randomly, or where an interviewer's work is of suspect quality, is likely to strain the respondent's goodwill. He may try

to remember the answers he gave before, or have heard other answers to which he decides to change his own. He may be anxious that he is being interviewed again because his answers were unsatisfactory, or merely irritated at being asked again. Much has been made of *'stable'* measures, variables which are the same at consecutive interviews as an indicator of quality, but clearly some variables change over even very short periods of time. Clearly opinion questions are least *'stable'*, but the lack of consistency is in itself a reflection of the interaction between the respondent and his changing circumstances, of which the interview procedure forms a part.

If, for any reason, re-interviewing must be undertaken, the respondent should be told the reason, or asked to co-operate in a *'training'* interview for a new enumerator. Changing the order of questions or making a different approach might be acceptable for factual questions.

It is difficult for the same interviewer to go back and ask supplementary or repeat questions, but strictly factual information can sometimes be obtained subsequently if the fieldwork team is based in a settlement and on good terms with the community. However, if the correct answer cannot be obtained, under no circumstances can an estimate be permissible. If this guess were in line with preconceptions, it would have a biasing effect. An experienced fieldworker making a series of such insertions would be likely to give an answer close to what he has come to regard as the norm. Thus variability would be compressed; high figures would be rounded down, and low ones up, to *'solve'* inconsistencies rather than probing the reasons for *'odd'* values. Marginal notes to explain why a farmer used an *'excessive amount'* of labour or seed is required, not an adjustment to the average. Well-trained and involved interviewers, and a project leader in close touch with the fieldwork, should avoid this kind of *'correction'*.

At an early stage, preferably at several points during the fieldwork, rough frequency counts of the distribution of answers to particular questions, and cross-tabulations or scatterplots of key variables, should be made. The tabulations can check on consistency between enumerators, place and time of interview, stage in the survey, the presence of outsiders, the degree of reluctance to participate, and the types of respondents. Some key information may have been obtained about respondents who refused to be interviewed or could not be contacted, and it is useful to see if they are significantly different from those successfully interviewed.

Ambiguous questions may have slipped through even after extensive piloting and interviewers may be employing rather different approaches. Early tabulations may identify these; scatterplots are particularly useful, as it is possible to see at a glance that, for example, the relationship between yield and labour input shows two distinct patterns - perhaps an indication that different definitions of labour, including more or less parts of the process, are being used. In the normal situation where fieldworkers have been allocated different areas to minimise travel, it will be hard to distinguish area from interviewer variations. An interpenetrating sample design (section I iv) and a pair of interviewers working in each area, each one interviewing on one part of the sample, may have advantages as well as providing mutual support.

If the initial tabulations indicate problems, some questions may have to be modified (and the earlier answers discarded), or removed from the survey altogether. Resolution may also have to be sought outside the original survey. If the original design made no provision for the cross-checking of

inter-penetrating samples, and there are many problems in the data from the original survey, provided resources permit, a post enumeration survey may be undertaken. This could take the form of a second interview of a sub-sample of original respondents, probing in more detail the areas found inexplicable in the early analysis of the main survey, or a fresh sample. A mobile population can make particular problems for a supplementary survey, as those who can be found again are likely to differ from those who cannot. For both re-interviewing and a fresh sample there is the problem of changing circumstances between the two surveys; this can be particularly problematic if the subject matter relates to something which has already happened, for example the harvest, which will obviously be receding in the memories of the respondents. The same respondents cannot necessarily be expected to have the same household sizes, land holdings, or opinions at different times.

Because the sample possible in the second survey is likely to be small, and the standard error of variables consequently high, and because time is likely to be constrained, many researchers might prefer a more qualitative approach to solving intriguing inconsistencies in the original survey. Group discussions might be a useful technique.

(vi) Consistency

Careful design will minimise misleading or unreliable data, and continuous monitoring of a survey's progress will reveal where errors are creeping in. Inconsistency, though, is in itself a *'finding'*, and areas where data does not conform to preconceptions are possibly the most fruitful of a research project.

Occasionally surveys will include questions which provide cross-checks, for example the number of people in a household may be obtained at one point, and a listing at another. More generally a researcher will be concerned to demonstrate the validity of his findings by comparing key variables with other surveys or the census. This will depend on compatible definitions and requires certain assumptions about rates of change and stability, as the comparison will invariably be with data collected at a different date.

The first report for a sponsoring body, or locally published summaries or abstracts prepared as soon as possible after the survey, and possibly containing only preliminary tabulations, will still be able to contain some estimates of data quality if the researcher has been alert to problems and conscientious about checks throughout. It will be of great benefit to the development of a research tradition not based on word of mouth or ethnocentric rumours about the difficulties of working in particular areas if researchers publish details of their methodology. Accurate reporting of sampling methods and their field application, wordings, checking procedures, suspected or demonstrable errors, field organisation including preparation for entry and training in field techniques, and the presentation of schedules and other documentation used will help evaluate the project, and indicate the weaknesses and strengths of a study.

Experience reported from every continent suggests that researchers who have worked consistently and sensitively need not be afraid of checking. Reliability in the sense of consistency of answers on different occasions is generally high. There is a wider problem of the validity of data collected by asking questions, but within these limitations survey work in under-developed countries can be of a very high standard.

VII THE RESEARCH CONTEXT

(i) Research and sponsorship

Geography has a traditional association with travel, exploration and faraway places, and particularly with colonies. Geographical research was frequently conducted as an adjunct of economic and political control, and although this function became less overt in the post-colonial era, research is generally susceptible to use for monitoring economic and political events, and for providing the factual information on which decisions can be made.

Survey research is especially susceptible to criticisms that it supports the status quo; the data are collected within the terms of an existing social and economic structure. While the observations made by the survey may show problems, and thus appear critical of society as it exists, the framework within which it is conducted is unlikely to show how that society might be changed.

Academics derive their ideology ultimately from the ruling interests in society; those who have sought most eagerly to avoid *'the trivial, the inexplicable, and the academically interesting while people are hungry, poor or discontent'* (Lea, 1975, p.6) are perhaps only more likely to pursue avenues of research which are Central to the concerns of their own ruling class in an era of revolutionary upsurge in the former colonies.

The individual researcher's philanthropy and the sympathy he develops for the people among whom he carries out his work may appear at variance with the motives of his sponsors, and he may feel ambivalent about his position, but the reality of his situation is that in general the production of survey information on conditions or attitudes in under-developed countries which have not experienced revolution is beneficial to, justifies and aids the perpetuation of the existing system of values and thus of the economic and political system itself. Stauder (1974, p.49) could as well have been writing of social science in general when he said:

'In the absence of revolutionary changes in the wider society, anthropology as a whole, and as an institutional activity, cannot be radically changed or reformed so as not to serve imperialism.'

Whether research is directly sponsored by public or private institutions, or is conceived by an individual researcher operating in an academic environment who seeks financial support, will make certain differences to the orientation of the work, what is done, where it is done, and what is *'found out'*, as well as where and how the findings are published. Indeed, no research can be evaluated without considering its sponsorship, and the strength of its dependence on the sponsorship in terms of the costs of the project and the way the work was done. However, while there may be observable differences in direction of a research project under the auspices of a foreign government or a university, the overriding consideration is that research in general is conducted for the maintenance of a relationship of classes and countries. While the policy guidelines sought from the research may be designed to alleviate rural poverty, or increase incomes in an area, these goals are usually secondary to the preservation of a capitalist world system, and these plans may, with varying degrees of explicitness, have the object of defusing unrest or improving the sources of supply of particular commodities or the markets for other goods.

Nevertheless, sensitive research in many areas has revealed much that is illuminating in the study of the system of relations and its disintegration, and as that break-up progresses the emphasis on fundamental solutions and redistributions, on genuine planned and controlled economies, can increase. The expertise developed as servants of an international ruling class can then be utilised to appraise resources and requirements for workers and peasants in the areas.

We would not want to stress the non-class *'insider/outsider'* dichotomy which has preoccupied many radical research workers, and led them to align themselves with the local people in a way which tends to subordinate scientific understanding (of weather, soils, and so on) to *'ethnoscience'* or village science, to local views of the world. Agricultural people are more knowledgeable about the world than many writers have given them credit for, but to glorify their existing level of understanding maintains the existing relationship between the peasants with their *'village science'* and the purchasers of their produce. To a greater or lesser extent this approach asserts their right to be ignorant of advancements in science.

Similarly, although we have written as if most research workers are foreigners working overseas, increasingly the role of expatriates is being reduced. While expatriates experience particular problems, the job of the *'expert'* research worker could never be an easy one, either employed under a capitalist or socialist government. It is only in the latter case, when workers and peasants can achieve real control over their own lives through equitable trading relationships and the provision of education and services as a right and not as a sop, that the technical skills of the survey worker can take their place beside those of the agronomist, irrigation engineer, and so on, appraising the potential for change in an area, assessing progress and spelling out alternatives which can be decided on by increasingly informed workers and peasants.

(ii) Expatriate researching

Individual academics have been particularly drawn to under-developed regions, some for political reasons and some more concerned with career advancement or obtaining funding. But it is also true that the apparently less complex situations, the possibility of becoming an *'expert'* without fear of contradiction, and the easier access to officials, increasingly useful statistics and records, make the under-developed areas attractive. It may genuinely be easier to study an alien culture objectively, and *'foreignness'* may be an advantage, but it is equally possible for deficiencies in research design and methodology, data and reliability to be overlooked - or concealed in the presentation of results. Too much allowance may be made for the difficulties of conditions, food, climate, disease, language and costs. The shortage of other data for many countries enables the researcher to infer more from limited findings, and indeed the pressure to make the most use of what may be in fact a very localised, small scale study is very great.

The transient nature of much research by foreigners in under-developed countries has given rise to terms like *'safari research'* (Szalai, 1966, pp.2-3), and *'miners'* (Castillo, 1968). Brookfield (1973, p.89) refers to: *'the academic hijacker who is one who obtains a grant to work in a developing country, does splendid work there, publishes it in London or New York, gains kudos, advancement, good offers, and a good life. He might*

send a few token copies of his publications to the people with whom he worked, but this is all the benefit they see'.

There has been much discussion, particularly by social anthropologists, of the extent to which the researcher becomes an *'informer'* (Wolf and Jorgensen, 1970, p.34) whose work is used to damage the subjects amongst whom it was gathered. Some writers have suggested ways in which their consciences would be easier, by becoming *'planters'* instead of miners, in other words, providing some help, advice or instruction in return for the information taken away, by local publication in a way which is as accessible as possible by depositing findings in local archives (Lea, 1975, p.9), and particularly by speedy publication, because there is *'no commodity that is more perishable than statistics'* (Hunt, 1969, p.105).

(iii) Publication

The researcher may face the dilemma of dealing with different audiences and different expectations. He may find that the necessity to protect his respondents (and not prejudice further research, either by himself or others) conflicts with providing enough detail of sources to support his findings and justify his methodology (Weiner, 1964, pp.129-130). Generally, however, it is the sponsors and governments whose demands provide the most difficulties.

The researcher may not want to shut the door to promoting further supplies of funds or if he is a foreigner permission to enter the country again. Wolf and Jorgensen (1970, p.34) cite a case in which anthropologists working in Thailand were made aware that refusing to comply with the Thai government's request for information would close further research in the country to them. The number able to conduct fieldwork is being pruned as the political climate sharpens generally (Berreman, 1969; Stauder, 1974), while survey research in the countries where revolutions have taken place is limited.

The image of the researcher and his team at different levels of officialdom, and with different branches of the government, may vary, and it is not reasonable to assume that acceptance of a project beforehand, or its conclusions afterwards, by one ministry will smooth the path with others. Problems encountered, the structure imposed on the researcher and any ethical dilemmas should, of course, be reported, but in many cases these items themselves will be subject to censorship.

The constraints on the researcher, what he investigates, how, and what he (publicly or privately) is able to conclude should be borne in mind in evaluating other people's work as well as in deciding whether, and if so how, to conduct one's own.

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Many of the references are specialised; where the number of references in a particular section is very large the most general are marked with an asterisk.

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