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NATIONAL HOUSEHOLD SURVEY CAPABILITY PROGRAMME

Development and Design of Survey Questionnaires

UNITED NATIONS
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PREFACE

This study on principles of development and design of survey questionnaires is one of a series of publications designed to assist countries in planning and implementing household surveys in the context of the National Household Survey Capability Programme. The United Nations revised Handbook of Household Surveys* is the basic document in the series. The Handbook reviews issues in survey content, design and operations and provides technical information and guidance at a relatively general level to national statistical organizations charged with carrying out household survey programmes. In addition to the Handbook, a number of studies are being undertaken to provide reviews of issues and procedures in specific areas of household survey methodology and operations and in selected subject areas. The major emphasis of this series is that of continuing programmes of household surveys.

Successful implementation of national household survey programmes requires, among other things, the design and development of good questionnaires which can be used to collect the required information as accurate and cost-effective as possible in given circumstances. However, the failure to devote sufficient attention, care and resources to the development of questionnaires has been surprisingly common in survey practice. It is hoped that this document, providing a detailed discussion with numerous illustrations of general principles of design and development of survey questionnaires, will make a useful contribution towards the promotion of good practices in this area of work, and at the same time serve as useful reference and training material. For designing questionnaires for surveys on specific topics, the general principles discussed here will need to be supplemented by subject-matter knowledge and by evaluation and analysis of past experience of surveys on the topic concerned.

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The draft has been reviewed and revised by the United Nations Statistical Office in the light of comments received from survey experts. The document is being issued in a preliminary version to obtain comments and feed-back from as many readers and users as possible prior to its publication in final form.

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CHAPTER 1

INTRODUCTION

1.1 DEVELOPMENT OF SURVEY QUESTIONNAIRES

One of the most important problems in undertaking surveys and censuses is the precise definition of the data to be collected, and the translation of those data requirements and related concepts into usable questions. The variables to be measured by the survey have to be transformed into operational definitions and expressed in the form of a logical series of questions which the interviewer can ask and the respondent can comprehend and answer. Good questionnaires are those which are designed:

- to enable the collection of accurate information to meet the needs of potential data users in a timely manner;
- to facilitate the work of data collection, data processing and tabulation;
- to ensure economy in data collection, i.e. avoid collection of any non-essential information; and
- to permit comprehensive and meaningful analysis and purposeful utilization of the data collected.

In short, survey questionnaires must be developed so as to yield information of the highest quality possible with special emphasis on relevance, timeliness and accuracy. This must be accomplished efficiently, minimizing the cost and burden involved in the provision of the necessary information.

The failure to devote sufficient care, attention and resources to the development and design of survey questionnaires is surprisingly common in survey practice.

Numerous examples, including those from otherwise experienced statistical organizations, can be given of cases where defective questionnaire design resulted in data of poor quality, long delays in processing, collection of unnecessary or unusable data and omission of crucial items, thus seriously diminishing the usefulness of the survey.

The refinement of the general data requirements of a survey into precise questions is a step-by-step process. In this process, the survey objectives are themselves made more specific, and may even undergo significant revision as they are spelled out in detail and their feasibility tested in the field. There are a number of preparatory steps for the development of good questionnaires:

(1) There is, firstly, the need for regular consultation between users of statistical information and those who are responsible for producing it. Particular attention needs to be paid to appropriate organizational arrangements and work-style to achieve close communication between users and producers.

(2) Secondly, within the statistical office, it has to be ensured that the technical task of questionnaire development receives the multi-disciplinary inputs it requires. A variety of skills need to be pooled together. In a larger or more developed statistical office, the task may be entrusted to a team of professionals each specializing in a particular area. In an office with limited capability, a few individuals may have to perform a variety of functions; and they may need to seek the help of other national and international agencies. Whatever the arrangements for and size of the questionnaire development team, a number of functional skills are required including:

- a good knowledge of the subject matter to be investigated and adequate understanding of the analytical uses to which the resulting data can be put;

- an appreciation of the practical constraints under which the data are collected, specifically a realistic idea of the type, form and detail of information which can be obtained given the quality of the available field staff and the characteristics of the population to be surveyed;

- on the basis of knowledge of the subject-matter and general field conditions, awareness of the form or type of questioning which would be most suitable to obtain the required information;

- understanding of the various principles and techniques of questionnaire design and development, including ordering, wording, layout and coding of questions, and procedures for testing and evaluation of questionnaires;

- and, in particular, appreciation of the data preparation and processing requirements.

(3) It is equally important to realize that the process of questionnaire development has to be seen as a part of total survey development. The questionnaire is the operational expression of the substantive objectives of the survey, and hence its development relates closely to all the other components of survey design, such as population to be covered, type of respondent, sampling and field-work arrangements, the method of data collection, the type of interviewers etc. Hence questionnaire development requires skills in a variety of areas including the subject matter, field operations, survey design, data processing and especially, general principles and techniques of questionnaire design.

(4) The development of questionnaire design capability is a cumulative process. It is rarely the case that a questionnaire has to be developed on an entirely new topic with no prior experience, either of one's own or of other organizations. In fact, the use of poor or inappropriate questionnaires in survey work is frequently due to the failure to document and learn from one's own experience, to study the experience of others especially of those in similar circumstances, or to take advantage of the accumulated knowledge as for example synthesized in publications of various national and international organizations. This does not imply that a questionnaire developed for specific objectives under one set of circumstances can be applied without modification and renewed testing of its suitability in another set of circumstances. However, the general principles and techniques of questionnaire design and development, and even specific question formulations are, in many instances, portable from one situation to

another. This is usually the case in many developing countries, particularly neighbouring countries which often have surveys with similar objectives carried out under similar circumstances.

(5) Finally, the institutionalization of questionnaire design capability involving the setting up of appropriate organizational arrangements, development of various skills, documentation, accumulation of experience etc. - is all the more important for a statistical office undertaking surveys on a continuing basis. It forms an essential component of the development of overall statistical capability.

1.2 OBJECTIVES AND SCOPE OF THIS DOCUMENT

The objective of this document is to discuss and illustrate the principles and procedures involved in the development and design of survey questionnaires. It is one of a series of documents designed to provide technical support to countries participating in the United Nations National Household Survey Capability Programme (NHSCP). It is addressed to national statistical organizations in developing countries undertaking continuing programmes of household surveys. As is the case in most developing country surveys, it will be assumed throughout that the information is collected through face-to-face personal interviews.

The document is primarily intended for use by designers and managers of household survey programmes. Its aim is not only to discuss various considerations involved in the development of survey questionnaires but also to contribute towards the promotion of good practices in this work and to serve as a useful reference and training material.

An overview of the process of questionnaire development is provided in Chapter 2. Various steps involved in questionnaire development are discussed, including the establishment of appropriate organizational arrangements, determination and refinement of survey content, evaluation of feasibility, itemization of data to be collected, determination of data collection methodology, drafting, translation, testing, evaluation, reproduction and administering

of questionnaires. Selected aspects of this process are elaborated in subsequent chapters.

The basic principles of questionnaire formulation and design are presented in Chapters 3 and 4. The first chapter deals with formulating survey questions, such as itemization of the information to be collected, determining reference periods, wording of questions, specification of response categories, problems of translation and so on. The guiding principle of this discussion is the need to "structure" the interview to varying degrees so as to obtain the required information most accurately. While the focus in Chapter 3 is on individual questions, the subsequent chapter deals with issues relating to the form of the questionnaire as a whole: introductory and other sections of the questionnaire, issues involved in grouping and ordering of questions, skips, filters and other aspects relating to the flow of the interview, provision of summaries and subtotals and other substantive aspects of questionnaire layout. The design of household rosters is given special consideration in view of their importance and frequent use in survey taking.

Chapter 5 is concerned with the principal aspects of questionnaire format in relation to its printing and reproduction for the full-scale survey. Topics such as numbering of questions, placing of response categories and interviewer instructions, catering for data processing requirements and other aspects of physical design are discussed. There is also some discussion of printing of questionnaires and production of interview aids and accompanying documents such as instruction manuals.

Finally, Chapter 6 describes various methods for testing and evaluating survey questionnaires. Adequate testing, of course, must precede final production of the questionnaire and its use in a full-scale survey. Evaluation refers to the collection and analysis of the information on performance of the questionnaire, both during the course of the survey field-work as well as through special operations and investigations subsequent to the survey.

1.3 LIMITATIONS

It is also important to appreciate what this document is not. The document provides a detailed discussion, with numerous illustrations, of general principles of design and development of survey questionnaires. However, it is not meant to provide specific guidance in designing questionnaires for any particular survey on any particular topic. For that, the general principles discussed here will need to be supplemented by subject-matter specific knowledge and evaluation and analysis of past experience in the topic concerned.

CHAPTER 2

THE PROCESS OF QUESTIONNAIRE DEVELOPMENT

2.1 INTRODUCTION: DETERMINATION OF THE SURVEY OBJECTIVES

As noted in the previous Chapter, the process of questionnaire development involves a number of stages which have to be seen in the context of the total survey design and development.

In the context of the National Household Survey Capability Programme, it is best to begin by considering the manner in which integrated survey programmes are formulated in participating countries. Typically, one begins with the preparation of a medium-term plan to undertake household surveys on a continuing basis. The plan is formulated in the form of a project proposal which, in consultation with users, identifies the type of data required from the survey programmes, and the relative priority, timing, frequency and detail with which they are required. The proposal also examines the existing capability of the national statistical system in terms of its experience, staffing at various levels, field and office machinery, processing, analysis, printing facilities etc., and identifies the critical areas needing upgrading. On this basis, the broad coverage, size, scope and timing of the survey programme are determined taking into account the users' needs and priorities, data available or obtainable from other sources, and above all, resources and practical constraints. The proposal also attempts to identify the appropriate institutional arrangements for project development, implementation, monitoring and evaluation.

The formulation of such a medium-term plan is a prerequisite for launching any large-scale national survey programme. This, however, is only the first step. Data may be needed on a great number of subjects - population,

employment, health, education, housing, energy, agriculture, income and expenditure and so on. These have to be arranged into a series of related operations in the most efficient manner possible. A number of considerations need to be taken into account in determining the arrangement and timing of the individual surveys or survey rounds of the plan. The primary determining factor is the users' needs and priorities, especially the relative urgency with which the data are required. However, this has to be moderated by numerous practical constraints and technical considerations. For example: Are the topics to be investigated necessary? If so, are household surveys the most appropriate method? Are any cheaper and/or more accurate alternative sources of the data available? Is it feasible to collect the needed data through household surveys, taking into account the nature of the population to be surveyed, and the available resources, type of interviewers, experience and capability? For instance, it is often not feasible to collect highly complex or elaborate data from a population with low levels of literacy, or by using non-specialist interviewing staff. Similarly, the survey programme in many circumstances may have to begin on a modest scale, with relatively simple surveys covering topics for which some survey experience already exists.

It is not necessary here to discuss the numerous considerations involved in determining the design and content of household surveys. However, for a continuing programme of interrelated surveys, two additional considerations should be noted as these have important and wide-ranging implications. The first is the need to ensure operational co-ordination between various surveys, and substantive integration between resulting data. Operational co-ordination involves, among other things, the use of common infrastructural facilities and arrangements for various surveys, ensuring smooth work-flow over time, and maximum use of the inter-relationships of various operations involved. Substantive integration is the process of rendering statistical outputs from diverse sources as coherent and comparable as possible so that the resulting data are mutually complementary and can be interrelated for exploitation in greater depth. The content, as well as arrangements, of the individual surveys or survey rounds have to be determined in order to maximize the advantages of co-ordination and integration. Unnecessary duplication should be avoided and the questionnaire should enable maximum possible linkage and combined use of the resulting data from individual surveys.

Undoubtedly, the formulation of the survey plan and determination of its content require mechanisms for close and regular interaction between producers of statistical information, and the users of the information.

From the initial definition of the broad survey objectives, the survey content has to be refined and made more specific, operationalized in the form of actual questionnaires, and then implemented in the field, processed and analysed. This is a step-by-step task which increasingly becomes more technical. The user-producer consultative arrangements have to evolve to reflect the changing requirements of the task. Also, appropriate arrangements have to be established to ensure collaboration among the different categories (specialists) of producers and for the testing, review and revision of the survey questionnaires at various stages. Some issues involved in setting-up appropriate organizational arrangements are discussed in Section 2.2.

The rest of this chapter provides a step-by-step overview of the various stages involved in the development of survey questionnaires. These include: the process of refinement of survey objectives with a detailed illustration (Section 2.3); elaboration of the content of individual surveys and specification of the survey variables (2.4); preliminary work to determine the suitable form of questions, and the actual drafting, testing and revision of the questionnaires (2.5); and finally, the production, implementation and evaluation of the questionnaires (2.6).

2.2 ORGANIZATIONAL PREREQUISITES FOR QUESTIONNAIRE DEVELOPMENT

The formulation of survey plan and determination of its content require mechanisms for close and regular interaction between users and producers. While details of the actual arrangements would vary with circumstances, there are certain general considerations and requirements to be met in setting up the appropriate consultative arrangements.

2.2.1 User-producer consultation

At a general policy level, overall guidance may be provided by appropriately constituted high-level inter-ministerial committee. At a technical level, the task may be entrusted to various technical advisory groups including representatives of middle-level users, especially those who are familiar with the general methodology, potentialities and limitations of statistical surveys and are involved in day-to-day utilization of statistical information. Whatever the exact form of arrangements, it is important to recognize the specific roles and areas of responsibilities of the various parties involved:

(1) While the widest cross-section of the user community should be represented, the high-level committee should be in a position to co-ordinate the often diverse, and sometimes even conflicting, users' requirements. In view of resource constraints, priorities have to be determined, and choices made and compromises reached.

(2) While the user-producer technical advisory groups work under the guidelines determined by the overall steering committee, this interaction should be seen as two-directional. In the process of refinement, the survey objectives are themselves made more specific, and may undergo significant revisions as they are spelled out in detail and their feasibility considered. Also, new requirements may emerge which initially were not apparent.

(3) Of course, the determination of the nature and timing of the information to be collected is essentially a prerogative of the community of users. While the producers may assist the users in identifying their requirements in more detail, the latter must take these requirements as the starting point, and certainly must never launch major statistical operations unilaterally without adequate consultation.

(4) On the other hand, it is the special responsibility of the producers to evaluate the feasibility, practicality and the cost - in terms both of human and material resources - of meeting the users' requirements. The producers must consider the numerous technical issues involved in operationalizing the general requirements, such as: exploring alternative sources or modes of

collection of the required data (household surveys may not be the only or the best means); determining the size, scope, design and methodology of the surveys to meet the objectives; working out the operational and substantive relationships between different surveys; and above all, formulating the actual questionnaires and analytical outputs of the surveys. Many of these decisions are interconnected and need to be taken after careful and detailed consideration. It is highly desirable that maximum flexibility is given to those who are technically qualified (i.e. the producers) to undertake these tasks.

The implications of the above is that in user-producer interaction, the users should specify the requirements in terms of the needed outputs. As to how that information is to be collected (e.g. in terms of survey design, question wording, etc.) should be largely left to the producers. Of course, frequent consultation between users and producers must continue, but it should concern primarily the substantive outputs expected from the survey as they are refined and possibly modified, and the implied costs and resource requirements. Designing survey questionnaires through "committees of users and producers" would almost invariably result in a poor product, as it does not facilitate cool and careful consideration of all the technical and practical issues involved. Another tendency to be avoided is that of unsystematic additions to the content of the survey, without due attention to their effect on the length, quality and structure of the existing questionnaire, or worse still, without examining exactly how the additional information would be used. It is not always possible for the user community to fully appreciate the implications, for practical survey taking, of their diverse demands and data requirements.

2.2.2 The questionnaire design team

Once the overall contents and expected outputs of the survey have been determined reasonably clearly under the guidance of the users, the task of questionnaire development becomes increasingly more specific and technical involving the multi-disciplinary inputs of different specialists among the producers. A variety of skills, such as knowledge of the subject matter, field conditions, operational management, data processing, questionnaire design etc. need to be pooled together.

In the professional team responsible for questionnaire design and development, the leading role has to be played by specialists in the subject matter of the survey. Each subject matter has its own requirements and, with cumulative experience, the survey techniques become increasingly specialized. In any given field, it is necessary not only to choose from among a variety of possible approaches, but also to adopt appropriate concepts, definitions and classifications taking into account the country conditions, practices followed on previous occasions and international recommendations. Good knowledge of the subject matter is also essential to define the appropriate analytical outputs from the survey, and more generally to help set priorities whenever the demand for statistical data exceeds the available capacity to produce them. At the later stage of questionnaire testing and evaluation, again, subject-matter knowledge is required to determine whether the results obtained are of reasonable quality.

However, subject-matter specialization alone is not enough to develop good survey questionnaires. Experience and familiarity with the practical conditions of data collection and processing, and with principles of questionnaire design are also essential. Subject-matter specialists without these attributes may end up producing impracticable questionnaires.

It is crucial to ensure that the questionnaires can be processed to generate the needed information within the available time and with the existing data processing facilities. Therefore, once the contents of the survey have been determined, persons with data processing knowledge should be fully involved in the design of questionnaires to ensure their processability. While the guiding principle in the design of questionnaires has to be the collection of the most accurate data possible, that may be of little use if it is impossible to process the data or if the processing takes unacceptably long time.

In a larger, more developed organization, each of the various areas of specialization referred to above may be represented by one or more persons. In organizations with limited capability, a few individuals may have to perform a variety of functions seeking outside help whenever necessary. Whatever the situation, organizationally the best practice may be to delegate the task of actual drafting and revision of the questionnaires to a small 'questionnaire

design team' (preferably consisting of more than one person). The team can work more or less independently, and its work can be periodically reviewed and evaluated by the wider body of professional colleagues.

Sometimes, especially in larger statistical offices, there is a tendency to divide up the survey design work rather sharply between different subject-matter areas, with insufficient 'horizontal integration'. This can result in non-uniform standards, variable quality and inefficient survey design for different subjects. The damage can be particularly serious in organizations which, though relatively large, lack adequate number of professional staff - as indeed still is the case in the national statistical offices of many developing countries. Hence, the appropriate strategy would be to develop a common pool of expertise which can serve all the different subjects. When several related questionnaires need to be developed for the same survey or the same survey programme, it is important to ensure that individual designers do not work in isolation of each other. Ideally, the task of developing closely related questionnaires should be entrusted to a single team which can draw on subject matter and other specialized expertise as necessary.

2.2.3 Arrangements for evaluation and revision of questionnaires

At various stages in the process of questionnaire development, a careful word-by-word review of the drafts is an indispensable step. It is important to make proper arrangements for reviewing and implementing the resulting revision. The review should be as broad-based as possible and involve not only those directly responsible for the production of the drafts (the questionnaire design team), but also other interested professionals within and outside the particular survey or even the particular organization undertaking the survey, as well as field and supervisory staff responsible for the evaluation of the survey. It would be necessary to involve the users in discussions affecting the survey content, expected outputs, costs and other policy aspects.

It is desirable to organize the review process in the form of formal meetings, provide reviewers with check-lists of points to guide the discussion and keep written records

of decisions. In making changes or additions to existing draft of the questionnaire, an overall balance and co-ordination has to be retained. Sometimes the recommendations made by reviewers may not be mutually consistent, or when taken together may result in unmanageably long and complex or otherwise technically unsatisfactory questionnaires. Other changes may fundamentally affect the cost or the basic objectives of the survey. Hence, while the review process should involve the widest possible circle of users and technicians, it is necessary to reconcile the various recommendations, comments and requirements and to take an overall view. The actual task of reformulating the questionnaire should be preferably entrusted to the small group of professionals who are the main persons entrusted with the design of the questionnaire. The 'questionnaire design team' can then report back to the larger review groups, and the process may have to be repeated several times.

2.3 REFINEMENT OF THE SURVEY CONTENT

The initial survey plan of the type outlined in Section 2.1 may be more or less specific and detailed, depending upon such factors as the type of survey involved, past experience and the degree of sophistication required by the users. In any case, the next step would be to define the content of the survey more precisely. This section lists certain basic considerations and provides a detailed illustration of the process involved.

2.3.1 Basic considerations

In determining the content of the surveys it is always desirable to start from the end-product expected from the surveys, and work backwards to the actual survey instruments and procedures required to achieve them. The following considerations need special attention:

(1) Relevance: What are the specific issues that need to be answered by the data? Can some or all the information required be obtained from alternative sources? If a new survey were to be taken, how would its output

relate to data available from other sources? Specifically, how would it relate to other surveys which might be carried out within the framework of the same programme?

(2) Timeliness: What are the time constraints? Do the results have to be delivered by a specified date? Does the information require periodic updating? What are the seasonal factors and other considerations determining the timing of the survey?

(3) Accuracy: What is the desired level of accuracy? What is the necessary level of detail (e.g. geographic breakdown) of the results? What are the corresponding sample size requirements?

(4) Methodology: What are the most appropriate methodological arrangements to meet the above requirements? Are alternative strategies available, and if so, what are the criteria for choice between alternatives? What has been the past experience, including that of other organizations and countries in conducting surveys on similar topics? What are the relevant international recommendations? For surveys which have been conducted in the past, and especially surveys which are repeated periodically to provide time-series data, how important is it to keep the survey procedures and questionnaires unchanged for substantive and/or operational reasons?

(5) Feasibility: What are the resources and facilities required for survey design, data collection, processing and analysis? How feasible is it to meet the survey objectives fully under the circumstances? Would the respondents be able and willing to provide the type of information required? Would the type of field staff who are available or can be recruited be able to obtain the information? Are the available data processing facilities adequate to handle the survey, given its size and complexity, and taking into account the time-constraints? What might be the most critical bottlenecks?

(6) Co-ordination and integration: In the case of a continuing programme of surveys, is careful attention being paid to the considerations of operational co-ordination and integration between different surveys, as well as between different operations of each survey?

(7) Grouping of survey topics: How are the subjects to be covered best grouped into individual surveys so as to ensure complementarity, lack of duplication, and maximum linkage between surveys? Are the topics to be covered in any one survey compatible with each other in terms of technical requirements such as sample size, design, data collection procedures, respondent rules, sensitivity, respondent burden etc.? Should the survey be divided into more than one interviewing operation, each requiring a separate questionnaire which is more manageable and more uniform in content, respondent rules, period of enquiry and frequency?

The above are examples of the types of issues involved in determining the general survey design and in defining and delimiting the content of individual surveys in a programme. The actual process may vary, depending on circumstances and specific requirements. Some of the issues may be further clarified by considering an example. The following fairly detailed illustration is based on the actual survey programme of a country participating in the NHSCP. However, it has been slightly modified to bring out some of the points more clearly.

2.3.2 An illustration

The initial survey plan in our illustration identified the following general areas to be covered in the household survey programme over a period of 5 years.

(1) Agricultural production and crop-forecasts: During the agricultural seasons, - twice each year - data were required on production and sales of major crops. Given the predominance of small holdings in the country, household surveys were the principal means of agricultural data collection. The primary objective was to make prompt forecasts of the quantities produced and marketed and especially to identify significant changes since the previous crop year. Periodically, detailed data were also required on structural and operational characteristics of holdings including: area by ownership, land use, crop and crop-mix; number and value of cattle owned by type and grade, and recent changes in livestock; labour inputs in cultivation and livestock; quantity of other agricultural inputs; quantity and value of agricultural and livestock produce, and amount sold; and other sources of household income.

(2) Pattern of household income and expenditure: For a variety of purposes (including computation of consumer price indices, compilation of national accounts and study of income distribution), data were required on the size and pattern of household consumption of food, beverages, clothing, fuel, transportation, durable goods and services, etc. as well as on household income from farming and non-farming activities. Information was to be collected once during the five-year period, taking into account seasonal variations over the year.

(3) Demographic characteristics: Around the middle of the inter-censal period, data were required on vital rates (fertility, mortality and migration) to update the information on population size, structure and distribution from the last population census, and to study population trends.

(4) Labour force and employment: A comprehensive one-time survey covering seasonal variations in both urban and rural areas was required to obtain benchmark and structural information on employment conditions, income, work-related mobility, levels of unemployment, underemployment etc.

(5) Social conditions and indicators: A variety of areas relating to social conditions of the general population were identified for investigation in discussion with the various sectoral ministries. These included the need for a more accurate assessment of the levels of literacy, prevalence of physical disability by type, nutritional status of children, housing conditions, and availability and utilization of educational, health, sanitation, co-operative, commercial and various administrative services.

(6) Community level information: Connected to the above was the need to collect information on the general conditions, availability and utilization of services by rural communities.

(7) Supplementary enquiries: The infrastructure established for the national household survey programme was also to be used to collect certain other essential information, including a longitudinal investigation of the impact on socio-economic conditions of an important public works programme covering several regions of the country.

Given these general objectives of the survey programme and a reasonably clear indication of users' priorities, it was primarily the responsibility of the statistical office to clarify, elaborate and operationalize these objectives in the form of definite statistical enquiries - of course, with frequent reference to the users at various stages of the process. Below is a description of the major considerations which were involved. The reader may refer to the general issues listed in the previous subsection.

Relevance

The requirements of the users, survey objectives and the main issues to be answered were in this case fairly well understood and expressed. The main requirements were: to produce structural information of medium-term validity on population, labour force, agriculture, household income expenditure and socio-economic conditions; to provide time-series on current agricultural statistics and forecasts, releasing the basic results as promptly as possible; and to provide an assessment of the long-term impact of a particular development project. While some information could be obtained more cheaply from administrative sources and institutional surveys of schools, hospitals, etc. it was clear that, as in most other developing countries, the primary source had to be household-based surveys of the general population. Of course, these had to be supplemented by special enquiries in areas not covered by the household sector, for example large and medium-sized agricultural enterprises.

Timing considerations

The various surveys had their specific requirements of timing and frequency. Clearly, the crop-forecast surveys had to be repeated twice each year during very specific periods determined by seasonality of agriculture, which was somewhat different in different parts of the country. Furthermore, the short time in which the results of crop surveys had to be issued for them to be of any value in forecasting, made it imperative that the scope and content of the surveys be kept very simple. The major surveys on structural characteristics of the population, labour force,

household income and expenditure and agriculture could be one time surveys during the 5-year period, but each needed to be spread over a whole year to take into account the effect of seasonal variations. Each survey was complex in content and required substantial inputs, so that the surveys could be carried out only one after the other, in an order determined largely by the users' priorities. Substantively, there was considerable flexibility in sequencing the surveys since they relate to structural characteristics which tend to be stable and do not change in the short term. Finally, the various social topics could be covered more flexibly as 'modules' attached to other major surveys.

Required accuracy and sample size

The users' requirements as originally formulated required the production of separate estimates for each of a fairly large number of subnational domains - consequently requiring a national sample of large size. It fell on the statisticians to work out the practical consequences of this requirement, and to convince the users that it could not be met fully with the given organizational, technical, field operation and data processing resources. By examining specific policy requirements, it was determined that the elaborate disaggregation of results was less critical for some topics than for others. In some cases, greater geographical detail could also be obtained by cumulating data over several years without increasing the annual sample size. From these and other considerations, the required sample sizes were determined. These varied from topic to topic, in the following order from larger to smaller sample size: demography, prevalence of physical disability, socio-demographic characteristics, labour force, agricultural production, other social variables, biannual crop forecasts, and household income and expenditure. This ordering is fairly typical of surveys in developing countries. In terms of survey content, it was considered important to keep the content of large-scale surveys simple; greater complexity could be tolerated for the smaller surveys.

Methodology

Several other considerations were involved in determining the methodology of the surveys. For the year-round surveys the basic choice was between (i) enumerating the same sample of households repeatedly during the year (say once every quarter) to measure seasonal variations more precisely; or (ii) enumerating a new sample each quarter to increase the precision of overall estimates for a given number of interviews during the year. It was decided that in the present case, with limited resources, the survey objectives could be better met by the second alternative.

Such choice can have a fundamental effect on the content and design of the survey questionnaire. With repeated visits to the household the interview can take the form of prospective or follow-up questioning to record changes since the previous visit. Consequently, the problems of memory lapse and reference period errors may be less serious in this case as compared with retrospective questioning involving a long recall period. The questionnaire design has to make special provision for linking and updating the data between visits. In one-time retrospective interviews, recall and reference period errors present more critical problems, and special provisions may need to be made in the questionnaire and associated interview aides to reduce their impact. (This is considered at greater length in Sec. 3.4.)

Similar alternatives also existed for the demographic survey in our illustration: (i) one may either carry out a single-round retrospective survey, which would be somewhat cheaper, easier to manage, and require short time for data collection, processing and release but which would yield less accurate information; (ii) or alternatively one may conduct a multi-round follow-up survey which could provide more accurate information, but with higher costs, longer delay and possibly greater difficulties in management and integration with other surveys in the programme. It is obvious that the questionnaire design would be very different in the two cases, even though the expected outputs are of similar type.

Feasibility

This, of course, is a prerequisite of all aspects of the survey design. Reference has already been made to some considerations which in our illustration resulted in limiting the size and complexity of the surveys. There were several additional reasons in favour of this decision, which incidentally are fairly typical of survey taking in developing countries. These were the low level of literacy in the country and its predominantly rural character; the generally limited skill and experience of the available field force, especially for collecting highly specialized data; and severely limited data processing facilities.

Other critical factors were the relatively small size of the available field force which, as noted earlier, could not fully cover the original sample needed to produce detailed subnational estimates; and limited mobility of the field and supervisory staff, due to transport constraints. After careful consideration it was found that even after reduction of sample size and making the surveys less complex, the original work programme was too heavy. Some major cuts were made, which necessitated several more rounds of intensive user-producer consultation. In fact, the process of constant reassessment continued over an extended period as the surveys in the programme were implemented one by one. Some major adjustments were the exclusion of certain sparsely populated areas and nomadic sections of the population from the survey programme; spreading the agricultural production survey over two years, thus halving the annual sample size; confining the detailed labour force enquiry to urban areas only (considered more critical by the users) and collecting only basic information on the topic in rural areas in conjunction with the demographic survey; concentrating on a subset of the social variables; and generally simplifying further the content of all surveys to the extent possible within the limits defined by users' priorities. These compromises are fairly typical of the situation encountered in national survey programmes.

Co-ordination and integration

A determining consideration was that the surveys were to be carried out by a common pool of permanently employed field-workers. This made it necessary to arrange the surveys so as to obtain a continuous and fairly uniform flow of work, and to avoid excessive concentration. At the same time, however, the availability of facilities to carry out surveys on a regular basis made it generally unnecessary to conduct complex multisubject surveys, in so far as the required information could be obtained more easily in a properly sequenced series of related but distinct surveys. This facilitated questionnaire development but made it all the more necessary that the questionnaires be designed to permit easy linking of micro-level data across surveys.

Individual surveys

On the basis of above considerations, the scope and general content of individual surveys was also identified more clearly. The next step was an elaboration of the content, including specification of survey variables, types of units to be enumerated, respondent rules, expected outputs etc., keeping in view that more than one type of questionnaire might be required for any one 'survey'. These issues are discussed in the following section.

2.4 DETAILED SPECIFICATION OF SURVEY VARIABLES AND OUTPUTS

This section describes the preparatory work necessary before the actual drafting of detailed questions can begin. The time and effort which need to be devoted to this phase of questionnaire development depends upon the context of the survey, its complexity and prior national and international experience on the topics to be covered. As elsewhere in this document, our context is that of the development of a continuing programme of related household surveys such as NHSCP.

2.4.1 Grouping of topics into surveys

When data are required on a wide variety of subjects, these have to be grouped into manageable, separate surveys. In addition to the users' priorities, required timing and legislative and other practical considerations, a major factor to be taken into account is that the different subjects to be put together into one interview should be mutually compatible. For example, it is difficult to put together topics which require greatly different coverage, sampling arrangements, methods of data collection and interviewing skills. Consider for instance agricultural production and child health. The former survey may be confined to farming households and require interviewing (usually male) holders, using interviewers specially trained in measuring areas, cutting and weighing crops etc. An in-depth child health survey, by contrast, has to cover both farm and non-farm households and interviewing mothers with young children, anthropometric measurements on infants and children, and possibly use interviewers with some special knowledge of identifying types of illness. The two topics are so incompatible that there is no point in combining them into a single survey operation.

Some topics can also be incompatible because the presence of one may have an adverse effect on the quality of information on the other. Putting such topics together into a single interview may be inconvenient, annoying or embarrassing to the respondent, and hence lower the quality of response or result in higher rates of refusal. It should be remembered that even when respondents do not show any obvious sign of impatience with a long and complex interview, their patience cannot be taken for granted. Long interviews are known to result in data of poorer quality, processing delays and in higher non-response. Here is an illustration of the experience of a country: a short enquiry on the incidence of physical disability was incorporated into an ongoing household budget survey. This was not an appropriate arrangement since the former type of survey required a large sample to study the relatively rare events (incidence of disability) with sufficient precision, while the latter survey being already quite complex is likely to become unmanageable by the addition of another topic which, may also receive insufficient attention during the interview. Consequently, it was found that the data on disability suffered from very large sampling and non-sampling errors and, in fact, turned out to be unusable.

Hence, a balance is required between having multi-subject surveys, and dividing them up into several simpler uni-subject surveys. As noted above, multisubject surveys can have certain advantages in some circumstances. But they can also result in data of poor quality, higher non-response, and processing delays. They may also be less flexible in accommodating different sample size, design and data collection requirements for the various subjects. By contrast, short uni-subject surveys can be more manageable in terms of data collection and processing, and can yield results of higher quality because of reduced burden on the respondent and the interviewer, and especially so when additional training can be given to the interviewers between surveys. Furthermore, in the context of a continuing survey programme employing permanent arrangements, the cost disadvantages of uni-subject survey may not be so serious: the marginal cost of revisits to the respondents may be quite small especially when permanently employed interviewers can be stationed within or near sample areas. The primary disadvantage of uni-subject surveys can be the difficulties in linking of different questionnaires for the same respondent. On balance, it would appear that a combination of a few interrelated subjects in terms of conceptual framework and analytical potential, offers an optimum possibility for a multi-subject survey.

2.4.2 Relationship between surveys

While defining the content of individual surveys, it is important to keep in view the substantive relationships between data collected in various surveys in the programme. Firstly, it is advisable to avoid unnecessary duplication between surveys, especially when surveys are based on common or closely related samples so that substantive linkage at the micro-level is possible. For example, if information is already collected on household possessions in an income and expenditure survey, it may be unnecessary to repeat it in a housing survey even though the information may be necessary for the analysis of the latter.

This does not mean that repetition must be avoided in all cases. There can indeed be some advantage in allowing a degree of overlap between topics covered by different surveys. The use of common 'core' items repeated in all surveys, can provide a basis for comparing coverage,

adjusting and aggregating data from different surveys, obtaining common categories for classification and tabulation of the data, monitoring time-trends, and sometimes also for providing an indication of the reliability of the data. Basic demographic characteristics of the population are for instance obtained in almost any household survey: they define the population covered, provide necessary denominators for the computation of many rates and ratio estimates, and generally define the context within which other data collected in the survey can be interpreted. If, for instance, the distribution by age and sex and household size of the population enumerated in a large-scale and more reliable demographic survey is to be used to reweight or otherwise adjust the results of a small-scale survey (such as on household consumption), this would require the inclusion of the demographic characteristics in both surveys.

Another reason for repeating certain items between surveys is to avoid the need for micro-level linkage. Linkage across surveys is not always straightforward and can be time-consuming and taxing on data processing facilities. This is especially the case when linkage is required at the individual (personal) rather than at the household or some other aggregate level. Identification of individuals in a survey can be problematic and prone to mismatching and failures in matching. For example, if it is required to relate the incomes of individuals to the employment status, occupation and training, it may be easier to obtain all that information in the income survey itself even if it is already obtained in some other survey such as the labour force survey. It should be emphasized that whatever the advantages of repeating items of information between closely related surveys, minimization of the amount of information to be collected to meet the given objectives is always a very important requirement.

A related consideration is the need to ensure compatibility and complementarity between topics covered in different surveys. First of all, this requires the use of common concepts, definitions and coverage rules. Furthermore, various possibilities may be exploited to enhance the overall cost-effectiveness of the survey programme. For example, relatively simple topics may be incorporated as 'modules' into some ongoing survey at a small additional cost. A module on maternal and child health or utilization of family planning services may be added on to a fertility

survey, or one on literacy and levels of education may form part of almost any survey which involves listing of household members. It is also possible to use one survey to act as a screening phase and to provide information for a later phase. Examples are the use of a large-scale demographic survey to identify persons with specific characteristics for an intensive enquiry on disabled persons, and the use of a household income-expenditure survey to obtain information on socio-economic status of households and their stratification for the selection of a sub-sample for a nutrition survey.

So far we have considered surveys which, though related, cover different topics. Household survey programmes also frequently involve continuous surveys or surveys repeated at fixed intervals of time. Repeat surveys offer considerable economies in collection and processing once the basic system has been set up. However, periodic revision of questionnaires and survey procedures may be necessary. Repetition of the same questionnaire over a long time may lead to increasingly inadequate survey procedures and survey content. On the other hand caution needs to be exercised while making changes in order to maintain comparability of the time-series data. The best strategy in most circumstances may be to continuously evaluate the ongoing system, and introduce changes only infrequently whenever there is sufficient justification for revising survey content and methodology. In other words, it is preferable to overhaul the system periodically rather than subject it to frequent disruption.

2.4.3 Related survey design issues

In determining the information to be collected and designing questionnaires, it is also necessary to consider several related aspects of the survey design. These include, for example: defining the types of units for which the information is to be collected and analyzed; the target population of the units to be covered; the sampling arrangements and the types of units used for selecting the sample; and the rules to determine who the appropriate respondents would be. For instance, most household surveys exclude population residing in non-household institutions, and special provisions would need to be made if any such sectors are to be included. Similarly, some surveys may exclude specific segments of the population, e.g. nomads,

foreign residents, or other minority groups. Surveys of household agriculture may exclude all non-farming households as well as farms above a certain size. The coverage of the population may be on a de jure (usual residence) or a de facto basis; and so on. The sampling units used in the selection of the sample may or may not be identical to the units of enquiry or observation i.e. units on which the information is actually obtained in the field. These in turn are not necessarily the same as the units used in analysis of the results. The respondents, i.e. individuals who actually provide the information may be different from all the above. For example, in a general demographic survey, the sampling units may be areas or clusters, the units of enquiry or observation and analysis may be households and individuals, while the respondent may be any usual adult resident of the household. Similarly, in a survey of household agriculture, the ultimate sampling unit may be the household, while information may be collected at the holding level with the principal holder as the respondent, and the data are tabulated both at the household and the holding levels.

Furthermore, a single survey may involve the collection of information at various levels of units such as communities, dwellings, households, holdings and individuals. Each level may have its own preferred respondent, e.g. household head for household characteristics, mothers for information on children, housewives for household consumption, the main earner for household income, and individual members for information on themselves. These considerations would determine the major divisions of the survey questionnaire and the arrangement of sections within the questionnaire (discussed further in the next subsection). The respondent rules, in particular, can affect profoundly the type of information which can be collected, and the cost and quality of the information collected. For example, the use of proxy respondents, while significantly reducing the survey costs, may greatly limit the detail in which information can be obtained and the extent to which sensitive, attitudinal or behavioural questions can be included in the questionnaire.

Whatever be the details, provision has to be made in the questionnaire to identify the various types of units involved and specify their interrelationship. This may require the collection and coding of supplementary information such as the area, dwelling, and household

identification, line-numbers of individual members, and information on their background characteristics.

Questionnaire design has also to gear up to other possible methods of data collection: whether face-to-face interviews can in some cases be supplemented by mail survey or maintenance of records or diaries by respondents; whether the enquiry involves physical measurements (of areas, yields, quantities of food, heights and weights of children, etc.); whether some of the information can be obtained from or verified with documents or records available with the respondent (birth or marriage certificates etc.); and whether any other forms of interview aids are available etc.

Another important consideration is the periodicity of the survey: whether, depending upon the type of data required, the survey is a one-time operation or whether it is to be repeated periodically; in the latter case, whether the successive interviews are conducted independently of each other, or whether follow-up interviews are conducted on the basis of and by direct reference to the questionnaires completed at the preceding visit(s). It is clear that these and other aspects of the overall survey design have a profound effect on the length and type of reference and recall periods, the type and detail of information and generally on the form and layout of the questionnaire.

2.4.4 Use of more than one questionnaire type within a survey

As noted earlier, there may be good reasons for using more than one type of questionnaire in any given survey. The 'survey' refers to an operation designed to collect information on a closely related set of topics. It is characterized by a relatively unified design and arrangement for data collection and data analysis of the topics covered. At least some basic information is typically collected on all the units in the sample, but some topics may be confined to subsamples and may differ in the units of collection and analysis and in the types of respondents providing the information. In such situations, it is convenient to use a number of questionnaires, each relatively homogeneous in content and applied to a given set of sampling, analysis and reporting units. For example, if data are wanted from a relatively rare

population, (e.g. people with a particular physical or mental disability) it is useful to have a simple household level "screening" questionnaire as the first step to identify individuals with the characteristic of interest and then return to a sub-sample of the identified individuals with a more detailed questionnaire.

As another example, the information collected in the World Fertility Survey was divided into two parts: (i) that concerning characteristics of the household, and demographic and other particulars of each household member, and (ii) information on fertility and marriage history, contraceptive use and other factors on women in the child-bearing age. Information in the first group was relatively less personal and less complex, and could be satisfactorily obtained from any one or more adult members of the household. The second group was more personal and complex and the information had to be obtained directly from the woman concerned, preferably in private. In such a situation, it was convenient and necessary to employ two questionnaires in the survey: one could for households and the other for individual women. The two interviews be operationally combined and did not usually involve separate visits to the household.

Similarly, the 1981-82 National Sample Survey of Agriculture (NSSA) of Malawi employed, for reasons of convenience in the management of data collection and processing, as many as 11 separate schedules, each focusing on a particular aspect of agricultural activity.

In another survey on the same subject the information to be collected was divided into three main groups, with one questionnaire for each: (i) data on structural characteristics and stocks such as total area by ownership and use and crop pattern, number of cattle owned by type, value of various agricultural inputs held in store, etc.; (ii) data on changes in various characteristics and agricultural stocks during a 3-month reference period; and (iii) daily record of livestock production, labour inputs, household food consumption etc. over past one week. Samples of different sizes were used for different questionnaires to maximize the overall efficiency of the survey. Substantive and cost considerations resulted in adopting a large sample size for (i), a sample of moderate size for (ii) and a relatively small sample for (iii). The first required only a one-time interview with the principal

holder; the second required reinterviewing the holder after a 3-month intervals and the third required daily visits to each household for a week, with the housewife as the preferred respondent.

2.4.5 Operationalization of concepts and definitions

Before detailed specification of survey variables is made, it is necessary to define the underlying concepts. The concepts and definitions must be formulated clearly and in detail, specifying exactly what is included and excluded, and how the definition will be applied in practice. Reference has already been made in Sec. 2.4.3 to various concepts relating to coverage, units of sampling, analysis, response, reference period, etc. relating to the survey design. Similarly, there are concepts relating to the substantive content of the survey.

It is useful to consider an example in some detail. In a survey of the labour force, for instance, it is necessary to define and to specify procedures for measurement of terms such as the economically active population, economically inactive population, employment, unemployment and underemployment. The UN Principles and Recommendations for Population Censuses (1966) and the International Conference of Labour Statisticians (1982) define, for instance, the "economically active population" broadly as comprising all persons of either sex who furnish the supply of labour for the production of economic goods and services during a specified reference period. The ICLS then goes on to identify, without excluding other possibilities, two useful measures: the "usually" active population measured in relation to a long reference period such as a year; and the "currently" active population measured in relation to a short reference period such as one week or one day. The "usual" status is conceived as a summary measure based on the variable status of the individual with reference to the weeks or days that together constitute the long specified reference period, i.e. on the basis of "current" status which prevailed during a majority of the weeks or days constituting the period. The usual status could turn out to be substantially different depending upon whether it is defined in terms of the current status which prevailed over most of the weeks or over most of the days considered individually. In any case, in household surveys the usual status can only be determined through one or a few

retrospective questions (Rao 1982) and this practical limitation has to be recognized. Next, it is necessary to define and individually identify in terms of specific series of questions, the various categories which together constitute the broad group "economically active population". For instance, according to ICLS, the economically active population comprises employed and unemployed persons; among the employed a distinction needs to be made between paid employment and self-employment. Paid employment includes persons at work during the reference period for wage or salary in cash or kind, as well as persons with formal attachment to a job but who were temporarily not at work during the reference period. Self-employment likewise, includes persons at work during the reference period for profit or family gain in cash or kind as well as persons with an enterprise but were temporarily not at work during the reference period for any specific reason. The point of this illustration is that broad concepts are defined and operationalized by identifying the categories comprising them in more and more detail, and this forms the basis on which the actual sequence of questioning can then be constructed.

As another example, we quote the concept of "unemployment" as used in the Canadian Labour Force Survey. It included those persons in the civilian (non-military), non-institutional population aged 15 and over who, during the reference period of a given week each month:

(a) were without work, had actively looked for work in the past four weeks (ending with the reference week), and were available for work. The "available" are those (including full-time students seeking part-time work) who reported either (i) that there was no reason why they could not take a job in the reference week, or, (ii) if they could not take a job it was because of "own illness or disability", "personal or family responsibilities", or because they already had a job which they were expecting to join;

(b) had not actively looked for work in the past four weeks, but had been laid off (from a job to which they expect to return) for 26 weeks or less and were available for work; or

(c) had not actively looked for work in the past four weeks but had a new job to start in four weeks or less from the reference week, and were available for work.

It is interesting to note that as many as nine questions had to be asked to ensure that the correct meaning and only that meaning was conveyed to respondents. However, whether it is necessary to include that level of detail in the questionnaire depends on specific objectives of the survey. When information on employment constitutes an incidental background characteristic rather than the primary focus of the survey, it may suffice to measure it in a less precise manner on the basis of a simplified, shorter series of questions.

In the choice of concepts and definitions, an important consideration is the need to ensure consistency. In a continuous or periodically repeated survey aimed at producing time-series data, the concepts used in the past should always be the starting point. In the interest of continuity and operational convenience, only such changes that have been found absolutely necessary should be introduced. Often special studies of the continued usefulness of the concepts and definitions may be necessary before the need for and appropriate form of changes can be identified. Within any survey, whether one-time or continuous, terms need to be defined and applied in the same way throughout the questionnaire, in the interviewers' manual, during interviewers training, and in analysis and reporting of the data. In a programme of related surveys, it is desirable to maximize consistency, if not aim at complete identity, between different surveys. As much consistency as possible is also desirable between surveys and other sources of data. Given these considerations as well as others dictated by national circumstances, it is desirable to follow internationally recommended standard concepts, definitions and classifications as far as possible. Apart from possible advantages of international comparability, this practice can be of great benefit to the country since a great deal of experience, thought and work has gone into the formulation of these recommendations with high degree of consistency and detail.

2.4.6 Specification of survey variables

After determining the concepts, definitions and classifications to be used, the next step is the preparation of a detailed list and description of the survey variables. In practice, this work has to proceed simultaneously with elaboration of the outputs from the survey in the form of cross-tabulations and statistical analysis as discussed in the next subsection.

It should be noted that a survey variable is not equivalent to a questionnaire item. The survey variables essentially define the micro-level information to be obtained from the survey while questionnaire items specify the exact form in which that information has to be collected. Frequently, in the interest of obtaining accurate values of survey variables, the questionnaire may call for more detailed information than is actually needed in the final analysis. For example, a survey variable might be household's income from wages and salaries during a specified reference period. To collect information on this one variable may require asking several questions for each member of the household; in fact different series of questions may be required for different categories of individuals. Similarly, referring back to the concepts of the economically active, employed and unemployed population etc. discussed earlier, the list of survey variables may be substantially shorter than the actual series of questions required in a labour force survey.

In practice, the process of refinement of individual question is a step-by-step process, with details gradually filled up as the successive drafts are discussed and evaluated and as the survey outputs are formulated more precisely. One may begin from no more than a skeleton of the items of information to be covered. The following is an illustration of the process. The next few pages (Illustration 2.1) show extracts from successive drafts of an Indian Survey of Disabled Perons. The illustration shows "Block 7" of the questionnaire concerning particulars of physical/ mental disability. The first draft was developed after discussion with medical experts, and shows little more than an outline of the topics to be covered in the survey. Note that question 7.2, seeks to determine whether the respondent has a visual disability, but asks no further details of the visual disability. The second draft was developed after further discussion with both subject-matter experts and with data processing experts. Note that the amount of detail to be obtained about visual disabilities has been expanded. By the time of the third draft, which is still not the final version, the concepts have been defined, codes have been developed, and a formatted schedule with provision of information for upto four individuals has been developed. Separate blocks (7.1 and 7.2) have been introduced for visual and communication disability. The precise questions have not been written out in full, so that the interviewers are free to use whatever words they think will best convey

the concept of visual disability. Data-capture columns have been entered (by hand) in the right margin, presumably to be printed in the final schedule form. Note also the deliberate repetition of administrative identifiers at the top of the page, for the convenience of interviewers, editors, and general administration.

The above example provides an illustration of the use of somewhat abbreviated list of survey variables, which is gradually expanded and turned into the form of actual questions to be used in the survey interview. An alternative strategy would be first to develop a fully detailed list of survey variables, and turn it into the form of questionnaire or schedule only at a later stage after the list has been discussed, reviewed and finalized. There are a number of possible advantages of this alternative approach. It is clear that as distinct from a list of survey variables, the detailed questionnaire must pay attention to a host of factors such as wording, arrangement, ordering, layout and other aspects of the form, in addition to the basic content of the information being sought. It may, for example, require parallel series of questions for respondents of different categories of respondent, even though the information to be obtained is identical. All this detail may obscure the essential issues and make it difficult for the users and the wide body of professional colleagues to check and evaluate the basic content of the survey and to recommend changes. By contrast, an explicit list of survey variables - giving the definition of the variables and what they include and exclude, the units of measurement, their classification or categories, the population or subpopulation to which they apply, and other details can describe and communicate the content of the survey more clearly and precisely. Such a list will also facilitate the development of tabulation plans and other outputs to be obtained from the survey.

Illustration 2.2 provides an example of the list of variables prepared for a labour force survey. It lists the variables, the subpopulation to which each variable applies, and identifies the main terms which need to be defined. To conserve space, this list has been abbreviated and omits a number of details which may be provided, such as the units of measurement for the variables (e.g. completed years for age), categories to be used (e.g. single, currently married, widowed and divorced for marital status), the coding schemes, and a description and definition of the various

terms employed. Ideally, the objective of such a list is to specify the scope and content of the survey as clearly and in as much detail as possible.

2.4.7 Tabulation plan and other outputs from the survey

While the preparation of a detailed tabulation plan with complete instructions on how each table will be constructed and possibly also interpreted, may have to wait till the finalization of the questionnaire, the basic content and outline of the tabulation and analysis plans should be determined as early as possible. Ideally this work should proceed simultaneously with the detailed specification of the survey variables discussed in the previous subsection.

At the minimum, this may take the form of specification of the table titles, identifying the substantive variables to be tabulated, the background variables to be used in classifications, and the subpopulation to be included in the tables. It is also desirable to show the categories of classification with as much detail as possible though these may need adjustment at a later stage when the sample distribution over response categories is better known. At some stage in the questionnaire development, it may become possible to prepare "dummy tables", showing all the details such as headings, columns, stubs, layout of the table etc. except of course the data. Dummy tables are useful in pointing out gaps in the questionnaire in case any necessary items have been omitted or have not been fully covered to meet the survey objectives. Further, they show up unnecessary information or details which may have been included in the draft questionnaire. Tabulation plans are also helpful in determining the coding scheme to be used in the questionnaire.

Illustration 2.3 provides an example of an outline draft tabulation plan, prepared at an early stage of questionnaire development for a survey of women's participation in economic activities. Note that quite an elaborate tabulation plan has been outlined in a succinct manner. At a later stage, the plan may be refined and dummy tables prepared specifying the format of each table. An illustration of the latter is also provided from an African employment survey (Illustration 2.4).

Illustration 2.1: Extracts from Successive Drafts from a Survey of Disabled Persons (India)

A. FIRST DRAFT

/7/ Particulars of physical/mental disability

7.1	description/manifestation		_____
7.2	type of physical disability	visual (blind)	_____
		auditory (deaf)	_____
		auditory (dumb)	_____
		orthopaedic	
		loss of limb or any part of the body	_____
		deformity of limb or body	_____
		paralysis of limb	_____
		dysfunction of joints	_____
		others	_____
7.3	type of mental disability		codes to be decided
7.4	cause of physical disability	injury at work site (while working)	_____
		injury outside work site	_____
		stroke	_____
		polio	_____
		arthritis	_____
		spastic	_____
		leprosy	_____
		others	_____
7.5	cause of mental disability		codes to be decided
7.6	whether congenital	physical: yes	_____
		no	_____
		mental : yes	_____
		no	_____

(Illustration 2.1 - cont'd)

B. SECOND DRAFT

/7/ Particulars of physical disability of the disabled members

1. Serial number as in col. (1), block /6/

2. Sex

3. Age

4.00 Whether parents of the member have common ancestor (yes - 1, no - 2)

4.10 If 'yes' against item 4.00, type of blood relationship

(Member's mother is first cousin of member's father - 12, member's mother is member's father's sister's daughter - 2, member's mother is other blood relation of member's father - 3)

5.00 Degree of disability

/total - 1, can function only with aid/help - 2, can function without aid/help - 3.

6.00 Visual disability (if 'yes' in col. (8) of block /6/).

6.10 Description of disability

6.20 Type of disability

(blind - 1, partially blind with spectacles - 2, partially blind without spectacles - 3)

6.30 Probable cause of disability as known

(cataract - 1, glaucoma - 21, injury - 3, small pox - 4, other eye disease - 5, other illness - 6)

6.40 Whether congenital (yes - 1, no - 2)

6.50 If 'no' against item - 6.40, age (years) at onset of disability

6.60 whether disability commenced during last year (yes - 1, no - 2)

(Illustration 2.1 - cont'd)

C. THIRD DRAFT

GOVERNMENT OF INDIA

NATIONAL SAMPLE SURVEY ORGANISATION
Socio-economic Survey: July-December 1981

Scn: 26: Survey of Disabled Persons

RURAL/URBAN

Part II - Block 1, 7 and 8 THIRTY SIXTH ROUND

Identification of sample household			
1.	Serial number	5.	Sub-round
2.	State/region	6.	Sample village/block no.
3.	Stratum	7.	Sub-stratum
4.	Sub-sample	8.	Sample household no.

/7.1/ Particulars of visual disability of the disabled member

1.	Serial number as in col. (1) of block (6)
2.	Sex
3.	Age
4.	Visual disability (if code-1, in col. (8) of block (6)
4.10	Whether having light perception (yes - 1, no - 2)
4.11	Having light perception but with both eyes open cannot count fingers at a distance of 3 metres or ten feet in good day light (with spectacles - 3, without spectacles - 4)

(Illustration 2.1 - cont'd)

4.12 Whether normally using spectacles (yes - 1, no - 2)

4.13 Whether having visual disability from birth (yes - 1, no - 2)

4.14 If Code - 2 against item 4.13: since when (years) having difficulty in moving around.

4.15 Whether visually disabled during last year (yes - 1, no - 2)

4.16 Probable cause of visual disability as known (code)

4.17 If code - 1 against item 4.16: type of eye disease as known (code)

4.18 Whether can read braille alphabets (yes - 1, no - 2)

CODE LIST FOR BLOCK 7.1

Item 4.16 (cause of visual disability)		Item 4.17 (type of eye disease)	
eye disease	-1	cataract	-1
sore eyes - during first month of life	-2	glaucoma	-2
sore eyes - after 1 month	-3	corneal opacity	-3
severe diarrhoea before the age of six years	-4	eye infection (inner-eye)	-4
smallpox	-5	eye haemorrhage (inner-eye)	-5
injury	-6	high power of glasses	-6
old age	-7	not known	-0
others	-9		
other eye diseases	-9		

/7.1/ contd. particulars of visual disability of the disabled member

1. Serial number as in col. (1) of block (6)

(Illustration 2.1 - cont'd)

5.10 Whether treatment taken (yes - 1, no - 2)
5.11 If code - 2 against item 5.10 reason for no treatment (code)
5.12 If code - 1 against item 5.10 how soon treatment commenced after having difficulty in moving around (months) ...
5.13 Type of treatment taken (code)

/7.2/ Particulars of communication disability of the disabled member aged 5 years and above

1. Serial number as in col. (1) of block (6)
2. Sex
3. Age
Communication disability (if code - 1 in col. (9) of block (6).
4.00 Description of communication disability
4.11 Hearing disability
Whether having hearing disability (yes - 1, no - 2)
4.12 Degree of hearing disability (code)
4.13 Whether having hearing disability from birth (yes - 2, no - 2)
4.14 If code - 2 against item 4.13, age (years) at onset of hearing disability

(Illustration 2.1 - cont'd)

4.15 Whether hearing disability commenced during last year (yes - 1, no - 2)

4.16 Probable cause of hearing disability as known (code)

CODE LIST FOR BLOCK 7.1

Item 5.11 (Reason for no treatment):

Place where treatment available not known	-1
Place of treatment known but treatment expensive	-2
Treatment not deemed to be necessary for:	
economic independence	-3
personal independence	-4
Others (specify)	-9

Item 5.13 (Type of treatment):

Glasses only	-1
Medicine only	-2
Surgical operation	-3
Others	-9

CODE LIST FOR BLOCK 7.2

Item 4.12 (Degree of hearing disability):

Cannot hear at all	-1
Profound	-2
Severe	-3
Moderate	-4

Item 4.16 (Cause of hearing disability)

German measles/rubella	-1
Noise induced hearing loos	-2
Ear discharge	-3
Following:	
illness	-6
injury	-7
medical/surgical intervention	-8
Others	-9
Not known	-0

Illustration 2.2: Specification of Variables for a Labour Force Survey (abbreviated list)

Variable	Subpopulation to which applies	Terms to be defined
Demographic characteristics:		
-age, sex, relationship to household head	All usual residents	Household, usual resident, household head, relationship code
-current marital status	Usual residents aged 15+	
Migration:		
-duration of residence in present locality	Usual residents aged 5+	Locality
-province and type of place of previous residence	Usual residents aged 5+ who moved locality within past 5 years	Type of place
Education:		
-whether currently attending school	Usual residents aged 7-30	Type of educational institutions to be included as 'school'; levels of education.
-highest level of education completed	All usual residents aged 7+	
-years of higher education	All usual residents who graduated from university, teachers training or technical school.	
Work experience:		
-whether worked during past week and whether ever worked in the past	Usual residents aged 11+	Work, work during reference period
-occupation, industry and work status in last job, and principal occupation and industry during last year	Residents who ever worked (including who worked during past week)	Occupation, industry work status; principal occupation and industry

(Illustration 2.2 - cont'd)

-days and hours worked last week; normal hours worked per week and reason if less than 35 hours.	All persons who worked last week	Code for reasons for working less than 35 hours
-the form and amount wages received in cash and kind during past one month	Persons who worked as employees last	Employment status; employee
-number of employees and profit received last month	Persons who worked as self-employed or employers in non-agricultural enterprises during past week	Self-employed; employer
-whether looked for work duration since looking for work, reasons for not looking for work	All usual residents who did not work last week	Looking for work; code for reasons for not looking
Farming:		
-whether household does any farming;	Each household engaged in farming or having one or more members working in farming	Farming; cultivated land; list of principal crops; units for measuring land area
-number of members engaged in farming;		
-amount of cultivated land owned and amount rented for each of a pre-specified list of crops.		

Illustration 2.3: Yemen Arab Republic: Draft Tabulation Outline for a Survey of Women's Participation in Economic Activity in Rural Areas (1983)

1. The following distributions are tabulated after classification by geographic stratum, sex of the person and by each of these variables in turn (i) five-year age groups, (ii) marital status and (iii) level of education:

   - distribution of the population aged 10 years and over according to activity status;
   - distribution of employed persons according to principal industry;
   - distribution of employed persons according to occupation; and
   - distribution of employed persons according to employment status.

2. Distribution of employed persons classified by sex and the following combination of background variables: (i) occupation and industry, (ii) occupation and employment status, (iii) industry and employment status, (iv) occupation, education and age group.

3. Employed persons with more than one usual occupation classified according to their primary and secondary (i) industry, (ii) occupation and (iii) employment status.

4. Distribution of employed women according to hours worked per week, classified by (i) geographical stratum, (ii) women's age, (iii) marital status, (iv) industry, (v) principal occupation, (vi) employment status, and (vii) earnings from agricultural and non-agricultural activities.

5. Distribution of employed women according to weeks worked during the past year, classified by (i) age group, (ii) industry and (iii) principal occupation.

6. Distribution of employed women according to classes of monthly income and principal activity, classified by principal (i) industrial class (ii) occupation class, and (iii) employment status.

7. The above distribution, by secondary activity, industry, occupation and employment status.

8. Distribution of females who were not working during the reference week according to reasons for not working, classified by (i) geographical stratum; (ii) woman's marital status, (iii) her level of education, and (iv) type of training received.

9. Unemployed women, classified according to the following combination of background variables: (i) last occupation and age group, (ii) stratum (iii) duration of unemployment and age group, (iv) occupation sought and age group, (v) stratum and occupation sought, (vi) stratum and minimum income sought.

Illustration 2.4: Dummy Tables for an Employment Survey

Table 10

Number of Household and Age-Sex Composition of Population for Household Size

Household Size	Total No. of Households	Number of persons by broad age groups and sex															
		Under 10		10-11		15-19		20-24		25-44		45-65		65 and Over		All	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1 person																	
2 persons																	
3 persons																	
4 persons																	
5 persons																	
6 persons																	
7 persons																	
8 persons																	
9 persons																	
10 persons																	
More than 10 persons																	
Total																	

Table 30

Number of farms cultivated by ownership of land and distance from residence

Type of ownership of land	No. of farms by distance from residence					
	Less than 1/2 km.	1/2 to less than 1 km.	1 to less than 2 km.	2 to less than 3 km.	3 km. or more	All
Fully owned land						
Leasehold land						
Land rented out						
Land rented in						
Communal or shared land						
Others (a) (b)						
Total						

2.5 DRAFTING, TESTING, IMPLEMENTATION AND EVALUATION OF QUESTIONNAIRES

Once the contents of the survey to be undertaken have been elaborated in sufficient detail and the major statistical outputs specified, the next step is the actual drafting of questions.

This section provides a summary of some of the important issues in drafting and testing of questionnaires prior to their use in the full-scale survey. Three broad stages may be identified in this process: the exploratory or developmental phase; the drafting or formulation of questions; and their testing before full-scale implementation.

2.5.1 Developmental phase

The task of drafting the questionnaire should always begin with an examination of the past practices and experiences - of the organization undertaking the survey, of other organizations within and outside the country. There should be a review of the general recommendations made by international organizations on the subject of enquiry. It is important to evaluate how the various approaches used in the past have actually fared in terms of costs and quality of the data obtained. Not infrequently, the tendency to 're-invent the wheel' has resulted in inadequate questionnaire design. One has to learn both from the positive and the negative aspects of experience.

On topics which have not been well tried in the past, some experimental work may be necessary before the actual formulation of the questions can be undertaken. A number of special techniques, some rather new and innovative, are available for the exploratory work. One such technique, recently adopted for general survey practice, is to conduct a series of interviews (or rather discussions) with groups of potential respondents to gauge the appropriate approaches and wordings for asking the questions. Also, skilled interviewers may be employed to carry out unstructured interviews with individual respondents, using merely lists of survey topics to be investigated rather than fully formed questions. Analysis of the experience of this unstructured interviewing can then be used to determine the best approach

and the form of questioning to be used. Another technique is to carry out exploratory interviews with in-depth probing on some or all the items to gauge the respondents' understanding of the questions, the context in which the responses are given and the thought processes which lead to those responses. The objective is the same as other techniques: to rationalize and refine the survey content, discover the best ways to itemize and formulate questions, and to identify major problems and areas of possible misunderstanding in communicating the questions to the respondent. Finally, another possible avenue for obtaining such information is provided by anthropological type of intensive studies involving participant observation. These techniques are discussed more fully in Chapter 6.

2.5.2 Formulation of questions

A host of technical considerations are involved in determining how individual questions are to be grouped, ordered and arranged, how they are to be worded and their response categories specified and coded, what is the appropriate reference period and, generally, how best the questionnaire may be used to structure and control the interviewing process and facilitate processing and analysis of the information collected.

It needs to be emphasized that in questionnaire design work, a common mistake is to assume that once the terms are defined and explained to the interviewer, they are automatically and equally well understood by the respondent. However, the critical factor is not whether the interviewer understands the questions, but whether they are clearly communicated to and understood by the respondent as well. This requirement determines the degree of detail or itemization necessary to translate more general concepts into operational terms: often a series of questions may be required to convey the correct and complete meaning of an item. For example, if the objective is to enumerate the entire population residing in sample households, it may be necessary to identify and specifically probe for categories such as visitors, servants and infants who are prone to be under-enumerated in household interviews. Similarly, to convey the meaning of a complex concept such as economic activity may require a series of questions to identify the various types of activities which are to be included. The same applies to many other commonly used but complex concepts such as employment, income, expenditure, consumption, illness, disability etc.

How fully or explicitly individual questions are worded in the questionnaire is another important issue to be considered in questionnaire design. Broadly speaking, there are two approaches to question formulation: the so-called 'questionnaire approach' in which each question is printed in full in the exact form in which the interviewer is instructed to deliver it*; and the 'schedule approach', in which questions are listed in an abbreviated form as items to be enumerated, which guide the interviewer in asking the questions in a form which he/she considers most appropriate in particular circumstances. In choosing between these styles, one has to compare the advantage of greater control and standardization of the verbatim style against the greater flexibility provided by the schedule approach; and compare the greater clarity of the verbatim questionnaire against the brevity and manageability of the schedule. Essentially, the issue is how much should one predetermine the manner of conducting the interview and give guidance to the interviewer and the respondent through the questionnaire.

A related issue is the degree of control over the form and categories in which responses are sought to the questions. Here a distinction is usually made between 'open-ended' questions in which both the interviewer and respondent are unconstrained and allowed maximum scope for individual variation in wording and recording responses; and 'closed' questions in which the units of response and categories from which responses are to be selected are made explicit both to the interviewer and the respondent. In certain circumstances, e.g. at the developmental stage, and for certain types of questions especially those dealing with respondents' subjective beliefs, attitudes and feelings, the open-ended form helps to maintain the necessary flexibility and spontaneity. However, open-ended questions can be difficult to record, code and analyse, and may sometimes result in irrelevant or unusable responses. On the other

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*In some questionnaires, the questions are directed to the interviewer rather than to the respondent, so that the interviewer may obtain the required information in respect of each individual in the sample population either from the individual direct or from a knowledgeable respondent such as the head of the household.

hand, responses to closed questions can be obtained in clearer and more usable form and can be more easily recorded, coded and analyzed. The closed questions can sometimes limit the variety and value of the information that is possible through open-ended questions. Actually, a whole gradation is possible in the degree to which questions are made open-ended or closed, and choices have to be made in designing questions on the basis of experience and testing.

The above are some of the technical issues which need to be considered in the drafting and design of questionnaires. As the substantive content of the questions, including their ordering, wording, response categories etc. is formulated in detail, attention also needs to be paid to the physical form, layout, and structure of the questionnaire. This includes aspects such as provision of identification and other administrative information, the grouping and numbering of questions, provision of summaries and subtotals to control and check the information collected, filters and skip instructions to guide the flow of the interview, provision of instructions for the interviewer, placing and ordering of response categories, provision for efficient coding and data capture, and many other issues relating to the physical form and layout of the questionnaire. These issues are considered in detail in Chapters 3 and 4, with illustrations from a variety of surveys, countries and circumstances.

2.5.3 Testing of questionnaires

The process of review and testing of draft questionnaire may involve several aspects or steps, including (i) technical review by the survey team and review of the expected output by the users; (ii) pre-testing of the questions through field interview; (iii) preferably, more formal testing of alternative approaches or methodologies of data collection; and (iv) pilot testing of the questionnaire along with other survey procedures prior to the main fieldwork.

A careful, word-by-word review of the draft questionnaire - and of its translation into different languages if applicable - is an indispensable step. There are many examples where apparently minor or purely accidental slips went unnoticed due to insufficient and cursory review, and

caused unnecessary inconvenience to the interviewers and sometimes serious damage to survey results. The review should involve not only those directly responsible for the production of the draft but also a wider body of professional colleagues within and outside the organization, as well as field and office workers responsible for the execution of the survey. It is often the case that on the basis of previous experience and logical and technical considerations of the type discussed in Chapters 3 and 4, a thorough review of the document can reveal errors and omissions and identify improvements even before any further field testing.

The next step is to try out the draft questionnaire in the field under reasonably representative conditions. This is, of course, the only sure way of ensuring that the survey is feasible and that the questionnaire will yield data of the type and accuracy required. A distinction may be made between pre-testing and piloting in field trials. Pre-testing refers to one or more series of interviews conducted on successive drafts of the questionnaire for the purpose of identifying and correcting errors and shortcomings. It is directed primarily at the improvement of the questionnaire. Its objective is to evaluate the general receptivity and feasibility of the questionnaire, and identify specific problems of communication between the interviewer and the respondent in terms of specific questions or items of information sought. A pilot, by contrast, refers to small-scale testing of all survey procedures under conditions and arrangements mirroring the full-scale survey; it is a dress-rehearsal for the full set of collection procedures, and to some extent of data-processing procedures as well.

Given this difference in the basic objectives of a pretest and a pilot, generally considerable latitude may be exercised in the choice of interviewers, respondents and interviewing procedures for the pre-test, depending upon its specific requirements and focus. Special techniques such as in-depth probing of selected items, comparison with alternative sources and reinterviewing etc. may be useful in identifying questions which suffer particularly from response errors and in evaluating the results of the pre-test. The design and procedures for the pilot would usually be more formal or standardized so as to reflect as closely as possible the sample of respondents, interviewers, interviewing and supervisory procedures, field-work arrangements and administration, etc. for the main survey.

Finally, situations may arise when available experience and knowledge are not sufficient to choose decisively between alternative approaches. It may become necessary to undertake formal experiments to test and compare alternatives in a scientific or objective manner. The design and execution of formal experiments may require specialized skills and resources not easily available to developing country organizations. Their incorporation into full-scale surveys is usually difficult and can be disruptive. Hence wherever necessary, they may be organized as separate operations with special arrangements.

Important aspects in the design and conduct of pretests, pilots and experimental studies are discussed in Chapter 6.

2.5.4 Questionnaire production and implementation

In addition to the technical tasks of designing, testing and finalizing the questionnaire, attention also needs to be paid to a host of other practical and supplementary aspects of questionnaire development. These include the physical production of the questionnaires for the full-scale survey, the preparation of instruction manuals for data collection, editing, coding and processing; finalization of the tabulation and analysis plans; development of interview aids and preparation of training materials for the field and office staff; developing and implementing procedures for supervision of field-work, collecting and storing completed questionnaire, keeping of records and so on. At the stage of full-scale administering of the questionnaire, the distinction between questionnaire development and other aspects of survey implementation is necessarily blurred. Those more directly related to questionnaire production and implementation are discussed in Chapter 5.

2.5.5 Evaluation and research

Evaluation of how well the questionnaire works in the survey should be part of the questionnaire development. This is particularly important in a continuing programme of periodic surveys because the evaluation findings can be used to improve the questionnaires of subsequent rounds.

It is useful to distinguish broadly between testing and evaluation. The objective of testing, referred to in the previous section, is to ensure the relevance and accuracy of the data to be collected and to minimize the errors which the questionnaire might contribute; it refers to operations carried out prior to the full-scale survey. Evaluation, on the other hand, has the objective of providing information on the magnitude and sources of error introduced at various stages; it refers by and large to certain operations carried out during and after the collection of the data. These include both the monitoring and evaluation during main field-work, and the evaluation of the questionnaire, other procedures and data quality through special operations after the particular survey.

As a part of the main survey operations, evaluation of the questionnaire may be carried out on the basis of observation, documentation and analysis of the information collected more or less routinely in the course of survey management and implementation. This may include, for example, information from records of non-response (in particular item non-response), spot-checking and observation of interviews by supervisors, tape recordings of interviews, interviewer observations and debriefing, rates of work and error rates during data collection and processing. For improving future questionnaire design, it is particularly important to identify specific questions which result in difficulties or high rates of error and/or non-response.

Additional information on the sources of non-sampling errors in general and on the performance of the questionnaire in particular may be obtained by building in suitable "experimental comparisons" into the main survey design. It is, for example, possible in many circumstances to introduce a degree of randomization in the allocation of workload to interviewers and coders etc. in ways which would permit more quantitative estimation of the components of response errors arising from various sources. Where resources permit, special post-survey evaluation studies may be organized to evaluate the questionnaire, the survey procedures and data quality. A variety of techniques are available. For example, reinterview studies may be carried out in which a subsample of the main survey respondents are interviewed again to obtain estimates of reliability of the data; individual discrepancies between the original and the reinterview may be followed up in-depth to identify the sources of error and magnitude of the resulting bias.

Sometimes, part of the information collected in the survey may also be available from some more reliable, independent source against which it can be checked and validated. Evaluation of the data quality - at least at the aggregate level - on the basis of criteria of internal consistency, logical relationships and accumulated knowledge is, of course, an indispensable step in the proper analysis and reporting of data from any statistical enquiry, and can provide valuable information for improving content and design of future questionnaires. See Chapter 6 for a description of some techniques of evaluation of questionnaires and data quality.

In the last analysis, the improvement of quality of the questionnaires used in household surveys depends upon the institutionalization of a programme of research and evaluation as an integral part of the more routine survey-taking. Developing good questionnaires is not an easy task, and cannot be accomplished simply by indiscriminate continuation of past practices or imitation of what others have done. The statistical organizations need to pay attention to methodological research in order to improve the quality and cost-effectiveness of their survey operations and should regard it as as an integral part of their survey programmes.

CHAPTER 3

PRINCIPLES OF QUESTIONNAIRE DESIGN: FORMULATION OF QUESTIONS

3.1 INTRODUCTION

In designing the survey questionnaire, the objective is to assist the respondents in providing the required information as accurately as possible, and to facilitate the work of the survey organization in obtaining, recording and processing it. This Chapter describes the various technical considerations involved in operationalizing the survey content and formulating individual questions. Issues relating to the form and layout of the questionnaire as a whole will be considered in subsequent chapters.

We assume here that the appropriate survey objectives, content and final outputs have already been determined after careful assessment of the information requirements in consultation with users. As discussed in the previous chapter, these have an important bearing on the questionnaire design. The following sections describe the general principles and techniques of questionnaire design and highlight the factors in making choices from available options. Several examples are given of typical situations to illustrate the application of general principles.

3.2 A FUNDAMENTAL PRINCIPLE OF QUESTIONNAIRE DESIGN: STRUCTURING OF THE INTERVIEW

The primary objective of questionnaire design is to provide an instrument for collection of the required information under the given survey conditions and within the time and resources available for the survey. A fundamental

issue to be considered in choosing the questionnaire style is the degree to which the interviewing should be 'structured'. Structuring means the use of pre-specified and uniform procedures in the conduct of an interview, with little freedom to the interviewer in choosing the sequence, style and wording of questions or the form and categories in which responses are recorded. A highly structured interview would require the interviewer to follow the exact wording as specified for each question in the questionnaire, provide him with detailed instructions on how and with whom to conduct the interview, and specify both to the interviewer and the respondent the exact categories for recording answers to each question. A high degree of structuring of the interview process may be desirable in many circumstances and for several types of surveys. For example, in surveys concerned with respondent's attitudes and opinions, the replies to questions can depend critically on how they are asked and the exact wording used. Permitting individual interviewers to freely choose the manner in which they ask questions may result in highly variable and possibly unusable responses. In many large-scale surveys, the skills and capabilities of the interviewers may be highly variable and not uniformly high; it may be safer and generally advantageous to insist on the application of standard procedures laid down in detail. Structured interviewing is also likely to yield data which are easier to code and tabulate; a consideration which is often of vital importance in large-scale surveys generating huge volumes of data.

On the other hand, there are situations where it is desirable to give the interviewer maximum flexibility in choosing the manner of asking questions and the form of recording answers. For instance, the interviewing conditions, language, respondents' characteristics etc. within the survey may be so variable that no satisfactory uniform procedures can be specified in detail; and if specified, would not probably be adhered due to practical problems in conducting the interview. Similarly, the subject-matter of the survey may be so complex that useful information can be obtained only through detailed probing which requires flexibility and initiative on the interviewers' part. In general, the more skilled, experienced and motivated the interviewer is, the stronger would be the case for flexibility in choosing the manner and form of asking the questions during the interview.

In this context a distinction is usually made between two broad approaches to question formulation: the so-called 'questionnaire approach', which specifies the exact form and wording of each question as it is to be put; and the 'schedule approach' which lists questions in an abbreviated form as items to be enumerated, leaving the choice of exact wording to the judgment of the interviewer depending upon the specific situation of each interview. In choosing between these two styles, one has to compare the greater control, standardization and possible clarity of the questionnaire, against the economy, brevity, manageability and greater flexibility offered by the schedule approach.

As discussed in detail in the following sections, there are several other aspects of questionnaire design which determine the degree of control over the manner in which the interview is conducted.

Some examples are given below:

(1) Questionnaires may differ in the detail with which individual items of information are specified, and the manner in which the interviewer is instructed to communicate these to the respondent. For example, a questionnaire on household consumption may list individual items of consumption in great detail, or it may refer simply to broad groups of items without listing them. Similarly, information on income from household enterprises may be solicited simply in the form of net income on the basis of a single question, or it may be deduced from more detailed questioning of gross sales and expenditures under various categories.

(2) Equally important is the manner and detail in which the interviewer is instructed to communicate the requirement to the respondent. Sometimes detailed lists of items are provided in the questionnaire primarily for the information of the interviewer, to assist in classifying the responses obtained or determining how to probe for more information in particular instances. Alternatively, the instruction may be to read out a selected subset of items to provide the respondent with examples of the type of information required. In a more structured interview, the interviewer may be instructed to read out and obtain responses for each item separately, one by one. Thus, the degree of structuring and control over

the interview procedure - and hence the completeness, quality and cost of obtaining the information - can differ greatly depending upon how the questions have been formulated in the questionnaire and communicated to the respondent. Section 3.3 discusses this further and gives numerous examples.

(3) In many surveys, the information obtained is of a retrospective nature, i.e. it relates to specified reference periods in the past. For example, a demographic survey may record births and deaths in the household during the past 12 or 24 months, or migrations, say, during the past 5 years. Similarly, a labour force survey may obtain information on economic activity during the past week and/or past year; an income survey may refer to a specified calendar month or year; and a consumption survey to various lengths of reference period for different sets of items. The choice of the appropriate reference period(s) is an important issue in survey design (see Section 3.4).

(4) Apart from issues relating to the wording of questions and the use of questionnaires vs. schedules mentioned earlier (see Sections 3.5 and 3.6 for details), another important dimension to be considered is the structure imposed on the response categories. Here a distinction needs to be made between open-ended and closed-ended questions. In a fully open-ended question both the respondent and the interviewer are unconstrained and allowed maximum scope for individual variation in the specification and recording of responses. At the other extreme, questions may be fully closed, i.e. stating explicitly the relevant dimensions and the exact categories of response to the question. Actually, most questions are neither fully open-ended nor fully closed. For example, a question may be only partially closed; or a question "closed" for the interviewer (for recording responses) may be essentially open-ended for the respondent; questions may also differ in the degree to which the "permissible" range of responses are actually communicated to the respondent, and so on. These and related issues are discussed in Section 3.7.

(5) In many countries, the linguistic diversity of the population requires that the survey is conducted in

more than one language. The situation is particularly complex in some parts of Africa, though multilingual surveys are common in other regions as well. Should written versions of the questionnaire be prepared in each language and administered formally, or should the interviewer be asked to translate the questions into the language of each respondent, spontaneously at the time of interview? Such questions can profoundly affect the cost, logistics, management, quality and even design of the survey. A brief discussion of the rather limited experience available on this important question is provided in Section 3.8.

(6) Various provisions may be made in the questionnaire for cross-checking the internal consistency and/or overall plausibility of the information obtained by the interviewer - both during the interview and the desk-scrutiny later. Examples are provision of subtotals and balance sheets at various places in the questionnaire, or deliberate introduction of redundant items to permit cross-checking. The questionnaire may also include additional items of information on the identification of the respondents, conditions of the interview, presence of third parties during questioning, interviewer's assessment of the reliability of the information obtained etc. These features of the questionnaire design affect the degree of checking, control and supervision of the interview. This and other issues relating to the overall structure of the questionnaire are discussed in Chapter 4.

3.3 SPECIFICATION OF THE ITEMS TO BE COLLECTED IN DETAIL

A fundamental consideration in the formulation of a survey questionnaire is the clear specification of the items of information, specifying what is to be included and excluded, what exactly are the reference periods and how the information is to be recorded. Omission or erroneous inclusion of the items or events, and the use of incorrect reference period are two major sources of error in survey data.

To construct a practical questionnaire, the given concepts, information requirements and survey variables have to be broken down into specific, comprehensive and answerable series of questions. The basic questions are: what is the appropriate level of detail for this breakdown, and what are the considerations involved in the choice?

3.3.1 The importance of providing sufficient detail

To begin with, it may be stated as a general principle that the only guarantee against serious omission or under-reporting is to itemize the information to be obtained inasmuch detail as possible, and seek information explicitly on each item or component even though some of the details may be amalgamated later at the processing and analysis stages.

Consider for example, a demographic survey aimed at obtaining information on the number of children ever born to each woman in the sample. In principle this may be done by asking just one question on the total number. However, experience has shown that in many cultures, respondents have a tendency to under-report certain categories of children, for example children not living at home, female children, and children who have died; the under-reporting may be particularly serious in the case of female children who have died. It may be possible to reduce the bias by asking separate questions on each category of children, and this indeed is the practice followed in most censuses and surveys. For example, the ECA Manual on Demographic Sample Surveys in Africa (1974) recommends the total number of children ever born to be enumerated in six categories:

boys living at home; girls living at home;
boys living elsewhere; girls living elsewhere;
boys who have died; girls who have died.

The additional detail may not only result in improved reporting, but also permit checks on the quality of the data and possibly suggest methods of making appropriate adjustments at the analysis stage. For example, breakdown into boys and girls permits estimation of the sex-ratio at birth and of relative levels of male and female child morality. These estimates can be evaluated against data available from other sources and the more or less stable relationships observed in other populations.

Let us consider another less well-known example where the degree of detail has been shown to affect the completeness of reporting. In the World Fertility Survey questionnaire, information on the knowledge of various methods of contraception was obtained in two forms:

(1) Women were first asked to name spontaneously any methods of contraception they have ever heard of.

(2) Subsequently, the interviewer was instructed to read out descriptions of methods one-by-one, and ask whether the method was known to and had ever been used by the respondent.

Generally, the first simple alternative resulted in lower levels of reported knowledge than the more elaborate and time-consuming series of questions. Vaessen (1980) reports the remarkable finding that in many cases women reported actually having used certain methods after detailed questioning, when they had not reported even a knowledge of the method concerned in the earlier general question! The differences were particularly striking for the more traditional methods of birth control which (unlike the contraceptive pill or condom) did not depend upon obtaining supplies from a family planning institution or commercial outlet. The survey designers had intended to include in the concept of "method of contraception" not only the modern supply methods but also the more traditional practices of birth control such as abstinence and coitus-interruptus. But this concept could be communicated to many respondents only through detailed itemized questioning.

3.3.2 But how much detail? Examples of variations in country practices

Needless to say, absolute maximizing the amount of detail in the questionnaire is neither possible nor indeed necessary or desirable in all circumstances. Before discussing the general considerations involved in choosing the appropriate amount of detail, it will be instructive to study variations in practices from a number of countries.

Surveys on household consumption provide perhaps the clearest illustrations of this issue. To obtain a reasonably clear picture of the total expenditure and pattern of consumption, it is necessary to take into account the

enormous variety of items which different households consume. The completeness of the information obtained would depend upon a number of factors such as the detailed listing of items of consumption in the questionnaire, how the details are actually conveyed to the respondent, the salience of the items in the respondent's mind, and the type and length of the recall periods. The cost of obtaining, recording and processing the information would also vary greatly depending on the methodology employed. Consequently, countries have followed very different practices as the following examples illustrate in some detail.

Illustrations 3.1 - 3.5 summarize the form in which information on household consumption and expenditure was collected in recent surveys in Ethiopia, Zimbabwe, Fiji, Thailand and India. Among the examples given, the questionnaires from Ethiopia (Illustration 3.1) and Zimbabwe (Illustration 3.2) provide the range of variation in detailed itemization: in the former case consumption is enumerated within major groups on the basis of open-ended questioning and spontaneous reporting; in the latter case very detailed precoded lists of individual items are provided, to be read out and recorded one by one so as to enhance the chance of more complete coverage. The Zimbabwe example is by no means an extreme one. The unit for recording the information here is the household as a whole. In many surveys a great deal of information on income and expenditure has been recorded separately for each individual member of the household, generally resulting in a very long questionnaire. Ethiopia itself provides an example of this in an earlier (1972) survey. The data thus collected could not, however, be processed; there is, indeed, a very important lesson to be learned from this by the developing countries in their survey work.

The examples from Fiji (Illustration 3.3) and Thailand (Illustration 3.4) show the possibility of using alternative approaches within the same questionnaire, depending upon the type of information sought and the nature of the subject being investigated. At the same time, they show how different solutions have been adopted by different countries reflecting different circumstances and survey objectives. The variations may sometimes arise because of lack of general consensus as to which is the best approach.

The example from India (Illustration 3.5) shows how in the context of a continuing survey programme, accumulated experience can be used gradually to enhance the coverage, detail and specificity of the questionnaire.

Illustration 3.1: Ethiopia Household Income, Consumption and Expenditure Survey, 1981-82

This is an example of questioning in relatively limited detail. The questionnaire enumerates items of household consumption under the following six headings:

- Food, drinks and tobacco (reference period 3-4 days).
- Clothing, headwear, footwear and jewelry (reference period one week and 3 months).
- Housing, including house rent, building materials, fuel, lighting and water (reference period one week).
- Household equipment, including furniture, furnishings, utensils, domestic services, and other household operational expenses (reference periods one week and 3 months).
- Services (reference period one week).
- Other items of consumption (reference period one week).
- Non-consumption items and other payments (reference period one week).

The unit of recording is the household as a whole (i.e. not each individual member separately). The important point to note is that within each group of expenditure, no specific list of individual items is provided to the respondent or the interviewer. In other words, the interviewer puts an introductory question in each group, following which only those items which are mentioned spontaneously by the respondent are recorded, in the order in which they are reported. Consequently, the questionnaire is relatively short (for this type of survey) - certainly in physical size, but probably also in the average time taken per interview. But it is also likely that the information obtained is less complete. Furthermore, data processing can be difficult and time-consuming, since special operation is required to code individual items as they are not recorded in any fixed order (except being assigned to fixed groups).

Illustration 3.2: Zimbabwe Pilot Household Budget Survey, 1983

This provides a contrast to the example from Ethiopia. The relatively long and comprehensive questionnaire puts emphasis on pre-specification of as complete a list as possible of individual items of consumption. These items are enumerated in two groups:

- Expenditure on food beverage and tobacco, enumerated on a daily basis for a week. The detailed precoded list extends over 10 full-sized pages.

- Final consumption expenditure on other items, enumerated with a reference period of one month. This group is divided into 8 subgroups, with the detailed precoded list covering hundreds of items and occupying 18 full pages of the questionnaire.

The interviewer is expected to read out each specified item individually and record the appropriate response in the fixed place provided for the item concerned in the questionnaire. Such a system facilitates more complete recording of household consumption, and avoids the difficult and time-consuming process of coding of items at the data processing stage. Relative disadvantages are a bulky questionnaire, longer interviews and large size of the resulting data files. Asking for an excessive amount of detail can sometimes also result in lowering, rather than raising, the quality of the information reported. Indeed there is a danger that the interviewer may be unable or unwilling to read out long lists of items during the interview if for most of the respondents, positive responses are obtained only for a small proportion of the items to be enumerated. There is also a danger that the respondent may occasionally report for the sake of prestige, or just for a change, expenditures not really incurred. The above general remarks are not meant to imply that such problems necessarily occurred in the Zimbabwe pilot survey.

Illustration 3.3: Fiji Household Expenditure Survey, 1983

This survey provides an illustration of the use of alternative approaches for different types of items in the same questionnaire. The items of consumption and expenditure are divided into two main groups:

- Food and other items of frequent consumption, recorded over a week on a daily basis.

- Other items of less frequent consumption, recorded with a recall period of 1, 3 or 12 months depending upon the item.

In the first group, the questionnaire itself does not provide a pre-specified list of items. Instead the interviewer is provided with "prompt cards" from which he/ she is instructed to read out items one-by-one and record on the questionnaire only those items which the household reports to have purchased or consumed. In this way an attempt is made to retain the advantage of an un-precoded questionnaire (small size), but to capture as much detail as possible to the extent that the interviewers actually read out the lists provided. Possible problems are the difficulty the interviewer may experience in handling the questionnaire and the prompt cards at the same time, and in checking that the interviewer actually reads out the lists item-by-item. Also the recorded items still have to be coded after the interview.

The second group of items is organized rather differently. Here the major items are individually specified on the questionnaire, and are asked one after another with responses recorded in fixed places provided. (These, of course, are always supplemented by an open "Any other?" question.) The pre-specified lists of items are less detailed than those in the example given above from Zimbabwe, but perhaps they focus more clearly on the important components of interest in the particular circumstances of Fiji.

The difference in the approach between the two groups of items probably springs from the assumption that it is possible to identify a reasonably short list covering practically all important items of less frequent consumption; however, for food and other items of daily consumption, the variety and variation is too great to be captured by a pre-specified list of moderate size.

Finally, we may mention another noteworthy feature of the Fiji questionnaire: a special effort is made to clearly distinguish between expenditure in cash and in kind, and between expenditures of the private household and those relating to the household economic activities. This important distinction has not always been maintained clearly in many household expenditure surveys.

Illustration 3.4: Thailand Socio-economic Survey, 1979-80

In this survey dealing with family expenditure, somewhat different approaches have been followed for different sets of items. The items of expenditure are enumerated in several groups, but the major division is by food and non-food consumption. It is interesting to note that for these two major groups, the approach followed is almost exactly opposite to that in Fiji in the example given above.

For food and related items daily records are kept, as in Fiji, over a 7-day period; however, the questionnaire provides a precoded list of nearly 170 items to be enumerated separately identified. In addition, information is obtained on the last purchase for a selected subset of important items.

By contrast, the non-food items are enumerated in a partly or fully open-ended manner (i.e. without providing precoded lists of individual items). Reference periods of 1, 3 or 12 months are used depending upon the item. The items are divided into 8 sub-groups, and for only a minority of the groups are partly precoded lists of individual items provided. For most of the subgroups, precoded lists are not included; rather, individual items are listed elsewhere in the questionnaire. These lists may assist the interviewer in probing and facilitate subsequent coding of the responses, but unlike the prompt cards used in the Fiji, these lists are not meant to be read out to the respondent.

Consequently, the interview is more "structured" (in the sense explained in Section 3.2) for food and related items, but less "structured" for other items of expenditure. This choice may reflect the greater significance of food consumption items compared to other items in predominantly rural Thailand.

Illustration 3.5: Household Consumer Expenditure Surveys in India

The Indian National Sample Survey (NSS) includes periodic rounds of consumer expenditure surveys. The most recent of such surveys were in 1973-74, 1977-78 and 1983, corresponding to rounds 28, 32 and 38 respectively of the NSS. The following example illustrates how in a continuing survey programme, cumulative experience can be used to improve the content of the questionnaire gradually, and make more and more questions precoded and structured. Consider, for example, a major section of the schedule dealing with "cash purchases and consumption out of home-grown stock of food, tobacco, intoxicants, fuel and light during past 30 days". In the earlier rounds, the above-mentioned group was subdivided into as many as 19 subgroups for separate enumeration. However, within subgroups, the scedule did not specify detailed lists of individual items (with the exception of groups dealing with grains and grain products). On the basis of accumulated experience, the 38th round introduced precoded lists of items in each subgroup and substantially expanded where such lists existed in earlier rounds. The same was done for several other major groups such as footwear and clothing. For groups where it was not considered desirable or necessary to provide precoded lists for item-by-item questioning, such lists were nevertheless included elsewhere in the schedule for reference by the interviewer in probing and for subsequent coding (in the field itself) of these items.

We may also note another important addition introduced in the 38th round to ensure a more complete enumeration of household consumption. This concerned the inclusion of explicit questions on social or religious ceremonies performed by the household and number of meals served by the household in these ceremonies during the reference period (30 days). These activities are an important occasion for consumer expenditure in the Indian cultural setting, and may have been under-enumerated in previous rounds due to the absence of explicit questioning.

3.3.3 Substantive and practical considerations limiting the detail

Substantive data requirements of course are the primary consideration determining the degree of detail in which a particular topic is covered in the questionnaire. However, these requirements often have to be modified in the light of practical constraints and what is feasible. Sometimes it may be desirable to collect some information in detail, but short, approximate methods may be used instead because of the practical limitation on length and complexity of the interview. Practical considerations may act in the other direction as well: sometimes reasonable completeness and quality of the information can be ensured only by collecting it in greater detail than is required for final analysis and use.

In addition to the household consumption surveys discussed above, surveys of household income also illustrate these points well. Sources of household income can be varied, and their enumeration in ideal circumstances would require very elaborate and complex questioning. However, in practice, limits have to be imposed depending upon the specific objectives of the survey, structure of the economy, conditions under which the survey is conducted, as well as past experience and preferences of the survey designers. As an illustration, let us contrast again the questionnaires from Fiji and Thailand referred to earlier (see Illustration 3.3 and 3.4). On income, the Fiji questionnaire includes a short sequence of only four questions as shown in Illustration 3.6 below.

Illustration 3.6: Sequence of questions on income in 1983 Fiji Survey

- Whether or not any member of the household was engaged in agriculture, forestry or handicraft during 1982.

- Total annual income from each of the following sources: sugar cane, other crops, livestock and livestock product, fishing, forestry and handicrafts. (There is no further breakdown within these categories, but as an aide memoire to the respondents, the interviewer is instructed to read out a list of individual items as examples.)

- Total expenses on labour, materials, transport, etc.

- Total amount of taxes paid on income derived from any source.

By contrast, the Thai questionnaire enumerates information on economic activity and income through a much longer sequence of questions:

> Information is obtained on detailed labour force characteristics (primary and secondary occupation, industry, hours worked, etc.), on earnings from employment, pensions, royalties, interest, dividends, grants etc. received by individual members of the household. For each self-employed person operating a non-agricultural enterprise, information is obtained on nature of activity, gross receipts and net earnings during past 12 months. Information is particularly detailed concerning operation of household agricultural enterprises. Apart from general characteristics of the enterprise, it obtains information on the amount and value produced and sold for each type of crop, livestock, livestock product, and production from hunting, fishing, forestry and gathering. For these, quantities and values of the product consumed by the household for private use and held in stock are also obtained. Also asked are receipts in cash and kind from renting out different types of animals and farm equipment. Costs are

obtained in detail, separately for a number of items such as land rent, hiring of labour, equipment and work animals, various types of agricultural inputs, transportation, interests and taxes paid etc. This level of detail is considered necessary because the survey objectives include not only assessment of income, but also details of household enterprise operations especially concerning agriculture. The latter, of course, also constitute the predominant source of household income.

Let us consider some further example from different fields on how the substantive and analytical requirements of the survey may determine the degree of detail of questioning on a given topic. The following illustration concerns obtaining information on foetal losses and abortions - induced or spontaneous - to women surveyed in the World Fertility Survey (WFS):

In the WFS 'Core Questionnaire' the primary objective of obtaining information on abortions was to discover whether any of these were in fact live-births but misreported as abortions. The primary objective of that survey was to obtain information on complete birth histories of women. The information on abortion, though useful in itself, was incidental to the primary objective. Hence, a very detailed questioning on abortions was not justified within the overall objectives of the survey, even though it was understood that more detailed probing may result in much better data on the incidence of foetal losses. Consequently, information on abortions was obtained in the 'Core Questionnaire' through a single question, followed by a single probe if the initial response was negative.

By contrast, many countries carrying out fertility survey under WFS were interested in obtaining more accurate information on the incidence of induced abortions. Consequently they applied a much longer sequence of questions on this topic, using the WFS 'Abortion Module'. This version first obtains (as in the 'core') a chronological list of all live-births to each woman in the sample. Then, to obtain as complete a record as possible of all other pregnancies which resulted in spontaneous or induced abortions, specific questions were asked about the

occurrence of such pregnancies in each birth interval reported by the woman: i.e. during the period before the first reported live-birth, between the first and second live-birth, between the second and third live-birth... up to the period following the last live-birth. This naturally leads to a fairly long sequence of questioning, justified in view of the substantive objectives of the survey which included obtaining reasonably accurate information on the incidence of abortion.

3.3.4 Acceptance of simplified procedures and grouped responses

Generally, the emphasis in this section has been that accurate information can be obtained only on the basis of detailed itemization and specification in the questionnaire of the complex concepts definitions and items of information sought. However, there are many situations in which practical conditions dictate the adoption of simplified procedures or short-cuts, even if it is understood that more rigorous and detailed procedures, if feasible, would meet the survey objectives more adequately. The following are some illustrations of the type of constraints which might make the adoption of simplified procedures unavoidable:

(1) Difficulties in physical measurement. For certain types of surveys, accurate information can be obtained only by introducing physical measurements of various types as a part of the interviewing operations. Examples of possibilities are surveys of agricultural production where the actual measurement of plot areas and cutting, drying and weighing of crops for estimating yields has been widely practised; in detailed food consumption surveys, quantities of food purchased, in store and consumed may be measured; medical examination may form a part of detailed health surveys; similarly, nutritional status surveys may require weighing and measuring heights, arm circumferences etc. of children. In other surveys, information may be obtained on the basis of interviewers' observation, e.g. on housing conditions, availability of household possessions, availability of amenities in the community etc.; or the interviewer may be required to verify the

information on the basis of documentary evidence, e.g. on ages, hospitalization, purchases made by the household and so on.

Such operations, however, can be taxing and time-consuming, and practical constraints may severely limit the extent to which they can be introduced. If so, the alternative can be either to confine these operations to a subsample, or seek more manageable approximate methods for the full sample.

(2) Limitations due to the use of 'lay' interviewers. In many circumstances, especially in developing countries, the diversity of data requirements can be met only by using a common pool of interviewers for a variety of surveys. The interviewers need to be able to handle a variety of subject matters, and may be specialists in none. In such circumstances, the use of 'lay' interviewers would preclude the introduction of highly specialized topics, e.g. going beyond the reported symptoms to determine causes of ill-health in health surveys.

(3) The inability or unwillingness of the respondents to provide very detailed information. Clearly there is no point in asking for details which are beyond the respondent's capacity to provide. Respondents may also be unwilling to provide certain detail either because it takes too much effort it or because it is embarrassing or annoying. It is for these reasons that the Cyprus Household Survey 1984 restricts the questioning on income of household members to the brief sequence shown in Illustration 3.7, even though a longer sequence may have been desirable to meet the survey objectives more adequately.

(4) Constraints imposed by requirements of other surveys and related operations. In the context of a continuing survey programme, in particular, no survey can be designed in isolation of the requirements of other surveys and related operations. The Ethiopia Rural Labour Force Survey 1981/82 provides an example (see Illustration 3.8). In view of the workload imposed by other components of the survey programme, the questioning was confined to only a few items for each household member (aged 10 and over), each item being enumerated through a single question.

Illustration 3.7: Cyprus Household Survey 1984: Questions on Household Income

1. First, net income and receipts of each member is obtained in income classes rather than as actual amounts.

2. For each employee information is obtained on gross salary, tax and other deductions from primary occupation and gross income and net income from secondary occupation if any. This last question is preceded by a reminder that all information, here or elsewhere, is being obtained only for statistical purposes.

3. For farmers, and for other self-employed persons only three questions are asked: number of paid employees; receipts after expenses; and further deduction in tax etc.

4. Income from other transfers is asked of the household as a whole, and only for a carefully selected short list of seven items.

The example from Cyprus (Illustration 3.7) demonstrates a number of points, some of which are discussed at length in other parts of this document:

- The use of broad pre-specified categories of income classes, rather than an attempt to record actual amounts. This is sometimes a useful method of dealing with sensitive information, though its use is more common in and better suited to self-enumeration questionnaires than to interview surveys.

- The use of a reminder to the respondent that the information sought is only for statistical purposes. This is done best immediately before asking a particularly sensitive question. In the above example this applies to the question on secondary occupation of persons employed elsewhere, which may or may not be entirely legal.

- The postponement of sensitive questions on income to the very end of the interview.

- The most relevant point in the present context is the attempt to cut down on details as much as possible, both because income questions are difficult, and because they are seen to be sensitive in the Cyprus context. The information sought is particularly brief concerning the employers and self-employed.

Illustration 3.8: Ethiopia Rural Labour Force Survey 1981-82: Labour Force Questions

Whether the person was engaged in productive work in most of the last 12 months

- If not: reasons (a short precoded list was provided)
- If yes: occupation, employment status and industry of the main occupation.

3.3.5 Detail for conceptual clarity

Often the concepts and definitions used in surveys are complex, and it is necessary to break down a single item of information required into a series of questions, not because more detailed information is required necessarily, but because that may be the only way to ensure that the respondent has a reasonable chance of understanding what is being asked for. Numerous illustrations of this may be given, but we will mention briefly only two examples.

In the Cyprus Multi-Round Demographic Survey (1980), one of the objectives was to measure current activity status of individuals. The concept of economic activity included any work done during the last week, for any duration even if for only one hour, irrespective of whether it was done for wages, salary, profit, in the family farm or business, for payment in cash, kind or without pay. Initially, in the pre-test, this was formulated in the form of a single rather longish question as follows:

> "Did (name of the person...) work for pay or profit, or in a family business or farm without pay, during the last week even for one hour?"

Experience showed that respondents frequently misunderstood the question. It often happens in such formulations that respondents misunderstand specifications in the question of what should also be included (e.g. work without pay, work even for one hour) as conditions which must be satisfied for some activity to be included in

responding to the question. Some respondents may even be confused whether the above question includes work on family enterprise with pay, or work done for more than one hour a week. Others may fail to appreciate the broad definition of 'work' implied above because of the length of the question asked. For these or similar reasons, the above question was eventually broken down into the following three questions in the Cyprus survey:

> Is ...(name) currently working?
>
> (If No) Did ... work last week, even if only for one hour?
>
> (If No) Please report even if (name) worked in a family farm or business without pay.

Here is another example. A common requirement in many surveys is to obtain complete lists of all household members. The interviewer may begin with a question such as "Please give me the names of persons who usually live in this household, starting with the head", and proceed to write the names of persons as reported. However, it has been frequently found that certain categories of persons such as young children, servants, other non-relatives living in the household, or temporary visitors (if they are to be included according to the coverage definition for the survey) etc. are easily missed. It may be useful to include in the questionnaire special probes to ensure a more complete coverage of these groups. Here is an example of the probes used from the WFS questionnaire.

- Are there any other persons such as small children, infants that we have not included in the list?
- In addition, are there any other persons that are not members of the family such as servants, friends, or lodgers who usually live here?
- Are there any visitors temporarily living in the house?

3.3.6 Summary of main points

This section has been concerned with a major issue of how detailed should be the questionnaire. It is clear that

between surveys, and between country practices even for the same type of surveys, there is a great deal of variation.

The primary determining factors must be the survey objectives, the subject matter content, and the conditions under which the survey is conducted. Some topics, such as household income and expenditure and economic activity, almost always require relatively lengthy questionnaires if information of acceptable quality is to be collected, given the diversity of conditions and circumstances of individual households. But as many illustrations given above show, a great deal of variation is possible even in these cases. Some aspects of the topic may need greater emphasis and a more detailed questionnaire because of their greater significance in the social reality to be investigated (e.g. agriculture in Thailand), or the specific survey objectives (e.g. induced abortions in the fertility surveys discussed earlier).

Practical constraints must also be given serious consideration in designing the questionnaire. For instance, in many developed countries extremely elaborate health surveys have been carried out using special arrangements and interviews; in many developing countries such surveys have had to be limited to the identification of only major or basic aspects of mortality, morbidity, nutritional status, general health conditions and amenities which can be investigated using lay, non-specialist interviewers and taking into account the limited capacity of the population to provide certain kinds of information. For similar reasons, many surveys in developing countries have to focus largely on factual items rather than on attitudes and opinions though by no means excluding the latter altogether.

Data processing requirement is another major consideration. Provision of precoding, summarization and manual data reduction before computer processing are important means of keeping the data processing workload to a minimum.

A balance is needed between the requirements of accuracy and data quality on the one hand and considerations of cost and feasibility on the other. This does not, however, imply that elaborate and detailed questioning always results in data of higher quality or that short abbreviated form of questioning is always more cost-effective. Asking for too much detail can often harm

the quality of the information, apart from practical problems of implementation. On the other hand, apparent brevity of a questionnaire can sometimes be very deceptive. By failing to adequately itemize and break down complex concepts into easily answerable sequences of questions, a so-called 'brief' questionnaire may result not only in data of poor quality but may also be no quicker or easier to administer. In many good questionnaires, detailed questioning is introduced not so much to obtain more information but rather to obtain the required information more easily, accurately and even more quickly. Of course, both the length of the interview and the physical size of the questionnaire are important, and are often correlated; but they must not be confused to be the same.

Our general recommendation would be that the substantive content and scope of the surveys should be delimited carefully taking into account the priority data requirements and all the practical conditions and constraints erring, if at all, on the conservative side. But once delimited, it is generally preferable to be liberal in detailed itemization of the required information so as to ensure its greater specificity, clarity and communicability to the respondent - even if it results in a longer questionnaire.

3.4 CHOICE OF THE REFERENCE PERIOD

In many surveys, information to be collected relates to some specified periods of time, such as week, month or year. The choice of appropriate reference period is an extremely important consideration in the formulation of questions as it affects many aspects of questionnaire design. The NHSCP study on non-sampling errors (UN 1982, pp 122-130) describes the concept of the reference period, factors involved in the choice of its length and form, and provides illustrations of how non-sampling errors due to recall lapse may depend upon the reference period chosen for questioning. For convenient reference some basic definitions are given in the inset below. (See illustration 3.9.)

Illustration 3.9: Description of some basic terms and types of reference periods

Surveys in which the information sought relates to some specified periods or dates in the past are called retrospective surveys. The specified period of time is called the reference period. The reference period may be the same for all respondents, i.e. fixed in terms of calendar dates e.g. from 1 January to 31 December of the year preceding the survey. Alternatively, it may refer to specified length of time preceding the day of interview, in which case it is called a moving reference period (depending upon when a particular interview is conducted), although its duration is constant.

Response errors in retrospective surveys may arise in a number of ways: (i) omissions i.e. failure to report some of the events (occasionally over-reporting may also occur); (ii) event displacement i.e. errors in locating the events correctly in time; and (iii) sampling variability determined by the amount of information collected i.e. the length of reference period times the frequency of occurrence of the events concerned. When event displacement results in erroneous moving of events into or out of the boundaries of the reference period, the resulting errors are sometimes called end effects. One way to control end effects is to use bounded reference period. This means choosing the reference period such that no end effects can occur at one or the other or both boundaries of the reference period. Using a moving reference period automatically ensures that no end effect occurs at the later boundary since it coincides with the time of the interview; by contrast fixed reference periods (in terms of calendar dates) can be unbounded at both ends. In follow-up and prospective surveys where the respondent is visited periodically at appropriate intervals and events occurring between successive visits are recorded from direct observation and questioning, the reference period becomes bounded at both ends.

Two concepts related to the reference period are: the survey period, i.e. the time interval during which the survey field-work is done; and the length of recall, i.e. the time elapsed between the date of a particular event and the date on which the respondent is asked to recall it. When a moving reference period is used, the maximum length

(Illustration 3.9 - cont'd)

of recall is the same as the reference period. It may exceed the reference period when the latter is fixed in terms of calendar dates.

Retrospective information may be obtained in a number of alternative forms in which case the length of recall becomes a more crucial concept. For example, sometimes it is more convenient to obtain retrospective information in the form of the date of (or duration since) occurrence of the most recent event of interest, e.g. birth, the last payment made, the last migration etc. More elaborate information may involve soliciting chronological histories, i.e. dating of each of a whole series of events proceeding backwards or forwards in time (see Section 3.4.1).

3.4.1 Types of retrospective questioning

The choice of reference and recall periods has to be based on logical considerations as well as on an evaluation of past experience as to how it affects the cost and quality of the information obtained. Firstly, what is the appropriate form of retrospective questioning for obtaining the required information most accurately? For some purposes, events or items may be most conveniently enumerated with reference to a period of fixed duration ('reference period'), as for example expenditure during the last week, month, quarter or year. For other purposes it may be more appropriate to obtain information as of date or duration since the last occurrence of the event. Generally speaking, the latter may be suitable when events are relatively rare, well remembered by the respondent, or occur with reasonably predictable frequency. For instance, it has been argued that information on recent fertility is obtained more accurately in the form of dating of the last birth to women in the household rather than asking for the number of births occurring in the household during a specified period such as the past year. The Cyprus Household Survey 1984 obtained information on several expenditures related to housing in the form of the last payment made (rather than payments made during a fixed period), making use of the regularity with which these payments are usually made, and at the same time facilitating cross-checking of the information obtained with records (bills paid etc.) which may be available with the household. In surveys on migration, there is debate as

to whether it is better to ask for the date of (or duration since) the last move, or ask for the location of the household at a fixed time in the past. In some surveys information may be best obtained in the form of chronological histories, for example birth histories in fertility surveys or migration and employment histories in detailed surveys concerned with causes and consequences of migration.

3.4.2 Length of reference period

For items to be enumerated using a fixed reference period, the crucial question is what is the appropriate length of the period. A longer reference period captures more events so that the sampling variability is correspondingly reduced. However, errors of omission generally tend to be increased, while errors due to event misplacement ('end effects') vary with the length of the reference period in a more complex manner. They may be high for very short or very long intervals, and minimum at some intermediate value. Generally, for less frequent or more salient events, longer reference periods are appropriate; for frequent and less salient items shorter reference periods are used. A number of examples have already been given from household income and expenditure surveys in the previous section. In some instances there are widely accepted 'standard' reference periods which should be followed for comparability; for instance, reference period of one week for current labour force status, and one year for usual status. Reference periods which correspond in some way to natural groupings of events in the respondent's mind tend to suffer less from 'end effects': for instance salaried people may be able to report incomes and expenditures more easily for calendar months, and farmers more easily for agricultural seasons.

Beyond these general observations, it must be emphasized that the choice of the appropriate reference periods is an empirical question. It requires testing and evaluation, and systematic collection and analysis of experience. Even after a fairly long experience, no "perfect" solution may emerge, implying the need for continued experimentation. It is in this light that we can appreciate, for instance, the introduction in 32nd and 38th rounds of Indian National Sample Survey (NSS) of two reference periods simultaneously (past 30 days and past 365

days)for a number of consumption items such as clothing, footware, medical and educational expenses, and other goods and services. (See also Illustration 3.5.) Another improvement recently made in the NSS was a clearer specification of the reference period: prior to the 38th round, reference periods were specified as "last month" and "last year" which could be confused with last calendar month or calendar year; in subsequent rounds, they have been specified as last "30 days" and "365 days" respectively.

Clear and definitive specification of the reference period both to the interviewer and the respondent is essential. In a recent large-scale survey in a developing country, it was considered that neither the "last year" (12 months) nor the "last agricultural year" was uniformly better than the other as the reference period. It was left to the interviewer to decide between the two case by case. Such practice is not recommended as it can easily result in confusion and an uncontrolled situation. A more appropriate solution would have been either to select, even if somewhat arbitrarily, one of the two for application throughout, or to use both the reference periods simultaneously.

When different reference periods are required for different items in the same questionnaire, it is desirable to group together questions using the same reference period. Frequent changes in reference period from question to question should be avoided. Here is a negative example (Illustration 3.10) from a recent survey where over ten changes in the reference period were encountered in a short series of question.

Illustration 3.10: A Negative Example of Frequent Changes in the Reference Period

Item or group of items	Reference period used
Bills paid by the household	Most recent payment made
Other payments, e.g. taxes, premiums	Last 12 months
Educational expenses	Last 12 months
Health care expenses	Last 3 months
Vacation overseas	Last 12 months
Vacation within the country	Last 3 months
Expenses on housing	Repeated alteration between one year, one month and date of last payment made.

3.5 QUESTIONNAIRE APPROACH VERSUS SCHEDULE APPROACH

In the formulation of individual questions an important consideration is how fully the questions should be worded and the extent to which the interviewer should be instructed to follow the wording precisely during the interview. This issue has to be decided quite early in the process of questionnaire development because it determines the physical size (hence production cost and required printing facilities) of the questionnaire, translation requirements in multilingual situations, the appropriate form of training and mode of interviewing, and the quality of the data obtained.

This section discusses the pros and cons of the two broad approaches to question formulation: the so-called 'questionnaire approach' and the 'schedule approach'. The objective is also to clarify some common misunderstandings regarding what each approach entails.

In a rigidly structured questionnaire, questions are printed in full, in the form in which the interviewer is instructed to ask the respondent. Generally this form is used when it is considered vital that the answers should be obtained to precise questions, not to approximations of these (Casley and Lury, 1981, p.103). In the schedule approach, questions are listed in an abbreviated form as items to be investigated, which guide the interviewer in asking the questions in a form which he/she considers most appropriate in the given circumstances. From the interviewing point of view, the verbatim questionnaire, if properly implemented, facilitates a more structured, predetermined and precise approach; the abbreviated schedule allows greater flexibility and variability among interviewers as to how the interview is conducted. However, it is useful to remember that the degree of completeness of wording is just one of the dimensions determining the structuring and control of the interview. Several other dimensions are discussed in other sections of this Chapter.

3.5.1 Some reasons for using verbatim questions

Generally, it may be considered desirable to provide the interviewer with as exact a wording as possible for each question so as to ensure a uniform application of the

interviewing procedures. Clearly, some questions are so sensitive to the manner in which they are worded that it is necessary to insist that they be put exactly in a specified way, even when the interviewers are highly skilled and experienced. Consider for example the question (World Fertility Survey, 1975):

> If you could choose exactly the number of children to have in your whole life, how many children would that be?

As the interviewers' instructions explain (WFS, 1975, p.67), the above question was asked to women in the child-bearing ages, to enumerate the total number of children each woman would ideally like to have herself 'if she could choose exactly', i.e. irrespective of whether she could accomplish it, and irrespective of the number of children she already had. The interviewers were instructed that, if the women enquired what was meant by choosing exactly, "You (the interviewer) simply say (that it means) what she likes it to mean. If she wishes, she can take it to mean if she were younger and just married, or her husband did not have any trouble with his job which he may be having, or she or her husband's health were better, etc.; she can take it to mean whatever she likes, but you must not suggest anything" (emphasis in the original). Clearly the survey organizers felt that to obtain even approximately comparable results, the question must be worded and delivered exactly in the manner specified. A simple form such as "Ideal family size (specify)" would not suffice.

Another example from the same questionnaire is the following, asked of women who were pregnant at the time of the survey:

> "How many more children do you want to have, in addition to the one you are expecting?"

Here again, the emphasis was on the word 'want', which may be quite different from the number the woman may 'expect' to have given her specific circumstances. And if the interviewer failed to communicate the second half of the question, there would be confusion as to whether or not the woman should count the child she is currently pregnant with in her response to the total number wanted.

The above examples are 'attitudinal' questions, i.e. questions aimed at assessing attitudes, desires, opinions etc. of respondents. Such questions tend to be inherently sensitive to the manner and form in which they are asked. Detailed specification of how they should be asked is an attempt to control some of the transient factors during the interview which may affect the responses obtained. Similar considerations apply to questions which have the danger of being perceived by the respondent as irritating, threatening or embarrassing. It may be preferable to provide the interviewers with carefully arrived at exact wordings for such sensitive questions, rather than to depend upon their skill to improvise appropriate forms of questioning and risk the respondent's annoyance, embarrassment or misunderstanding.

It is important to note that attitudinal or sensitive questions are not the only types of questions where it may be necessary or preferable to use the questionnaire approach. Even for the so-called 'factual' questions or questions relating to behaviour or the respondent's assessment of the situation, precise wording can be important in communicating to the respondent the context, reference period, the exact information being sought, and what is to be included and excluded in the response. For example, while the household consumer expenditure survey of the Indian National Sample Survey utilizes the 'schedule' approach almost exclusively, the following question is nevertheless included verbatim in its 38th round:

> "Do all members of the household get two square meals a day?"

As another example, in the Botswana Evaluation Survey of Primary Health Care (1983) many of the simple questions are in the schedule (abbreviated) form, but the following two are among the verbatim questions:

> "During the past 14 days did (name of the person) have any injuries such as skin or flesh torn, burns, fractures, etc.?"

The objective of putting this question in a verbatim form is to specify what is meant by the technical concept of "injury". Another illustration is provided by the following question (WFS, 1975):

> "As you know, many women work - I mean aside from doing their own housework. Some take up jobs for which they are paid in cash or in kind. Others sell things or have small business, or work on the family farm. Are you doing any such work at the present time?"

This is a rather long "mouthful" question. However, the objective of giving several examples is to communicate to the respondent that "work" as defined in the survey is not just employment for cash, but also includes unpaid work for the family enterprise, work paid for in kind, and regular as well as casual employment. In many surveys, serious under-enumeration of employment and labour force participation, particularly of women engaged without pay in the family enterprise, is common. The danger of such under-reporting is likely to be greatly increased if the question was left as a simple item such as "current work status (specify)_____", or "current activity status ____". (Note, however, that care is required in using examples in question-wording, see next section.)

Verbatim questions can also help in smooth transition from one set of questions to another, and define the context for the new set. For example, in an employment survey, after asking a series of questions about the current work of a respondent, questions about previous work experience may be preceded by a description such as the following:

> "Now I would like to ask some questions about the kind of work you did before you took up your present job. First, please think of the time immediately before you took up the present job (pause). Was there any period you were without work before you joined the present job?"

Here is another example. Following detailed questioning on birth-history of a woman, the WFS questionnaire introduced the more 'sensitive' topic of contraception as follows:

> "Now I want to talk about a somewhat different topic. As you may know, there are various ways that a couple can delay the next pregnancy or avoid pregnancy. Do you know of, or have you heard of, any of these ways or methods?"

Further examples of long "introductory" questions are given in Section 3.6.2. In many situations, obtaining relevant and usable information requires that the respondent be given guidance on the form in which to provide the information and the response categories to choose from. The quality of the responses obtained may depend critically on how well this is done during questioning. This issue is discussed at length in Section 3.7. While verbatim questioning is not an indispensible part of ensuring structured responses, it certainly facilitates the latter in many circumstances.

3.5.2 Limitations of the verbatim approach

Notwithstanding the advantages of using the verbatim approach in certain circumstances and for certain types of questions, it is not possible, even desirable or necessary, always to specify exact and detailed wording of each question on the questionnaire. For instance:

- for relatively straightforward, simple questions, there may be little to gain by writing out in full the exact wording;

- in complex situations, where interviewing has to be carried out under diverse of circumstances, especially where many languages and dialects are involved, there may be little point in providing precise wordings in the questionnaire; and even if provided, it may be impossible for the interviewer to follow the exact wording. At a minimum the use of a verbatim questionnaire would require the preparation of different versions for different languages in which the survey is to be conducted (see Section 3.8);

- the bulkiness and cost of production of verbatim questionnaires may be a serious limitation if a great deal of information is to be collected and/or the available printing facilities are limited;

- sometimes, verbatim questioning can result in complex questionnaire form, with difficulties for the interviewer in following the flow of the interview, in seeing the relationship between various items of information and checking the data for internal consistency during the interview.

In many large-scale but relatively simple surveys, there is little to be gained by putting the questions in a fully worded form. Rather, the use of simple column and row headings can often make the physical appearance of the questionnaire compact, manageable and practical. The best example of this is the commonly used one-sheet questionnaire for censuses and surveys to enumerate basic demographic and background characteristics of the population. For example, the rows may list individual members of the household and columns record their characteristics such as age, sex, relationship to the head, marital status, level of education, occupation etc.. Clearly, there is little to be gained by titling a column as, say, "What is your sex?" rather than simply as "Sex". (Note, however, that tabular presentation, though more convenient and more commonly encountered in schedules, is by no means precluded in questionnaires. See Section 3.5.4.)

In many circumstances, the complexity of the subject matter and diversity of interview conditions make it unreasonable to expect that interviewers can strictly adhere to prespecified wording of each question. Rather, it may be more meaningful to focus on training the interviewers to deal flexibly with diverse circumstances and use their discretion in choosing the appropriate form of wording and probing to obtain the required information. Variation in languages and dialects spoken by respondents is an important limiting factor in the use of verbatim questionnaires. Nonetheless serious attention should be given during interviewer training and in the instruction manuals, on how the questions should be worded, although it may not be necessary, feasible or desirable to specify these wordings on the questionnaire itself.

Spelling out the wording in full may result in excessively long questionnaires and the interviewer may find it difficult to compare various items on the spot for internal consistency.

Illustration 3.11 is a particularly striking example of the misuse of the questionnaire approach, actually used in a recent survey in a developing country. In an attempt to obtain the work history a sequence of 30 questions was used, sprawling over three pages.

Before returning to the main theme of this section, we may note that there are many other deficiencies in the the questionnaire shown in Illustration 3.11.

Illustration 3.11: Example of Misuse of the Questionnaire Approach

1. What is your main work - either for wages, payment in kind, self-employed?

2. How long have you done this work?_____(year started).

3. How are you paid for this work?_____monthly/ fortnightly/weekly_____daily _____self-employed_____ Other (described)_____

4. What form of payment do you receive?_____ cash_____partly cash_____whole in kind_____other (describe) _____.

5. Where do you do this work? _____. (for small village, add location)

6. Is this at home or away?_____Home_____Away

The above is followed by an identical sequence of 6 questions about secondary occupation, beginning with:

7. Do you do any other work, either for wages, payment in kind, or self-employed?_____yes (continue)_____No (skip to Q.13)

Describe_____

This is followed by identical sequences for up to three previous employments, the starting questions being:

13. Have you ever done any work before this - either for wages, or payment in kind, or as self-employed?

19. And before this, did you do any other work?

25. And before this, did you do any other work?

The important point to note is that by putting the questions in a long series as in this example, it is difficult for the interviewer to keep an overview of the relationships between responses to different sets of questions and make sure that the dates or durations overlap, and that the pattern of answers make sense. Likewise, the respondent may miss the context and the specific job being referred to in the long series of "And before this ....." questions. A concise tabular form would have reduced these problems.

The 'Fertility Regulation Module' of the World Fertility Survey extends over 14 to 17 pages, in six different colours, and employs complicated "skip" patterns and repeated series of practically identical questions; yet substantively it covers only a handful of questions for any one respondent. Without noticeably affecting the content or form of questioning, the whole sequence was greatly reduced in length and considerably simplified from the data processing viewpoint in the adaptation of the questionnaire for the Turkish Fertility Survey (1980).

3.5.3 Survey conditions which favour the schedule approach

We have noted that, while for certain types of questions the specification and adherence to exact wording is important, there are also possible drawbacks in following a strictly verbatim approach. There are indeed several situations where the use of exact wording is impractical. Insistence on precise wording can sometimes even be detrimental to the quality of the responses obtained.

The schedule form does not specify the wording to be used, but gives instead a summary description of the information to be obtained. An example is given in Illustration 3.12 from an Indian expenditure survey. Often the summary descriptions of the information look like column headings in a tabulation, e.g. "education-level" instead of "What is the highest level of schooling you have completed".

Illustration 3.12: Example of the 'Schedule Approach'

CENTRAL* / STATE

ORIGINAL* / DUPLICATE

GOVERNMENT OF INDIA NATIONAL SAMPLE SURVEY : 1971—72

Scheduled 1.0 : Household Consumer Expenditure

RURAL* / URBAN

Twentyninth Round

[1] Identification of sample household

1. serial number		12. village	
2. zone-state-region		13. hamlet(s)	
3. stratum		14. block identity ward IV. unit block/charge circle-block	
4. sub-sample		15. house number	
5. sample village/block*		16. name of head	
6. substratum/h. h. class*			
7. sample household		17. name of informant	
8. sub-round			
9. state		18. informant's relation to head	
10. district		19. E (no. of extra copies)	
11. tehsil/town*			

[2] Household characteristics

1. *household size* (*i*) adult male	
(*ii*) adult female	
(*iii*) child	
(*iv*) total	
2. household land possessed (0.00 acres)	
3. household industry occupation code	
4. household monthly per capita expenditure (Rs. 0.00)	
5. household group code	
6. household religion code	

[3] particulars of field work

officer	name	roll no.	date(s) receipt	date(s) operation	date(s) despatch	signature	addl. sch./ sheets
1. investigator							
2. asstt. supdt.							

[4] household members and their demographic particulars

sri. no.	relation to head	sex male-1, female-2	age last birth day	marital status	general education	sri. no.	relation to head	sex (male-1, female-2)	age last birth day	marital status	general educa-tion
(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	6)

*delete whichever is inapplicable.

15—17 C.S.O.(ND)/76

The diversity of languages and dialects used by the respondents may be a major reason for using the schedule approach. Preparation of standard translations, which are comprehensible and acceptable to respondents may not be possible or may be too expensive and time-consuming. In such situations it often becomes necessary to recruit interviewers with a knowledge of local dialects and conditions, and depend upon them for verbal translation of the questions in the field. (See, however, Section 3.8 for a fuller discussion.)

Respondents may become suspicious or be ill-at-ease if interviews are conducted using standardized, formal wordings, especially if the interviewer is a stranger to the local area. The interview is likely to be more successful if the interviewer is allowed to improvise the wording of questions. Often interviews may become 'group responses', or at least take place unavoidably in the presence of other family members or neighbours. Respondent's prestige, and concern for socially desirable responses may become exaggerated. Through several questions, and informal discussion of a conversational nature, with the respondent as well as with the bystanders, the interviewer can elicit more reliable information. This may apply for example to a question on the number of cattle owned by a small farmer, where this is a measure of social status. A great many other examples could be given of social, religious, or traditional customs or beliefs where abrupt direct questions would lead to biased answers, outright evasion or lies, or even hostility. In these conditions, reliance must be placed on the skill of interviewers to develop rapport with respondents. No questionnaire could ever give the exact wording an interviewer could use, or all the questions and comments needed to obtain reliable and complete information in particular circumstances.

Sometimes, interviewers may not feel comfortable reading out a text developed by others, one that does not correspond to their own pattern of speech, or allows for their own pauses and intonations. The effect would be to give the impression to the respondent of a 'wooden', stiff-sounding recital by the interviewer who is not at ease. This may be particularly important in relation to the introductory statement to the respondent on the purpose of the survey and what is expected of the respondent, and asking the introductory questions which set the context for the interview.

Generally, schedule type questions lend themselves to factual or objective information. However, in many situations respondents cannot readily give factual answers and require careful probing and assistance from the interviewer. It is known, for example, that mothers tend to provide undercounts of live children they have borne especially children who died shortly after birth. In many societies a substantial proportion of respondents are not certain how old they are, and at best can provide rounded-off answers, favouring ages ending in 0 and 5. In all these cases, exact questions would probably tend to yield more biased responses than those obtained through careful probing at the time of interview.

An important requirement for the schedule approach to work satisfactorily is the availability of experienced interviewers who have been trained to ask the questions in the same or comparable ways, having used the instrument frequently either in a continuous survey or in other surveys with identical or similar questions. While the standardized questionnaire approach emphasizes the need for interviewers to use the wording as given, without changing it, the schedule approach emphasizes the need for interviewers understanding the concept each question conveys, so that they choose the words in such a way as to minimize response bias.

A major advantage of the schedule approach is that it cuts down the length of the questionnaire. This is useful where limitations on availability of paper or printer facilities are significant, or where interviewers or field supervisors are required to transport questionnaires over long distances and under poor conditions, or to handle them over long periods of time. The greater economy of the schedule approach in terms of the size of the questionnaire, and possibly also in terms of data editing, entry and processing convenience - is often a critical factor in favouring this approach. For example, the designers of the Botswana Evaluation of Primary Health Care Survey (1983) proceeded with the explicit requirement that the questionnaire should be a single double-sized sheet printed on both sides - in view of the higher costs and problems of handling and processing a longer questionnaire.

To summarize, the more concise schedule approach is preferable in circumstances where:

- the complexity and variability of the interviewing conditions require flexibility in the manner in which the information is obtained;

- the complexity of the subject matter and the respondents' limited ability to provide the information requires frequent recourse to in-depth probing and asking questions in alternative forms to extract the required information;

- the type of information sought is largely quantitative and not sensitive to the exact words and phrases used;

- no complicated 'skip patterns' are involved, and the questions can be fitted into a concise form for convenient data editing, coding and entry;

- it is important to keep the physical size of the survey instrument small;

- and, above all, the available interviewing staff are experienced and well-trained and can be relied upon to word the questions as appropriate in each situation encountered.

3.5.4 The choice of style

In considering the choice of style of question formulation, it is useful to clarify some rather common misconceptions about the relative advantages and disadvantages of the questionnaire versus the schedule approach.

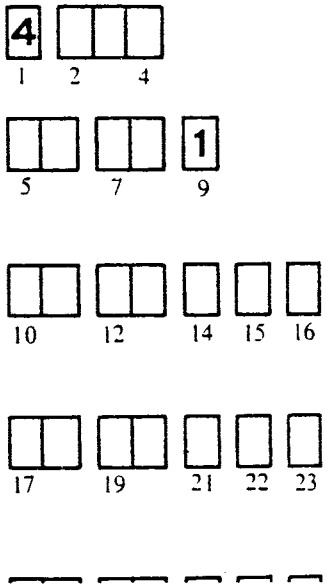
Tabular presentation

Sometimes the schedule approach is taken to be synonymous with tabular presentation of the questions, and it is assumed that the questionnaire approach precludes the use of tabular presentation. This, of course, is not always the case. Verbatim questions can be put into a compact tabular form as Illustration 3.13 shows (WFS, 1975).

Illustration 3.13: Example of Tabular Form in a Verbatim Questionnaire

BIRTH HISTORY

	212. In what month and year did your (first,second..) birth occur? *IF D.K., ASK HOW MANY YEARS AGO.*	213. Was it a boy or a girl?	214. Is this child still living? IF YES: What is (his/her) name?	215. IF DEAD: For how long did the child live?
01	MTH_____ YR _____ YRS AGO_____	BOY [1] GIRL [2]	YES [1] NAME_____ NO [2] →	MOS _____ YRS _____
02	MTH_____ YR _____ YRS AGO_____	BOY [1] GIRL [2]	YES [1] NAME_____ NO [2] →	MOS_____ YRS _____
03	MTH_____	__	YES [1]	



It is true that usually the shorter, abbreviated questions in a schedule are more easily put in the tabular form than the longer, verbatim questions. Nevertheless, there are examples where the design of verbatim questionnaires has suffered due to the failure to put long series of repeated subsets of questions into a tabular form. The long series of 30 questions on work history referred to in Section 3.5.2 (Illustration 3.11) provides a good (or rather a bad) example of this.

Skip instructions

Another misconception is the claim that verbatim questionnaires always result in complicated skip patterns. Skip instructions are directions to the interviewer at various places in the questionnaire to go on to a question other than the immediately following one (see Section 4.5). It is true that often verbatim questionnaires have more skip instructions than compact schedules. One reason for this is that in a standardized questionnaire different categories of respondents may need to be channelled to different parts of the questionnaire to ensure that questions, even if identical in content, are worded appropriately to reflect the particular circumstances of each category of respondents. Naturally, such skip instructions are avoided when the requirements of exact wording are relaxed, as in the schedule approach.

Apart from the above, however, it is not fair to say that the questionnaire approach results in complicated skips or that the schedule approach avoids them. Firstly, most questionnaires can be designed to ensure that the skip pattern encountered is not complicated, difficult to handle by the interviewers, or prone to interview errors. Basically, complicated skip patterns result from poor questionnaire design. Issues related to the flow of the interview and skip instructions are discussed further in Chapter 4. Here it may be noted only that experience has proved that in many well designed standard questionnaires, the presence of skip instructions causes no particular difficulty to the interviewer.

Secondly, sometimes the schedule type of approach only appears to have simpler skip patterns, merely as a result of ignoring the problem. The fact that some questions (column headings) are applicable to only certain categories of respondents is not specified on the schedule on the assumption that instructions can be taken care of in the interviewers' training and instruction manuals.

Thirdly, for a given sequence of questioning, the more liberally spaced questionnaire may actually permit a clearer and easy-to-use specification of the skip instructions than a schedule designed to conserve space. This is particularly likely if the schedule is in a tabular form.

Finally, it may also be noted that questionnaire approach may be preferred to the simpler schedule approach because of the need to accommodate a more elaborate skip patterns dictated by the subject-matter of the survey. In such situations, the relative complexity of the questionnaire is a consequence of the given subject-matter requirements rather than the choice of the particular style of question formulation.

Communication to the respondent

A clear distinction has to be made between what is actually communicated to the respondent, and what may be simply put in the questionnaire primarily as a guide to the interviewer.

In the following question quoted from a recent survey, for instance, it is not clear whether the phrase in parenthesis is to be read out to the respondent or not:

> "Have you done any gainful work (for pay, profit or family gain) during the last 12 months?"

Here is another example where clarity is needed:

> What was the nature of your principal activity?
>
> (a) Industry (see code list). Where industry code is not clear, give name and address of your employer, and if self-employed, describe the nature of your work.
>
> (b) Employment status
> wage earner
> salary earner
> etc.

In the following question there is apparently a confusion between qualifications in the designer's mind and the manner of communicating them to the respondent who is not supposed to see the questionnaire:

"Has any member of your household made any payments during the past year for any kind of insurance (other than those already listed under Q17 - Q19) like health or accidents or personal belongings (not included in household goods under Q18)?"

Note also that verbatim questions may vary in the degree to which their wording is "complete" in terms of communicating its meaning and intentions to the respondent. For certain types of questions (e.g. relatively complex, sensitive, attitudinal, hypothetical questions), it may be necessary not only to specify the exact wording of the question, but also to include as a part of it the range or the type of responses expected: only then can the responses obtained be considered comparable across the survey. Compare for example the questions:

1. In what kind of area did you live mostly when you were growing up say to the age of 12?

2. (Same as above, but continued by) was it a city, a town, or a village?

Both are verbatim questions but the second is more structured and more completely worded. It indicates to the respondent the type of response categories expected. The first question may result in all sorts of responses such as a "rich area", "poor area", "mountains", "valley" etc. - which not only lack comparability but also, and more seriously, may be irrelevant to the objective of the survey (for instance if the objective in the above question was to obtain an urban/rural classification of the respondent's place of residence).

Here is the pattern of responses actually obtained to the question:

Question

"How many children would you say are there in a large household?"

Pattern of responses

- 5, 6 or 7

- how can I know?

- lots
- many
- maybe 10, maybe 20
- as many as you want
- don't know
- you find 6, 7, 8 or 9 in a large household
- whatever we can afford
- how can I know other people's houses?
- whatever God gives
- if there are many women then there are many children
- I cannot imagine
- if I see the household, I'll know

If the objectives of the survey concerned were better served by maximizing the likelihood of obtaining numerical responses, a more complete wording may have been to continue the above question by something like:

> ".....Would you say less than 5, 5 to 8, more than 8, or just how many?"

3.5.5 Conclusion

In choosing the appropriate style of question formulation, one has to compare the advantage of greater control, standardization and clarity of the verbatim questionnaire approach with that of brevity, manageability and the greater flexibility provided by the schedule approach. Essentially, the question is how much guidance should be given to the interviewer and to the respondent through the questionnaire during the course of the interview. The appropriate solution depends upon the circumstances of the survey, as well as on the type of questions being asked. It is clear that for certain types of surveys

involving a long list of simple items of inquiry the advantages of the schedule approach (simplicity, brevity, clarity) outweigh its possible limitations, whereas for certain other types of surveys involving the investigation of facts, attitudes, behaviours and opinions, detailed verbatim questionnaires are preferred.

More often, however, the choice is less clear-cut. In practice, the issue is more of degree to which the survey instrument is designed to assist, guide and control the interviewer, respondent and the office worker, rather than of choosing between two sharply distinct approaches. In this connection, it is necessary to distinguish clearly between the following related objectives:

(1) To communicate to the respondent as precisely as possible the exact information being sought, including its context, reference period, and what is to be included and excluded. This must be the primary objective.

(2) To guide the respondent by indicating the type of responses expected, in so far as that can be done without biasing his actual responses.

(3) To guide the interviewer on how to ask the question, solicit the response and record it on the questionnaire.

(4) To facilitate the work of editing and coding of the data obtained.

This section has considered some of the factors involved in the choice of the appropriate question formulation and style to meet these objectives. It should be clear from the above discussion that it is not so much the form that matters, but its implications in terms of the guidance and control which the survey instrument and accompanying training provide over the interviewing operation.

Writing questions in the abbreviated form does not preclude detailed questioning. It only provides some flexibility in questioning. It is usual to adopt the schedule approach more for convenience and economy than for permitting greater variability among interviewers. Similarly, the objective of spelling out questions in a

standardized way is often primarily to instruct the interviewer on how the questions may be worded appropriately in most circumstances (and verbally translated, if applicable), rather than to take a rigid stand on exactly how the questions must be worded in all circumstances. In fact, a danger in using the simplified schedule approach is that sometimes the survey designers never clearly work out how questions might actually be put since they do not have to spell that out in designing the survey instrument.

3.6 MORE ON WORDING OF QUESTIONS

The wording of questions is perhaps the most widely researched aspect of questionnaire design and development, especially in market and public opinion oriented research and in developed countries in particular.

The basic principle in question formulation is to ensure that each item included is specified in such a way as to ensure that its context, scope, reference periods, units of measurement etc. are clearly understood by both the interviewer and the respondent. For example, a question such as "what is your income?", unless its context has been previously defined, is quite inadequate. Does "your" refer to the respondent alone or to the whole household? What is the time period - the last week, last month, last 12 months, or what? What is to be included in income - salaries and wages, tips, overtime pay, contributions, transfers, income from other sources? Is it gross or net income? Does it include income in kind? And so on.

Similarly, the term "household" can lend itself to a variety of interpretations, depending on the culture, social arrangements, housing available, and so on. Specific instructions are usually necessary. In a 1955 Nigerian expenditure survey, for example, interviewers and respondents were advised to include certain categories of tenants as household members. A convenient and simple explanation was found to explain when to include a tenant: interviewers were advised that "tenants are not house-members unless they eat from the same pot as the household".

Chevry (1962, p.121) gives the following illustrations: A housing survey in 1958 among miners and steelworkers in several European countries asked the question "How many rooms (including the kitchen) do you occupy?" Some respondents, though with families, misunderstood the question to mean "you personally", and answered "one", even though the household occupied several rooms. The questionnaire for the 1946 Census of France included two questions on literacy: "Can you read?" and "Can you write?". An unusually high proportion of negative answers were received in Alsace, a region of France that is largely German speaking. A follow-up survey established that many respondents had misunderstood the question as referring to reading and writing French, rather than any language as was intended.

The 1980-1981 Literacy Survey of Kenya adopted a more detailed formulation for this type of question. It clearly distinguishes between different languages and defines literacy through the following sequence of nine questions:

Is the respondent:

- able to speak and understand English?
- able to read a newspaper in English?
- able to write a letter in English?

followed by identical sequences for Swahili and the respondent's mother tongue.

Though very clear, the above sequence has one problem: the first question above is a 'double-barrelled' question as described later in Section 3.6.3, and may have resulted in some confusion for respondents who are able to understand English (or other languages) but are not able to speak in it: to answer "yes" or "no".

It is important to note that clarity of specification of content, scope, reference period, units of measurement, etc. of each item of information sought is essential, whether a verbatim questionnaire or an abbreviated schedule for questioning is used. Where questions are worded completely, a number of additional aspects must be considered. Some of these considerations and pitfalls to be avoided are discussed below.

3.6.1 Avoiding technical, complex, formal and unfamiliar words

Perhaps the most important principle in choosing question wording is to ensure that words chosen are those with which the majority of the survey respondents are familiar. Questions should be asked in a manner that will be understood by the ordinary respondents and convey to them the meaning it is intended to convey.

The language of a question should be simple. Words used should be familiar to respondents yet appropriate for the survey subject matter. It is important to choose words carefully, avoiding vagueness and ambiguity. Where it is necessary to use technical or legal terms, or definitions, explanations should be provided. Also, the use of vague and easily misunderstood expressions should be avoided. Belson (1981), for example, gives a number of illustrations of widespread misunderstanding of everyday words such as "usually", "have", "weekday", "children", "generally", "regularly".

It is useful to give an explanation or definition prior to utilizing a term that has a technical sense, especially where the term is a common one with a variety of non-technical or imprecise meanings. It has to be ensured that the term is understood by everybody in the same technical sense. Without this precaution the respondent may frame his answer incorrectly using his own definition rather than the one intended in the survey. Consider for example the following forms of the same question:

- Where were you living when Old City and New City amalgamated?
- Where were you living when Old City and New City amalgamated, that is, joined together to become one city?
- Where were you living when Old City and New City joined together to become one city?

In the first case the respondent who does not know the meaning of "amalgamated" could be confused. The second version is better as it explains the word. The third version is a further improvement as it altogether avoids the word.

It is all too easy to think that one can produce a perfectly worded questionnaire sitting in the office. In fact, it is very difficult to imagine all the possible interpretations and the variety of answers respondents may give, or the different circumstances or conditions which may alter the sense of the question. Review and evaluation of previous experience is the first source of information. In certain well tried fields, this may be sufficient to make a good beginning. In other fields, previous experience may be insufficient, and appropriate wording of the questions can be developed only gradually after a period of experimental data collection. This means going out into the field and interviewing or observing interviews. It is important to become familiar with respondent reactions, speech patterns and vocabularies. Section 6.2 describes a number of special procedures such as group interviews, unstructured interviews with individual respondents, in-depth probing and intensive study through participant observation, which may assist in arriving at appropriate question formulations.

The questionnaire designer should also be familiar with characteristics of the kind of interviewers used for the survey and the manner in which they work as these too affect the quality of the interviews.

3.6.2 Length of questions and use of examples

It is generally agreed that questions should be as brief as possible, and excessively long questions should be avoided. Long questions usually arise because adequate care is not taken to break them up into a series of small questions, or because the concept being used is inappropriately complex in the given survey situation.

In certain situations, however, rather long questions are unavoidable, to explain to the respondent the context and scope of the information and why it is being sought. An example of this are introductory questions which define the setting or important concepts used in the survey. When properly designed, a good part of such 'questions' really consists of an explanation, the actual question requiring a response appearing only at the end. Some illustrations were given in Section 3.5.1; here are some more:

> "I would like to obtain the names of all persons who live in this household. We should include all family members as well as servants, lodgers and other unrelated persons who normally live here. If there are any residents who are temporarily away for less than six months, they should also be included. Now please give me the names of all residents starting with the head of the household."

The 1984 Household Survey in Cyprus introduced questions on seconday occupation of employees as follows, recognizing the possible sensitive nature of the questions:

> "Second we need the income for persons with an additional occupation; these income data are asked, like all others you answered before, only for statistical purposes. They are strictly confidential. Nobody will have access to them except authorized personnel of the Statistical Office."

This was followed by questions on name, and gross and net income of each person with secondary occupation.

As the illustrations show, the primary purpose of introductory questions is to convey as clearly as possible some basic concept in the survey or to seek the respondents' co-operation. The inclusion of examples in the question is often useful in clarifying the concept. However, where they are used, it is desirable to give more than one example and to make them as neutral as possible. Otherwise, respondents may have trouble understanding the underlying concept. They may also be misled by thinking just of the example or examples given, rather than the class or group from which the examples have been taken. On the other hand, giving many examples would make the question too long, resulting in the interviewer omitting a part of the question or confusing the respondent. On balance, it appears that a few carefully chosen examples help in clarifying concepts to the respondent. In any case, the specific questions to be answered should not be lost in the examples and explanation, but appear clearly at the end.

3.6.3 Some types of questions requiring special care

Order bias

When respondents are asked to choose among a number of alternatives without any logical order, the emerging pattern of answers may follow the same order rather than the order of importance or relevance to the respondent. This bias is most noticeable in opinion questions but it may arise also in supposedly factual questions. For example, detailed questionnaires often include long lists of items to which respondents are asked to answer "yes" or "no". The lists may be made long in an attempt to ensure complete coverage of items in a diversity of circumstances. However, for any one respondent, the appropriate answer to most of the questions may be "no". Some respondents may get bored with giving the same answer, and start answering "yes" more often to items later in the list even though that is incorrect. Sometimes the desire to appear more "co-operative" or attentive, or the feeling that the interviewer is disappointed at receiving too many negative responses, may also result in the same effect. Similarly, it has been observed that when respondents are asked to choose from an ordered set (e.g. from 'very good' to 'very poor'), they tend to choose the category in the middle.

So clearly, the order in which questions or categories are presented may have an effect on the pattern of responses obtained. A possible solution to this problem may be to use alternative ordering for different interviews in the same survey. This, however, is difficult to manage where many other problems of survey implementation and management may already be too complex. A more practical approach is to avoid long sequences of similar questions resulting in monotonously similar pattern of responses.

'Double-Barrelled' Questions

This refers to an apparently single question which really has two questions embedded in it. For instance, the question "Are you able to understand and speak English?" is really made up of two questions: "Are you able to understand English?" and "Are you able to speak English?". A respondent who is able only to understand but not speak the language may not be able to decide whether to answer 'Yes'

or 'No' to the double-barrelled question. Perhaps the intention of the designer was that 'Yes' means being able to both understand and speak. If so, there was no need to refer to "understand" since those who can speak the language also understand it. If 'Yes' was intended to mean either understand or speak, then there was no need to refer to "speak".

One indicator of the likelihood of a 'double-barrelled' question is the appearance of the conjunction 'and' or 'or' in the question. The best way to avoid confusion is to replace double questions with two or more single questions.

Social Desirability and Politeness Biases

Respondents often tend to choose answers that favour their self-esteem, make them look intelligent or thoughtful, or conform to social norms. In some cases there is a general desire to be polite and co-operative, and respond in a manner to please the interviewer. Because of social desirability, respondents may exaggerate their possessions, lie about their age or make false claims about their knowledge awareness and behaviour patterns. The history of birth control studies is full of examples of spurious results from respondent politeness bias, in which, for example, an exaggeratedly high use of contraceptives was claimed. (See Mamdani (1972).

Family expenditure data from household surveys in the United States and in Canada consistently show reported expenditure on alcohol at about one-half of actual industry sales. Surveys about alcohol consumption have also suggested gross under-reporting. Regular surveys to measure the proportion of smokers in the general population have also registered a gradual decline over the last few years, although industry sales have increased. The declining social acceptability of smoking may be responsible for the reported drop in the number of smokers.

The only way to minimize the problem of response quality is to avoid, as far as possible, questions which are susceptible to serious biases and train the interviewers to be neutral while asking the questions. It may be possible to reduce the bias by emphasizing in the questionnaire that all responses are equally "desirable",

for example, by suggesting as a lead-in to the question that undesirable answers as well as desirable ones have been given by other respondents; e.g., "Many people have said ..... while others have said ..... What has been your experience?" A related bias is introduced by wishful thinking when respondents are asked about their future plans, or hypothetical questions; "What would you do if .....?" In general such questions should be avoided, as they seldom yield realistic answers.

Sensitive Questions

These refer to the questions which are apt to be irritating, threatening or embarrassing to the respondent. In some cultures, questions on age are seen as sensitive; in others respondents may be reluctant to report physical or mental disability or deaths in the households; questions on income, especially of the self-employed, are widely regarded as sensitive.

Special attention should be paid during field testing of the questionnaire to identify particularly sensitive questions and how they can be improved by rewording, placing them at a different place in the questionnaire, or better interviewing procedure.

Sensitive questions should not be placed at the beginning of the questionnaire. At the start of the interview, the primary concern should be to gain interest and confidence of the respondent. It is best to begin by innocuous and relatively easy questions.

It may be possible to position sensitive questions in the questionnaire where the respondent is more likely to see them as part of a "natural" sequence rather than as sensitive or threatening. Thus in a survey on work experience that contains a set of questions on the current job, it would be logical to ask about the present hourly wage-rate and the number of hours usually worked, etc. along with questions on when the respondent started the job, what the job is, who he works for and so on. In this way, the sensitive income question may not seem out of place or threatening. Sometimes, highly sensitive questions are better placed at the end of the questionnaire. Any hostility or bias evoked by them will influence few or no further questions, as most of the other information will already have been obtained.

Proper wording of questions can often reduce the perception of sensitivity. One way is to assure the respondent that he is not alone in answering such questions, and that many others who responded gave answers which may appear 'sensitive'. Open-ended questions (see next section) using familiar words and asking for narrative responses may be better than more structured closed-ended questions using precoded responses. Long, discursive questions may be more acceptable than short crisp ones. Sometimes a deliberate introduction of vagueness or imprecision in the response sought may be helpful. Example was given earlier from a questionnaire where it was considered preferable to ask respondents about their broad income group, rather than seek their actual income.

In any case, the explicit use of words which may be seen as particularly blunt or sensitive should be avoided. For example in asking women about the use of sterilisation as a method of birth-control, the sequence;

> "Some women have an operation in order not to have any more children. Have you ever heard of this method?",

followed, if answer is "Yes", by

> "Have you ever had such an operation?",

is likely to be better than an abrupt question:

> "Are you sterilised?".

Similarly, in asking about induced abortion, it may be better to put a question such as:

> "Did you, or a doctor, or someone else do anything to end that pregnancy early?"

rather than

> "Did you have an induced abortion?".

The above considerations generally favour the use of verbatim questionnaires with carefully thought-out pre-specified wordings, as opposed to the abbreviated schedule approach, in dealing with sensitive questions.

A final word about the use of sensitive questions in practical survey work. It has often been the experience that the concern of the survey designer about 'sensitivity' of questions were in fact largely unfounded. Respondents, especially in rural areas of developing countries, have been found to be surprisingly open and willing to answer questions. While co-operation of the respondents cannot be taken for granted, and their sentiments must be respected, there is also the danger of the survey designers being over-cautious and unnecessarily concerned. Similarly, one should also look out for questions that are perceived as sensitive only by the interviewers, when in fact they are not seen as sensitive by the majority of respondents. A few hostile reactions from respondents early in an assignment could lead an interviewer to this view, when in fact the problem may be far from general.

3.7 QUESTION FORM: OPEN-ENDED AND CLOSED-ENDED QUESTIONS

Questions may be formulated in different ways to impose varying degrees of structure on the interview. We have already discussed two dimensions of this structure, namely (a) the degree of detailed breakdown with which individual items or components are explicitly specified, and (b) the degree to which the wording of the questions is specified exactly. A third related dimension is the structure imposed on the response categories. Here a distinction is usually made between "open-ended" and "closed-ended" questions.

3.7.1 Examples of Open and Closed-ended Questions

In a fully open-ended question, both the respondent and the interviewer are unconstrained and allowed maximum scope for individual variation in the specification and recording of responses. The interviewer is expected to put the question in a general way, without influencing the form or type of response. The respondent is free to choose his own frame of reference and response terminology, which the interviewer records verbatim, again without guidance as to the type of response.

At the other extreme are closed questions which explicitly specify the relevant dimensions, units of response and categories from which the response must be selected. These will have to be complied by both the interviewers and the respondents.

Often there is a choice in questionnaire design as to how 'open' or 'closed' the form of questions should be. The following are examples of questions whose content can be adapted to either type.

Example 1. This illustration is from a health survey (adopted from the UK General Household Survey). A question in the open-ended form can be:

> "What sort of things do you do to try to improve or maintain your health?",

with the interviewers' instructed to record verbatim all activities as reported, without probing to elicit specific or more detailed responses. Alternatively, in the closed form, the question may seek 'Yes-No' responses to each item in a series of specified activities:

> "In order to try to improve or maintain your health, do you-
>
> (a) take any tablets or medicine regularly Yes__ No__
>
> (b) restrict what you eat and drink Yes__ No__
>
> (c) take regular walks, say at least 1 mile a day Yes__ No__
>
> (d) play sport or take any other form of exercise, Yes__ No__
>
> and so on.

Example 2. In an employment survey, an open-ended question addressed to an unemployed respondent may be:

> "What have you done to look for work during the last 4 weeks?"

Alternatively, the question may be broken up into a series of closed-ended probes:

"In order to look for work, have you, at any time during the last 4 weeks:

(a)	gone to a public employment office	Yes__ No__
(b)	visited or contacted a private employment agency	Yes__ No__
(c)	contacted a union agent	Yes__ No__
(d)	asked friends or relatives about work available	Yes__ No__
(e)	followed up advertisements in the papers	Yes__ No__
(f)	followed up notices displayed in other places such as stores, or clubs	Yes__ No__

3.7.2 Continuum between fully open-ended and fully closed questions

Before considering the relative advantages and limitations of the open and closed question forms, it is important to appreciate that between the two extremes, there is a whole gradation in the degree of structure imposed. Firstly, many questions are fully or partially closed for the interviewer, but remain essentially open-ended so far as the respondent is concerned. The respondent, for example, may be asked the (open-ended) question.

"What have you done to look for work during the past 4 weeks?",

while the interviewer may be provided with a precoded list of response categories into which he tries to fit the response obtained. Another example from an urban household expenditure survey in Malawi is shown in Illustration 3.14.

Illustration 3.14: Example of a question completely closed for the interviewer but open for the respondent.

What is your highest level of education or qualification?

Never went to school	___ Code 1
Went to primary school and achieved Standard 1, 2, 3 or 4	___ Code 2
Went to primary school and achieved Standard 5, 6, 7 or 8	___ Code 3
Went to secondary school but did not pass JCE	___ Code 4
Passed JCE but did not pass MCE	___ Code 5
Passed MCE or an equivalent such as 5 or more 'O-levels'	___ Code 6
Trade test certificate, nursing qualification, non-university teaching qualification or at least 2 'A-levels'	___ Code 7
University degree or diploma	___ Code 8

The objective of the above form is primarily to facilitate the task of recording and coding responses, rather than to provide guidance to the respondent. Often, the list of precodes may be ended by an open "other "specify" category. In this situation, the precoded categories may, of course, cover varying proportion of responses in different questions, resulting in questions closed to different degrees for the interviewer. The more the interviewer tries (e.g. through repeating the question, probing, mentioning response categories or giving examples to the respondent) to fit as many responses as possible into the specified response categories, the more likely is the question to become, in practice, closed-ended for the respondent as well.

This brings us to the second point: questions differ in the degree to which the range of "permissible" responses is communicated, explicitly or implicitly, to the respondent. Many questions require a simple 'Yes-No' response and this is implicitly obvious to the respondent: to him these are closed-ended questions. In other questions the respondent is asked to provide a number or a value (number of children, monthly income etc.), which may also be essentially closed-ended even if the possible range of values is very broad. In other questions, by contrast, the possible response categories may not be obvious from the question itself. Here the issue is how clearly and completely the question, as worded, communicates the response categories to the respondent i.e. is closed-ended for him. For example, the question may be only partially closed with only the important response categories read out to the respondent as examples of the type of responses expected. Two examples are provided in Illustration 3.15.

Constructing fully closed questions, i.e. which are worded to present all alternatives to the respondent, is not always easy. It may result in cumbersome and long question wording in which some other important information (such as the reference period) may be lost to the respondent. Yet it is possible that the inclusion of all substantive alternatives in the question produces different response patterns from a question which does not list alternatives or includes only some of them. Consider for example the following set of questions. Two versions of each question are shown: one when the phrase in parenthesis is not included in the question, and the second when it is included. It cannot be assumed that the pattern of responses will be identical in the two cases, though the magnitude of the difference can be established only empirically. (The examples are taken from a draft document of Social and Community Planning Research (SCPR), 1982.)

- Do you think you get enough physical exercise (or too little physical exercise)?

- Do you think you take enough care of your health (or do you feel you could take more care of your health)?

- Do you think a person of your age can do anything to prevent ill health in the future (or is it largely a matter of chance)?

Note that the appropriate response categories to the first alternative set is always 'Yes/No'; for the second alternative they should be specified more explicitly, e.g. 'enough/too little' etc.

Illustration 3.15: Examples of Questions Partially Closed for the Respondent:

1. Botswana, 1983. The following question -

"Is (name of the person) physically disabled - that is, blind, deaf, lame or disabled in any other way?"

included a partial list of response categories. The interviewer was provided with a more complete list and instructed to check one of the following categories: blind, deaf or dumb; lame due to polio; lame due to other causes; any other disability; no disability.

2. Refer to 'Example 2' in Section 3.7.1: "What have you done to look for work during the last 4 weeks?" Here is a partially closed version of the same question, achieved by introducing a preliminary question:

"Have you contacted an employment agency, union agent or someone else, or followed up any vacancy notice during the last 4 weeks the last 4 weeks to look for work?"

followed (if 'Yes') by

"Please tell me all you have done in looking for work during the last 4 weeks."

3.7.3 Advantages and Limitations of Open-ended Questions

In certain circumstances and for certain types of questions, it is desirable to maintain the flexibility and spontaneity provided by the open-ended form. Open-ended questions, or more accurately, questions which are more

open-ended, are frequently used to enquire into respondent's awareness or knowledge of a subject, their attitudes, beliefs and feelings, and especially explanations given for specific actions or beliefs.

In relation to awareness and knowledge, the open-ended form measures 'spontaneous' response, and minimizes the danger of false over-reporting which may result from the implied prompting in the closed-ended form. On the other hand, the lack of specific probing in the open-ended form may result in under-reporting of respondent's knowledge. Consequently it is common to employ both closed and open-ended questions in investigating awareness and knowledge.

Questions on attitudes, beliefs and opinions tend to be even more sensitive to the form of questioning. It may not be possible, or even desirable, to restrict responses to such questions to particular dimensions. Rather, it may be important to maintain maximum flexibility and spontaneity.

The most common use of open-ended questions, however, are those concerning explanations of actions or beliefs. In many situations, the attitudinal questions can be expressed in a suitably closed 'Yes-No' form, e.g. "Do you approve of induced abortion under any circumstances?"; but questions seeking explanations have almost always to be left in the open-ended form, such as "Why did you do that?", "What were the reasons?"

Specifying and suggesting answers may introduce very serious biases in such questions. This is basically because explanations for actions and beliefs are almost always complex and multidimensional, and it is important to gauge the salience or significance of a particular reason given by the respondent. Questions of the form "Did you do so and so because.....?" may produce large proportions of "Yes" or "No" answers as the case may be, without the reason mentioned in the closed question being at all salient in the respondent's mind.

Several reasons for using open-ended question form may be summarized:

(1) It may be necessary from the substantive point of view, for example to measure salience of explanations given, or spontaneous reporting of knowledge.

(2) It may be desirable to use open-ended questions to avoid biases which may result from suggestions implied in the closed-ended form of questioning.

(3) Sometimes it is desirable to allow the respondent flexibility to maintain interest or rapport during the interview. Open-ended questions imitate the everyday process of human communication. They may be used to warm up a respondent at the beginning of an interview, to introduce new topics, provide a smooth transition between topics, or to put the respondent at ease and allow opportunity for self-expression which may facilitate continued interest.

(4) Requests for further explanation, more details or general probing for more complete answers usually take the form of a series of open-ended questions, e.g. "Any other reason?", "Can you tell me more about that?", etc.

(5) Open-ended questions can sometimes provide a short-cut: a single open question may be able to replace a long series of closed questions (see Examples 1 and 2 given in Section 3.7.1). Of course, the closed-series may provide greater detail and precision, but sometimes the less refined indication obtained though simpler open-ended questions may suffice to meet the objectives of the survey.

(6) Another practical reason for using open-ended questions may simply be the lack of information available to develop precodes to cover all possible or relevant responses.

(7) The last mentioned reason accounts for the more frequent use of open-ended questions in preliminary or exploratory studies, and in development and testing of survey questionnaires. Verbatim responses can be useful in improving wording and form of questioning and identifying response categories to facilitate 'closing' of questions for subsequent use in the main survey.

The use of open-ended question also has many limitations, and in fact it is generally desirable to keep the number of completely open-ended questions to a minimum, particularly in relatively large-scale surveys. The task

of developing an appropriate coding frame and coding verbatim responses can be a taxing one. By definition, open-ended form of questioning makes it difficult to impose uniform standards, control and structure on the interview process, and there is likely to be greater interviewer and coder variability. Further, the process of coding verbatim responses makes implicit assumptions that it yields data that can be analyzed statistically as though they came from closed-ended questions, in which the respondents are of the range of permissible responses. This assumption may not be always valid. For example, some people are more reserved in their comments, and the unstructured questioning may capture unequal proportions of each respondent's experience.

The simpler open-ended form may also fail to communicate the meaning of the question to the respondents as fully as the more specific closed-ended questions. For example, a general question on "looking for work" in an employment survey may not explain to the respondents the type of activities which are considered to constitute looking for work, while a series of closed questions on specific activities would convey the concept more clearly and fully.

Often the substantive and analytic objectives of the survey require the identification of specific responses or response types, and this may be served better by using the closed form of questioning. Consider for example a survey on utilization of health services, in which the general objective is to enumerate various place or facilities visited by respondents, but a specific, specially policy relevant objective is to measure as accurately as possible the level of utilization of community health centres. A single open-ended question on places visited may fail to yield the required information on (and may indeed grossly underestimate) the frequency of visits to community health centres. The survey objectives may be better served by, for example, using a pair of questions; a closed question on "whether visited a community health centre", and an open-ended question on "any other persons or places visited in addition".

3.7.4 Closed and partly closed questions

As noted earlier, the characteristic feature of a closed question is its explicit or implicit specification and communication of all relevant response categories to

the interviewer and the respondent. he degree of closure depends upon various factors such as the wording of questions (and translation consideration in multilingual situations), the form and completeness with which response categories are communicated to the respondent, the extent and method of probing (especially how predetermined the probing procedures are), and possibly also on the order, context and position of the question in the questionnaire. The closed-ended form has its limitations too: for certain types of questions it may unduly constrain and limit the responses, and introduce bias into the results. As discussed in the previous subsection, certain types of questions are best asked in an open-ended form. However, the major advantages of closed-end questions are that they facilitate:

- a clearer specification of the context and content of the question;

- a more appropriate and convenient form for obtaining and recording responses;

- generally a greater control over the interview process and reduction in response variability;

- and above all, a simplification of the coding and data processing task.

For most large-scale surveys the advantages of closed-ended questions on balance outweigh their limitations, and it can be recommended that in general one should use questions which are predominantly closed-ended. In fact, it is desirable that open-ended questions are introduced only when clear reasons exist to justify them, such as a demonstrated unsuitability of the closed-form for the particular question, lack of information to precode the question, or sometimes, the significant convenience and brevity which may result from using the open-ended form.

A major requirement of closed-ended questions is that the questionnaire designer should be able to identify the most common responses, design a manageable number of categories to accommodate all or most of them, and do so without introducing bias or "leading" the respondent to answer in a certain way. The type and number of response categories have to be chosen in relation to the expected distribution of responses, the objective of the question

and the type of analysis envisaged. Where insufficient information is available from prior studies covering similar topics and populations, it is desirable to carry out exploratory studies specially for the purpose, probably using open-ended questions on the basis of which full range of distribution of response can be identified. A number of points need to be kept in mind in the choice of the type and number of response categories:

(1) The response categories should be mutually exclusive, i.e. non-overlapping. Any particular response specified by the respondent should correspond at the most to one category. A trivial example is of age groups specified as, say "20-30, 30-40, 40-50....." where the categories are not exclusive at the end points. But in the design of survey questionnaire, this problem is often far from a trivial one. Illustration 3.16 provides two negative examples from questionnaires used in two developed countries.

(2) The categories should be easily distinguishable from each other, and easily identifiable in terms of the responses given by the respondents in their own words. The use of numerous categories with subtle distinctions can be confusing to the interviewer and result in a high degree of unreliability in recording of responses.

(3) To the extent possible, the specified list of categories should be more or less exhaustive, i.e. cover a vast majority of the expected responses. Otherwise, the advantage and convenience of precoding may be largely lost. Nevertheless, it is generally desirable to end the list with an open item of the form:

"Other (specify)..... "

There are two reasons for introducing the residual open category: (i) to cover responses outside the specified categories; and (ii) to permit the interviewer to record responses verbatim which he is unable to code during the interview - even if actually the response corresponds to one of the prespecified codes, to which it can be assigned during the office coding operation.

(4) Often it is desirable and possible to arrange categories into some logical order, say proceeding from most salient or common to the least, or in some other way determined by the logic of the situation. A proper arrangement can facilitate both the giving and recording of responses. Illustration 3.17 provides an example of a logically ordered list from the Thailand Survey of Fertility (1975). The list proceeds from self-sufficiency in old age, to support from children, other family, non-relatives, to no support at all.

Illustration 3.16: Examples of Overlapping Categories

A. In a question on leisure activities during a specified period the following response categories appeared:

- visited friends or relatives, or had them come to visit you Yes___ No___
- listened to record or tapes Yes___ No___
- done any gardening Yes___ No___
- gone out for a drink Yes___ No___

The interviewer was asked to record all of these (and other) activities mentioned. But it is possible that in some cases different categories refer to the same activity or event, for example going out to a friend for drinks, meal, listening to music and a bit of gardening too.

B. In a question on action taken to look for work, the following categories appeared among others:

- followed up notices on notice boards, in stores, at club etc.
- visited employers and asked about work.

Again, "following up" a notice may consists of the same thing as visiting an employer.

Illustration 3.17: Example of an Ordered List of Response Categories (Thailand, 1975)

When you are old or can no longer work for any other reason, what means of financial support might you have? (TICK AS MANY AS MENTIONED; PROBE ONCE "Any other"?)

SAVING OR INCOME FROM FARM, BUSINESS, OR OTHER PROPERTY	/¯/
PENSION OR SOCIAL SECURITY	/ /
HELP FROM CHILDREN	/¯/
HELP FROM FAMILY OTHER THAN CHILDREN	/¯/
CHARITY, OR HELP FROM FRIENDS	/¯/
NONE, OR WILL HAVE TO KEEP WORKING	/¯/
OTHER (Specify)_____	

(5) A clear distinction needs to be made between (i) questions in which the interviewer is to choose only one out of a number of alternatives given, and (ii) when the instruction is to check as many of the categories as apply. These two forms, referred to as single response questions and multi-response questions are discussed further in Section 3.7.5.

(6) Another very important question is to determine the appropriate number of response categories. Having too many categories would make the task of the interviewer difficult; it may also become difficult to keep the categories mutually exclusive and easily distinguishable. Of course, forcing all the responses into a few categories may introduce bias, and may in any case be inadequate for the purposes for which the data are obtained. Generally, a wise strategy would be to keep the number of categories small, and near the minimum

required for analytical purposes. However, a little more detail than may appear immediately necessary is often desirable -- to cater for unanticipated needs, changes in analytical requirements, unexpected distribution of responses obtained, and sometimes even for logical consistency and completeness. If more than, say, 5-7 categories are involved, serious attempts should be made to divide them up into smaller groups for the convenience of the interviewers and the respondents. Sometimes it may be even better to divide the question itself into two or more questions to achieve this.

(7) As has already been noted, attention need be paid to the completeness and form in which response categories are not only specified in the questionnaire, but also actually communicated to the respondents.

3.7.5 Single-response and multi-response questions

Multi-response questions arise when more than one alternative may be "correct" for a given respondent. For instance, the respondent may be asked to give reasons or explanations (of which there may be several), or to list activities or events during a specified period. Multi-response questions may be completely open-ended both for the interviewer and the respondents. More commonly, however, they can be precoded (closed-ended) for the interviewers, but left open-ended so far as the respondents are concerned. When formulated in this manner, multi-response questions are usually referred to as 'check-list' questions. For example, the respondents may be asked the question:

> "What types of places have you visited during the last 4 weeks?",

and the interviewers provided with a precoded list of possible responses and instructed to 'check' as many of those as the respondents happens to mention.

Such questions may be partly closed for the respondents by including in the question wording some of the response categories as examples, e.g. by continuing the above question with ".....such as (followed by examples of places)". To ensure that the respondents understand that they may mention more than one place (if applicable), it would be desirable to continue the above question, say, as:

"Please tell me of all such places
you have visited over the last 4 weeks."

In any event, how fully the respondent answers the question may depend upon the manner in which the interviewer probes to solicit additional responses. In this, there may be considerable variability between interviewers, and sometimes it is desirable to impose greater control over the interview process by specifying to the interviewer the extent of and manner of probing. For instance Illustration 3.17 given earlier shows how an open-ended multi-response question specifies the manner of probing.

In spite of such specification, however, it is unlikely that different respondents perceive the same constraints in the number of "allowable" response categories. The difference in the number of responses mentioned (e.g. reasons given) may sometimes depend more on the characteristics and background of the respondents, than on any real difference in their behaviour or attitude.

A multi-response question may be adequately closed only by listing all relevant response categories and converting the question into a series of "Yes/No" questions asked separately for each of the response categories (see for instance the 'closed-ended' version of Example 2 in Section 3.7.1.). But in that case, it really becomes a series of single-response questions discussed below.

For the reasons mentioned above, questions allowing multiple responses are generally more difficult to handle at the interview, coding and processing stages. They suffer from the usual problems encountered in dealing with open-ended questions, only more so than those permitting single response. Many multi-response questions also tend to be difficult to interpret and analyse. Several assumptions need to be made which may not be valid. It is presumed that alternative responses are distinct and mutually exclusive, that alternatives are independent (in the sense that the response given on one is not affected by the response given on any other), that the interviewers probe for additional responses in a uniform and specified way, and, as already mentioned, that different respondents perceive the same constraints in the maximum number of responses they may give. In practice, it is unlikely that all these conditions can be adequately met. In attitudinal and opinion questions in particular, some interviewers and

respondents may see two responses as distinct (so that both should be recorded), while others may treat them both as the same response, only differently worded. Some of these problems may be reduced by precoding the question at least for the interviewers, but they cannot be completely eliminated.

The major reason for using multi-response questions is the flexibility they allow in exploring complex issues such as reasons and explanations of respondents for their actions or opinions. They also conserve space and time when only approximate or indicative information is required, which would not justify a long series of closed questions.

For most purposes, however, it is preferable to use single-response questions, in which at most only one response category is recorded or coded. Typically, these questions can be precoded, i.e. made closed-ended at least for the interviewer. They are often referred to as 'multiple choice' questions as the interviewer can choose one from a number of response categories. In the fully open-ended form, the verbatim response is assigned a single code at the subsequent coding stage.

In single-response questions, the response categories are mutually exclusive, so that logically only one category at most can apply. The usual "Yes/No" questions are a good example. In other situations, the question may be deliberately restricted to permit only one valid response, for instance:

"What type of place did you visit last";

or the respondent may be asked to make the choice, for example

"What type of place do you usually visit?"

or

"What do you think is the most important reason for...?"

Sometimes, the restriction may be made in the interview procedures or at the coding stage by using some additional criteria to choose only one response. For example, the United Kingdom General Household Survey included the following question:

"Apart from leisure classes and ignoring holidays, are you at present:

- at a college or university full time? Yes___ No___
- on a sandwich course? Yes___ No___
- training for a qualification in nursing.....? Yes___ No___
- etc.

The interviewers were instructed to begin reading the above list of series of 'Yes-No' questions one-by-one, but stop as soon as the first positive response is obtained. Thus at most only one response is recorded.

If the response categories are mutually exclusive (i.e. at most only one can apply), the above form of questioning is a more complete or forceful way of making the question closed-ended than for example the form:

"Apart from leisure classes and ignoring holidays, are you at present at a college or university full time, on a sandwich course, or training for a qualification in nursing... etc.?"

full time college/ university ____ sandwich course ____ nursing____

The first form may also be more manageable if the list of categories is long. However, in certain types of questions (especially attitudinal questions) it may suffer from more serious order-bias of the type discussed in the previous section.

The type of questioning illustrated from the United Kingdom survey above may also be used to obtain a single-response question even when the categories are not mutually exclusive, provided that they are listed in decreasing order of significance and it can be assumed that positive response to any category higher up in the list makes responses to the remaining categories irrelevant to the objectives of the survey.

3.8 QUESTIONNAIRE IN A MULTI-LINGUAL CONTEXT: TRANSLATION AND RELATED ISSUES

It is obviously desirable that every interview in a household survey is conducted in the native language of the respondent. In many developed countries and some developing countries as well, the national population is fairly homogeneous linguistically. Furthermore, due to high literacy rates and common cultural mores, there may be no serious hiatus between the different sections of population. In such situations, the survey questionnaire can be produced and administered in a single, official language of the country. All that is necessary is to avoid unnecessarily formal or technical language in framing the questions, and choose words which are familiar to the majority of the survey respondents. (This in itself is, of course, not a trivial requirement, as discussed in Section 3.6.1.)

The situation in many developing countries is much more complex. As noted by Vaessen et al (1984):

> "All countries have at least one official language. However, in many countries this language is more a vehicle for use by the bureaucracy and the educational system than a means of daily communication among ordinary people. In some countries literally scores of different languages are spoken. The problem is particularly acute in Africa but it is also serious in much of Asia. In many cases for various reasons local languages have been maintained as the principal means of everyday communication. As a result of this situation, in multilingual countries the official language is often unusable as a vehicle of communication with the masses, in part or all of the country. The need to interview respondents in their native language is, therefore, clear. Given this situation any nationwide data collection effort must deal with the problem of how to ensure that the meaning of each question is correctly conveyed in all languages used. If the meaning is not exactly the same in all the languages it is impossible to be sure that differences and differentials observed reflect reality rather than being artifacts of translation."

The problem becomes even more acute when relatively complex concepts have to be communicated to the respondents, or when the questions concern respondents' beliefs,

attitudes and opinions. If the native language of the interviewer, the language of the questionnaire or schedule, the language in which the interview is conducted and the mother tongue of the respondent differ from each other, then all sorts of misunderstandings and errors of interpretation and communication can arise during the interview process. Problems of language are a major source of errors in survey data in many situations; yet little attention has been paid to this issue.

The general requirement is to eliminate or minimize the linguistic gap between the four links identified above, namely:

- the language of the interviewer
- the language of the questionnaire
- the language of the interview, and
- the language of the respondent.

Ideally, the procedure would be to conduct a language pre-survey to identify the language of each respondent in the sample, prepare separate written versions of the questionnaire in each language appearing in the survey, recruit interviewers with language capabilities to match these requirements, assign interviewers individually to respondents according to linguistic criteria, provide them with questionnaires in the right language for each case, and ensure that they take the correct version to each respondent and actually conduct the interview in the appropriate language. Apart from costs, the logistical problems in ensuring correct matching at all these stages can be truly formidable in multilingual countries. This is well illustrated by the experience of the World Fertility Survey, despite the fact that right from the beginning the WFS paid exceptionally close and serious attention to the linguistic issues in surveys in developing countries. The efforts made in the WFS are so exceptional in this respect that it is worth noting them here in some detail. The following draws heavily on the discussion of the issues by Vaessen et al (1984). The WFS adopted a number of procedures in multilingual surveys:

(1) The original WFS questionnaires were prepared in standard versions in four international languages English, French, Spanish and Arabic. Even in countries which officially used one of these languages, the standard wordings were adapted to reflect local variations in that language as used by ordinary people of the country.

(2) In most countries, the local languages differed from the international languages. Thorough procedures were used to ensure correct translation. These involved first translation from the international language to the local language, then back translation of the latter into the former, followed by reconciliation of any differences of the result with the original, and carrying out a field pre-test.

(3) An attempt was made to prepare written version of the questionnaire separately for each major language in a country. The result was an impressive array of multi-lingual questionnaires as shown in Illustration 3.18. In 17 out of 42 participating countries, written versions of the questionnaire were prepared in more than one language, and in six countries nine or more languages were used.

(4) In three countries involving most complex situations (Cameroon, Ivory Coast and Haiti), special studies were carried out prior to the main survey to establish what the main languages used were, their size and distribution and related linguistic issues. Pilot surveys were also carried out in two countries (Zaire and Ghana) in which the linguistic issue received special attention. Some of these results have been discussed by Gaisie and Gyepi-Garbrah (1976), and Ware (1977).

(5) The major problems in implementing survey in multi-lingual situations are, of course, logistic and operational. Apart from identifying the size and distribution of major languages, and determining the languages in which questionnaire versions should be prepared, the most urgent problems are to: (i) identify the mix of languages for which interviewers must be recruited and (ii) prepare and implement a unified plan which matches interviewers' linguistic skills to the respondents' requirements. A serious attempt was made to tackle both these problems.

The logistic problems can indeed be very serious in multilingual surveys, though the situation varies from country to country. As Vaessen et al note,

> "In many countries the geographical distribution of languages is simple: each large area has its language and very few persons are found in the area who do not speak that language fluently. Where this situation prevails the languages of field-work are known in advance with reasonable precision and the logistic problem should be fairly easy to handle. In Africa, and particularly in West Africa, the situation is often more complex. In some countries (Cameroon is an extreme example) fragmentation is such that one cannot know, without conducting a specific study for the purpose, what languages one will find in a given selected area unit. In circumstances such as these only a first class organization and a highly disciplined field force can ensure a correct matching of interviewers to respondents. One has only to ask what is likely to happen when an interviewer, knowing only language A and lingua franca B, encounters a respondent knowing only her native language C but possessing a smattering of B. An interview conducted falteringly in language B with many misunderstandings will be the inevitable result unless strong discipline has been enforced on the field force from the outset."

It is important to distinguish two aspects of the problem:

(i) problems in the assignment of interviewers to respondents according to language, and

(ii) the issue of preparing the questionnaire in different language versions and the delivery of correct versions to the respondents.

The first is generally the major practical problem; the second is often far simpler to handle. Although the task of preparing different language versions is troublesome, there is no reason why it should be very costly. Only the translators' fees and the typists wages are involved on the personnel side. The main cost is likely to be the increased number of questionnaire copies required to cover the uncertainly in the numbers of interviews in each language - a margin the size of which will depend on the specific linguistic situation of each country. Often these costs are well worth the possible improvements in interviewers' performance.

Illustration 3.18: Numbers of Languages (written questionnaire versions) used in countries participating in the World Fertility Survey (Source: Vaessen et al, 1984)

Number of language versions used	Countries
1	25 countries*
2	Bangladesh, Malaysia
3	Fiji, Nepal, Sri Lanka
4	Mauritania, Senegal
5	Pakistan, Peru
7	Benin, Nigeria
9	Philippines
10	Ghana
11	Ivory Coast, Kenya
14	Cameroon, Haiti
	(Total: 42 countries)

*Includes Sudan (N) and Indonesia, which used only one printed version, but also used trained interviewers in oral versions of other languages, 3 in Sudan and 4 in Indonesia.

The preparation of different language versions is, of course, likely to be much more critical in surveys requiring verbatim questionnaires, where it is essential to ensure that questions are worded in a specified way. The whole objective of using verbatim questionnaires would be compromised if properly translated versions were not prepared to cover at least the major or main languages encountered in the survey. The consequences of not using questionnaires in the right language can in fact be quite similar to not using fully worded verbatim questions. As Gaisie and Gyepi-Garbrah (1976) note in relation to a pilot survey in Ghana:

> "There was a tendency among the interviewers using the English version of the questionnaire to paraphrase some of the questions to such an extent that almost invariably the actual meaning of the questions was partially or completely distorted. The

majority of them were also found guilty of skipping long introductions to questions and also of omitting an important part or parts of a question or questions when translation was done simultaneously with the delivery of the questionnaire."

The advantages of preparing written versions in different languages used in the survey are not confined to verbatim questionnaires. Even the more abbreviated wordings used in 'schedule' often provide the interviewer with key phrases and terms around which he can build the appropriate wording for the full question during the interview. The availability of these key terms in the proper language can be of great help in the interview process.

Finally, even if it proves too expensive or difficult to use correct language versions of questionnaires for actual interviewing, it remains highly desirable that different version be prepared for use at least in the training of interviewers.

CHAPTER 4

PRINCIPLES OF QUESTIONNAIRE DESIGN: OVERALL FORM AND STRUCTURE

4.1 INTRODUCTION

The previous chapter was concerned with the principles of formulating individual questions to be included in the questionnaire. This chapter considers technical aspects in the design of the questionnaire as a whole, i.e. with issues relating to its form and structure.

In the first instance, every questionnaire needs to have an introductory section which provides information for identification of survey organization, the survey round, and of the particular questionnaire in the survey. It may also contain information for the interviewers on how and with whom to conduct the interview, as well as other administrative, sampling and operational information pertaining to the interview. This is discussed in Section 4.2.

Section 4.3 provides a general discussion of the considerations determining grouping and ordering of questions in a questionnaire. Most questionnaires of any size are divided into sections depending on who will provide the information, methods and units for which it is collected, and the subject matter. Within each section questions have to be arranged in a logical order, possibly into subsections or blocks, so as to facilitate the task of the respondents in providing the required information, and of the interviewers in obtaining and recording it.

Listing of household members and information on their basic demographic and socio-economic characteristics is a necessary component of almost any household survey. In many large-scale surveys, such questions may in fact constitute the bulk of the information to be collected. Special attention is given in Section 4.4 to the design of household 'rosters' for this purpose.

Not all questions in a questionnaire necessarily apply to each and every respondent selected in the survey. The questionnaire has to contain unambiguous instructions on the flow of the interview, indicating which questions apply or do not apply to a particular respondent. The design of appropriate "skip" and "filter" instructions for this purpose is an important aspect of questionnaire layout. This is especially the case in verbatim questionnaires where it may be necessary to channel different categories of respondents to different set of questions, not only because the content of questions, but also because even for similar questions the exact wording to be used may differ from respondent to respondent. As will be described in Section 4.5, a useful tool in clarifying and designing the flow of the question- naire is to construct "net-work diagrams". Such diagrams are also useful for interviewer training as well as during the data preparation and processing stages of the survey.

Various provisions may be made in the questionnaire to facilitate cross-checking internal consistency and/or overall plausibility of the information obtained, as well as to produce preliminary summaries of results for early release. Examples are, provision of subtotals and balance sheets at various places in the questionnaire, and deliberate introduction of redundant items to permit cross-checking and assess reliability. These aspects are discussed in Section 4.6.

Finally, Section 4.7 summarizes a number of other aspects of questionnaire layout, such as numbering of questions and provision of interviewer instructions and space for recording responses. Special attention needs to be given to these aspects in tabular presentation of questions because of the generally more serious constraints of space with that form of presentation. In addition, the importance of ensuring processability of the questionnaire cannot be over-emphasized. The physical layout of the questionnaire and the coding scheme used affect both the speed and accuracy of the coding and data entry operations. Improper lay-out of questions and response categories, inadequate identification particulars, failure to precode questions or develop proper coding system etc. result in situations where data collected in a survey cannot be linked to data from other related surveys, cannot be fully utilized, or much worse, cannot be processed at all.

Some of these aspects require special attention also at the stage of actual production and printing of the questionnaire. For these reasons, they are taken up in fuller detail in Chapter 5. At the same time, the requirements of physical production need to be kept in mind from an early stage in developing and drafting questionnaires, and, therefore, a summary of the most important considerations is provided in Section 4.7.

4.2 THE INTRODUCTORY SECTION OF THE QUESTIONNAIRE

In any questionnaire, information is required to identify items such as the organization undertaking the survey; the particular survey or survey round being conducted; the address and geographic location of the responding unit; an identification number to control document flow, data processing and linkage between surveys; and operational characteristics of the interview. All such information is conveniently placed in the introductory section of the questionnaire, generally on the cover sheet. This section describes the type of information which may be included in the introductory section.

4.2.1 Introduction to the interview

For most household surveys the sample households have no legal obligation to respond. Even in those cases with specific legal liability the law is rarely enforced - and may not even be known to the respondent. The experience of many government agencies suggests that insisting on compulsory response is not worth pursuing in practice and may even be counter-productive.

Therefore, it is important to explain to the respondent the context and purpose of the survey, assure him that the information he provides will be treated as confidential and seek his co-operation. A number of steps may be taken prior to the survey to gain public co-operation. These include a general publicity campaign, contacting and briefing of local leaders in the sample areas, and where the population is sufficiently literate, sending in advance (or carrying by the interviewer) letters of introduction, explaining the

objectives of the survey, the agency undertaking it, the confidential nature of the information, and the role of the interviewer. Ultimately, the interviewer will be required to make a personal statement and answer any additional questions the respondent may have.

While much of this information may not form part of the questionnaire per se, certain minimum information must nevertheless be included: the cover sheet should record the name of the organization undertaking the survey, identify the date, name and round of the survey, the responding units for which the information is collected, and indicate that the information is confidential and meant only for statistical (as distinct from personal) use. Such information is needed not only for the respondent, but also for subsequent use (and prevent misuse) of the questionnaires.

The following pages (Illustrations 4.1 and 4.2) show examples from the 1977-78 Peru Household Budget Survey and the 1977 Kenya Fertility Survey. In the example from Peru the form is identified in the upper right corner as PF-03 (the Spanish words of which PF are the initials meaning Expenditures Form). Authority for collection, and assurance of confidentiality, are given in the first box. Subsequent boxes include the serial number of the form; the names of the Department, Province, District, Population Centre; the address and telephone number; sample identification codes; the names of the interviewer and supervisor; and the date of the interview. The cover sheet from the Kenya survey is simpler. Apart from identification of the organization and the survey, it shows: identification number of the interview; description of the geographic and sample location of the household; the date, time, duration, outcome and callbacks for the interview; the name of the staff involved for interviewing, field editing, supervision and office editing and coding; and dates when these operations were performed.

We will comment on the other features of the examples in the next subsection, but note that both provide the essential information mentioned above. The example from Peru actually reproduces relevant sections of the statistical law governing the collection of statistical information and defining its confidential nature. This sort of information may be useful in certain circumstances, but is rarely necessary as the example from Kenya shows. Generally, it is considered more important to give guidance to the interviewer on how to introduce the subject to the

Illustration 4.1:
Example of a Cover-sheet

INSTITUTO NACIONAL DE ESTADISTICA
Dirección General de Censos,
Encuestas y Demografía

ENCUESTA NACIONAL DE HOGARES DE PROPOSITOS MULTIPLES
MODULO: PRESUPUESTOS DE LOS HOGARES

CEDULA PF-03: GASTOS DIARIOS PERSONALES

(Para cada miembro del Hogar que tiene ingresos)

ESTA INVESTIGACION NO ES DE CARACTER TRIBUTARIO, SOLO TIENE FINES ESTADISTICOS

DECRETO LEY Nº21372 DEL SISTEMA ESTADISTICO NACIONAL

FUENTES DE INFORMACION ESTADISTICA

Art. 27º Son fuentes de información estadística del Sistema las personas naturales o jurídicas que se encuentren en el país, las cuales están obligadas a suministrar la información de uso estadístico en la forma y términos que le fijen los órganos del Sistema.

CONFIDENCIALIDAD DE LA INFORMACION

Art. 31º La información proporcionada por las fuentes del Sistema tiene carácter secreto. No podrá ser revelada en forma individualizada, aunque mediare orden administrativa o judicial.
Solo podrán ser divulgados o publicados sus resultados estadísticos, en forma innominada.

ENCUESTADORA: EN ESTA PAGINA LLENE LOS RECUADROS CORRESPONDIENTES A "UBICACION GEOGRAFICA DE LA VIVIENDA" Y A "IDENTIFICACION MUESTRAL", COPIANDO LA INFORMACION RESPECTIVA DE LA CEDULA PF-01. ADEMAS ANOTE EN LOS RECUADROS DE LA PARTE INFERIOR, EL NOMBRE Y NUMERO DE LA PERSONA QUE LLENARA LA CEDULA EN EL HOGAR Y SU PARENTESCO CON EL JEFE DEL MISMO.

NUMERO DE CEDULA	FACTOR DE EXPANSION	USO DEL INE

UBICACION GEOGRAFICA E IDENTIFICACION DE LA VIVIENDA

DEPARTAMENTO	PROVINCIA	DISTRITO	CENTRO POBLADO

DIRECCION				
Nombre de la Calle, Jirón, Avda., Carretera, etc.	Nº, Km. o Mz.	Piso	Int. o Lote	Teléfono

IDENTIFICACION MUESTRAL

NUMERO ZONA	NUMERO MANZANA (USM)	NUMERO VIVIENDA	NUMERO DE HOGARES	ESTRATO

USO DEL INE

PROBABILIDAD DE SELECCION		
UPM	USM	VIVIENDA

NOMBRE DE LOS FUNCIONARIOS DE LA ENCUESTA	
ENCUESTADORA	
SUPERVISORA	

SEMANA DE ENTREVISTA	
DEL:	AL:

NOMBRE Y NUMERO DE LA PERSONA QUE LLENA LA CEDULA. (Copie de la cédula: PF-01)		PARENTESCO CON EL JEFE DEL HOGAR.

Illustration 4.2: Another Example of a Cover-sheet

CLUSTER HH

CENTRAL BUREAU OF STATISTICS
MINISTRY OF ECONOMIC PLANNING AND DEVELOPMENT
KENYA FERTILITY SURVEY
HOUSEHOLD SCHEDULE

I D E N T I F I C A T I O N

PLACE NAME _____ STRUCTURE NUMBERS _____

CLUSTER NUMBER _____ HOUSEHOLD NUMBER _____

Interview calls	1	2	3	4
Date Interviewer name Result*				

*Result codes
1. Completed
2. No competent R at home
3. Deferred
4. Refused
5. Dwelling vacant
6. Dwelling occupied but family away
7. Household not found or non-existent

Other (SPECIFY) _____

FOR USE OF CODERS ONLY

CARD (1 0) — 1

CLUSTER ( ) ( ) ( ) — 3

H/HOLD ( ) ( ) ( ) ( ) — 6

LINE (0 0) — 9

STRUCTURE NO. ( ) ( ) ( ) ( ) — 11

STRUCTURE NO. ( ) ( ) ( ) ( ) — 15

STRUCTURE NO. ( ) ( ) ( ) ( ) — 19

STRUCTURE NO. ( ) ( ) ( ) ( ) — 23

DATE OF INTERVIEW — DAY ( ) ( ) MONTH ( ) ( ) YEAR ( ) ( ) — 27

RESULT OF VISIT 1 2 3 4 ( ) ( ) ( ) ( ) — 33

TOTAL NO. OF VISITS ( ) — 37

FINAL OUTCOME ( ) — 38

NO. OF H/HOLD MEMBERS ( ) ( ) — 39

NO. OF ELIG. RES. ( ) — 41

respondent. By and large, this is best provided during interviewer training and in the instruction manual rather than on the questionnaire; however, a brief statement on how to open the interview may be usefully included in the opening section of the questionnaire.

Finally, another example taken from a Canadian Health survey is shown in Section 4.4.2 (Illustration 4.7). The upper part of the Household Record Card contains, to the left, spaces for sample identification codes and for the household address. The upper right corner provides space for interviewers to record dates and times of contact with the household, and a code for response. The shaded area in the lower part of the questionnaire (marked "CONTROL") is used to record completion of stages of the survey (several questionnaire forms were used). The following page, the front page of one of the questionnaires, provides space to record the dates and times of contact, plus comments that might help in making subsequent contacts with the household.

4.2.2 Questionnaire identification numbers

A suitable numeric code is needed to identify the questionnaires. This is necessary for processing and analysis of the data and also for proper control of document flow at various stages of the survey. The code must identify each questionnaire uniquely within the survey. When a number of surveys are involved, this identification should be unique not only within but also across related surveys.

The system of identification must define all that is necessary to locate each survey questionnaire in the total data set. For example:

(a) The survey programme may consist of a number of "rounds", in which case an indication of the round number should appear as a part of questionnaire identification. Similarly, when survey rounds are divided into sub-rounds the latter also need to be identified.

(b) Sufficient information should be provided to identify the sample structure (such as the domain, stratum and cluster), as well as the administrative area if relevant, to which each enumerated unit in the sample belongs. It is only on the basis of such information

that sampling variances can be computed. Where a series of surveys is based on the same common set of sample units, it should be possible to link the information for these units across different surveys.

(c) Any given survey may involve a hierarchy of questionnaires, pertaining to related units at different levels. For example, there may be a questionnaire for each sample area or community, followed by household questionnaires, and within each household, questionnaires for each household member. In the above example, the identification number for individual members may consist of codes for the survey round, the sample area, the household and finally individual member within the household; identical round, area and household number should appear for the corresponding household so as to permit direct linkage of the household and individual member data. In fact, the identification numbers should be defined in a way to permit sorting and linkage of the entire data file for various survey rounds and levels of units in any required order, using common data fields in a fixed location for sorting and linkage.

(d) Frequently it is necessary to divide a questionnaire into "record types", such as 80-column cards or card images on disk or tape. It will then be necessary to include the record type as an element in the system of questionnaire identification. Also, a clear indication of the record type should be provided: for example, natural breaks in the questionnaire such as new sections or pages should preferably form the beginning of new record types.

Two points of practical significance may be noted in the choice of identification numbers. First, it is desirable to avoid the use of non-numeric characters. Secondly, it may not be possible to provide all the necessary information for record linkage as a part of questionnaire identification without making the identification number too long. For example, a census may use a complex system of uniquely identifying enumeration areas which specifies the various administrative and geographical units to which the area belongs; in a sample survey, by contrast, a much smaller number of area units may be involved and a simple sequence of numbers may suffice to identify sample areas uniquely. The linkage of census and

survey data at the area level may then be achieved through a conversion table which maps the simpler survey area identification numbers onto the more complex system for the census. The detailed sample structure may be specified and mapped onto the simple area identification numbers in a similar way. At a later stage in the data processing operation, the more complex area identification numbers may be transferred onto individual questionnaires as new data fields. In a questionnaire divided into a number of record types, the identification number needs to be repeated on each record type.

4.2.3 Other items of information

In addition to the essential information discussed above, it is useful to include a variety of other operational and control information in the introductory section of the questionnaire.

Identification in the field. The objective of the questionnaire identification number (section 4.2.2) is primarily to provide the necessary information for data processing, linkage and document flow control. Additional information is required to identify the responding unit in the field on location and address of the unit, such as names of the administrative unit(s), locality, neighbourhood and of the household head. The information and description has to be sufficiently detailed to permit easy and clear identification of the sample units by the field workers. Special care needs to be taken when no formal address system exists which is usually the case in many rural areas and even in urban areas of many developing countries. In such situations whatever formal address systems exist may need to be supplemented by verbal descriptions and sketch maps. Special operations may be carried out to give numbers to dwelling units specially for the purpose of the survey, and there may be good reasons to record these on the questionnaires. Sometimes it may be useful to make provision on the questionnaire for recording supplementary information in addition to the name of the head, for example head's occupation, name of spouse, size of household, ethnic group, description of the location and other characteristics of the house etc., to facilitate identification in the field.

Sampling information. For statistical estimation and analysis of survey results, it is essential that the necessary sample selection information is available for each sample unit. This may include information on stratification, sampling stages, selection probabilities and the associated sample weights (see Illustration 4.1).

It should be noted, however, that usually it is not necessary to include such information on each questionnaire, so long as complete records are available elsewhere to relate the questionnaire identification number to details of the sample structure. Such information can then be used at the computer processing stage to identify the sample structure, without having to transcribe it manually onto each questionnaire.

Operational characteristics of the interview. It is useful to include certain operational information about the interview on the questionnaire, which may help in control of operations and subsequent evaluation of procedures and methodological research. One important item is the date of the interview. Another is a record of the timing and call-backs for the interview, duration of the interview, details of field supervision, and editing and coding.

It is also useful to record the name of the respondent and whether the information was provided by the person to whom it relates or by someone else.

Information of the type described above can be invaluable for a variety of methodological analyses. For instance, study of correlated response variances requires identification of the interviewers, supervisors and coders etc. who dealt with a particular interview. On the same basis, one can study drop-out rates for various categories of survey workers and how those relate to characteristics of the workers and the survey procedures used. One can study the factors affecting variations in interview time and the effectiveness of call-back strategies used, and so on. Such analysis is useful for improving the design and management of future surveys.

Summaries of substantive information

Sometimes provision is made on the cover sheet or in the introductory part of the questionnaire to record

summaries of salient results from the interview. If relevant, such information may also be transcribed from some other related questionnaire to facilitate linkage between results of the two questionnaires. This manual transcription is especially useful when data processing facilities are limited.

Though this practice is not widely followed, two useful examples are shown in Illustration 4.3.

Illustration 4.3: Examples of Items of Information Summarized on Coversheet of the Questionnaire

Indian Household Consumer Expenditure Survey 1977-1978:	Thailand Socio-economic Survey: Income and Work Experience, 1979-1980:
Household size: - adult males - adult females - children - Total	Household size: - total - children under 5 - children aged 5-12
Number of consumer units	Household type
Land possessed by household	House ownership
Household industry/ occupation code	Economic class code
Monthly per capita household expenditure	No. of income recepients
Household group code	No. of income earners
Religion	Annual income Income class
House ownership	Type of household enterprise
	Household head: - age - sex - occupation

Space for remarks by interviewers and others: It is a good practice to allow space for recording comments by field and office workers on the conditions under which the interview is conducted and the reliability of the data. In certain types of surveys the sensitivity of the information may require that, if possible, the interview be held in private with the respondent concerned. In such cases it may be useful to record the presence of others at various points in the interview. Similarly, details of procedures used and the interviewers' impression of the reliability of the information for particularly difficult questions (e.g. on income, dates and ages) will also be useful. Of course, such information would be recorded at appropriate places in the questionnaire, not necessarily on the cover sheet or the introductory section.

4.3 GROUPING AND ORDERING OF QUESTIONS

Chapter 2 (Sections 2.4.1 and 2.4.2) discussed various considerations involved in grouping of topics into surveys, and the possible need to group questions within a survey into different questionnaires. The next step is to consider the grouping and arrangement of topics within a given questionnaire, and the ordering of questions within a group.

Questions should be ordered to facilitate answers by the respondent rather than that of the analysis of the data. The quality of responses will suffer if the questionnaire skips irrationally from topic to topic, if it contains seemingly irrelevant questions, or if the interviewer gets lost in complicated, unclear questionning sequence. The following are some general considerations in determining the order of questions.

4.3.1 Grouping of topics within a questionnaire

It is usually a good practice to divide the questionnaire into sections, each dealing with a particular topic or set of topics. When the questionnaire is particularly long and elaborate, it may be convenient to develop and test it in parts: sometimes, different parts of the questionnaire may be designed by different persons. In any

case, the division of the questionnaire into sections can facilitate its design and development, and make it easier for the field and data processing staff to handle. For example, decisions on sequencing and layout of questions can be made readily within groups. For the interviewers, sections may provide convenient breaks during the interview when information already collected can be reviewed and new topics and concepts introduced to the respondent. Sections of the questionnaire may also reflect natural division in the structure of coding (for example when 80 column cards are used, each section may begin on a new card) and of resulting data files.

It is logical to group together questions on the same topic, questions relating to the same time or interval, questions with the same reference period, or with the same frame of reference. At the same time, a long sequence of questions in exactly the same form should be avoided, or at least should be broken up by inserting a different type of question occasionally.

A number of other factors may be involved in determining the grouping. For example, the type of respondent may differ from one set of items to another. A compromise may be needed between accepting proxy responses and direct answers by the individual concerned. Some topics may be answered adequately by proxy, while others may require direct interview with the individual concerned, and it would be convenient to group these topics accordingly. Indeed the respondent rules are often the first consideration determining the division of the questionnaire into major parts.

A related factor is the type of units for which the information is recorded. Various levels of recording units may be involved in the same interview: such as households, household enterprises, holdings, household members, mothers, children, and specific events, transactions and activities pertaining to any of the above. Lack of clear separation and smooth transition from one type of recording units to another is a common source of errors in surveys. Many surveys begin, for instance, with the enumeration of basic demographic and background characteristics of household members, the respondent for which may be any adult member. Such a household roster would form the first major component of the questionnaire after the identification, administrative and control information. Following this,

there may be more or less detailed questions on the household or one or more individual members, each with its own specific respondent rules. For example, the 1983 Botswana Primary Health Care Evaluation Survey Questionnaire (see Illustration 3.15) consists of three major parts: general information on households and household members provided by any adult member; information on adult women, provided by the women concerned if possible; and information on young children, generally provided by each child's mother if present in the household. Similarly, the WFS questionnaire may be considered to have three major parts: information on households and household members as above; information on reproductive behaviour and related aspects on women in the child-bearing ages, provided by the women concerned in private to the extent possible; and information on the husband's background, for which the woman providing the information is encouraged to consult the husband if he is present.

In further subdivisions of the questionnaire, the primary consideration must be to facilitate the respondent's recall and assist him to give the required information. Grouping in the questionnaire has to correspond to how items may be related in the respondents' minds. Most commonly, grouping by major topic and within that by reference period is appropriate by this criterion. However, this may not always be the case. For example, the 1984 Cyprus Household Survey groups operational expenses relating to housing along with more general questions on housing conditions, rather than with other items of household expenditure even if the two sets of expenditure questions used the same reference period.

In arranging the sections of a questionnaire into a sequence or order, a number of factors should be considered:

(1) Administrative information for identification and control of the interview should always come first.

(2) Generally, the interview should begin with relatively general, easy and descriptive questions, for example basic background characteristics of the respondents. Certainly, sensitive items should not come too early in the interview, before a good rapport has been established between the respondent and the interviewer. Such questions should be placed where they are least likely to be perceived as sensitive (see

also Section 3.6.3). Often it is better, if possible, to place particularly sensitive questions at the end of the questionnaire to minimize the adverse effect, including a refusal to answer any more questions.

(3) In so far as some questions are more crucial than others in relation to the primary objectives of the survey, it is preferable to introduce the more important questions as early as possible (bearing in mind point (2) above).

(4) The need to ask some questions or sets of questions before others may be dictated by the logic of the situation. Some questions are required to identify respondents for subsequent questioning, or to route a respondent to different sets of questions. For instance, in a health survey, respondents might be classed into: those who have never smoked any tobacco products; those who smoked at one time but currently do not, or have not in the last six months; and those who currently smoke. Different sets of questions could then be asked of each group.

(5) Care must be taken to avoid an order of sections that might condition respondents by implanting an incorrect frame of reference, such as a particular meaning of a term or phrase, that is then carried over unintentionally, and in error, to a later section. In a survey on family planning for example, questions on awareness and use of contraceptive devices should not be followed without explanation by questions on contraception where methods other than use of devices (e.g. abstinence; vasectomy or other operations) are intended to be asked. Without proper explanation, respondents may fail to notice that the topic and questions have changed.

The following example (Illustration 4.4) showing the basic structure of a fairly lengthy questionnaire is from the 1976 Integrated Survey of Households in the Philippines. The objectives of the surveys were to measure the level of employment, underemployment and unemployment, and gather data on family-operated enterprises, on rice, corn and livestock production and on individual and family earnings. The rather elaborate questionnaire was divided into the following major sections/subsections. For further details see Sample Surveys in the ESCAP Region (fourteenth report, 1976), United Nations ESCAP (n.d.).

Illustration 4.4: An example of the basic structure and arrangement of topics in questionnaire

Part I - Demographic and economic characteristics of dual members in the household	Unit for recording the information
A. Demographic characteristics	Each individual household member.
B. Economic characteristics:	
1. Employment status during past year and past quarter	Each person 10 years old and over.
2. Industry, occupation, hours, worked and wages.	Each person who worked (had job or business) during last quarter.
3. Desire for work, search for work, preferred occupation etc.	Each person who did not work during last quarter.
C. Receipts from sources other than work, including also receipts from work by children aged under 10.	Separately for each member of the household, distinguishing children under 10 from others.
Part II-A - Details of family-operated economic activities during last quarter in various sectors.	
A. Fishing	
1. Production, distribution and net receipts from enterprise.	Separately for each operator or self-employed member in fishing.
2. Participation of family in fishing.	Each family member (other than the operator) and unpaid worker engaged in fishing.

(Illustration 4.4 - cont'd)

3.	Participation of non-family members (wage employees)	Separately for each operator or self-employed member in fishing.
B.	Manufacturing and processing (1-3 as above).	
C.	Service-type activities and construction (1-3 as above).	
D.	Forestry and logging, hunting and tapping, and mining and quarrying excluding activities mainly for own use (1-3 as above).	
E.	Farming, gardening and livestock and poultry raising - as above.	
Part II-B.	Other family sustenance activities, mainly for home consumption or for small-scale or irregular sale not included earlier. Divided into A-E as above.	Each household member engaged in such activity.

(Illustration 4.4 - cont'd)

Part III. Crops, livestock and poultry	
A. Storage of cereal stock as of October.	The household as a whole for each group A-H.
B. Palay production.	
C. Corn production.	
D. Utilization of July-December palay and corn production.	
E. Damage on standing palay and corn crops, July-December.	
F. Farming, truck/home gardening activities: perennial crops; and temporary crops other than palay corn.	
G. Livestock: stock, changes and production at various specified dates.	
H. Poultry: stock, changes and production at various specified dates.	

Some observations may be made on Illustration 4.4. Questions in Part I, groups A, B(1) and C apply to all or nearly all members of the household. Hence, the questionnaire provides one line for each member, and all relevant information for a member is entered on his/her line as determined by the order of original listing of the members at the beginning of Group A. The same system is followed for sub-groups B(2) and B(3), even though at most only one of these is applicable for any particular member. Such a system is convenient, less prone to errors of recording the information in the wrong line, and makes it easier to check that all household members have been accounted for - even though there is some wastage of space.

In Parts II-A and II-B, however, a great deal of detailed information is obtained, but only for a few members in each case. To provide one fixed line for each member as in Part I, irrespective of whether or not the information concerned applies to the particular person, would have wasted a great deal of space and made the questionnaire unmanageably bulky. Hence, the system followed was to allocate new lines, but only to persons for whom the information in each group in part II is applicable. The original line-numbers were copied out to link this information to that in part I for the particular person. This system is economical, but prone to errors e.g. due to mistakes in transcribing line numbers or missing out members who should have been included. A crucial requirement is the correct identification and carrying forward of individuals in Part I to whom each specific group of questions in Part II applies. This is a good example of compromises and choices which often have to be made in designing survey questionnaires.

Finally, the unit of observation and recording in Part III is the household as a whole, rather than individual members as in Parts I and II. The respondent rules also are probably different. In fact it is possible to canvass this part quite separately from the rest of the interview, and it is rather arbitrary whether to regard this as a part of the same questionnaire, or as a separate questionnaire though applied within the same survey.

4.3.2 The flow of the questions

Within the main body of the questionnaire, questions need to be arranged in some sort of order. Some of the principles in the ordering of questions are described in the next few paragraphs. The general objective is to provide a good flow, without awkward or illogical jumps. These supplement the principles for division of a survey subject into sub-topics, and ordering of the sub-topics, discussed in the previous section.

(1) Once a general topic has been raised, all questions on that topic should come together before a second topic is started. Thus, in a question on work experience, one group of questions could be about all the jobs the respondent has had since he entered the labour force. Then another group of questions could explore his present job, asking more detail about it. There would be no further reference back to past jobs. Each section of questions would have an introduction explaining the general topic to the respondent: "First, let's talk about all the jobs you've had since you started to work. What was the first job you had?..."; "Now, let's talk about your present job. When did you first start working at that job?...", and so on. In a health survey, questions on ill-health of family members in a reference-period might best be ordered so that all details are obtained for a given individual, before details for a second person are sought. Initial questions could, for example, determine a limited amount of information about the household (number of people, their age, sex, and relationship to the head of the household). It might then be logical to follow with questions on the extent of use of health facilities and services over, say, a longer reference period. Next could come questions on illness-preventive practices of the family and its members.

(2) The questionnaire should be designed to serve the logic of the respondent rather than applying the logic of analysis to the flow of questions. This will establish and maintain consistent frames of reference for the respondent and assist recall. What may seem logical to the designer who is very familiar with the subject-matter of the survey because of extensive background research, may not seem at all logical to the respondent on whom the questionnaire is suddenly thrust. Suitable

question sequence will often allow respondents to anticipate subsequent questions because such questions seem logical.

(3) Not only should the general flow of questions appear smooth to the respondents, but within the flow, they should also be able to see the relationship of the questions to the stated objectives. Questions should relate to the overall purposes. Otherwise, suspicion may arise just as it may with irrelevant opening questions. Questions whose only purpose is to obtain answers which it is "nice to know", and not related to the objectives, should be avoided.

(4) Where applicable, questions should usually follow a chronological flow, and usually from past to present, although sometimes working backwards can be more suitable. Chronological lead-ins can be valuable memory aids for questions on such topics as migration, job history or respondents' perceptions of attitudes from the past. By focusing on events preceding those being pursued in the questionnaire, the respondents may be able to put themselves into the proper time reference to remember specific details more easily. For example, questions on job history could be preceded by a question on the date of completion of formal schooling or the date of a move to the respondents' current place of residence. Questions on the duration, wage received and other characteristics for each of the jobs they have had, should ask all about one job before going on to the next. It can be confusing to respondents (and possibly to interviewers) to ask for a description of jobs, then go back to ask for duration of each job, the wage received and any other characteristics in turn. The designer may prefer this from the viewpoint of data analysis, but the respondents' logic is more likely to be in terms of all the characteritics of one job before going on to the second job.

(5) The above point may, however, be slightly qualified. It is often more convenient to first obtain a listing of all events/items/persons of interest, and then ask for all the details on each in turn. This slightly different approach is commonly used in obtaining household data in a household roster. Commonly, one person in the household is asked first to list all members of the household by age, sex, and relationship

to the head. Then further information is obtained about each individual in turn (e.g., education level, employment status, marital status, place of birth, places lived in, etc.). In this situation, it seems more logical to obtain a limited amount of information from the initial questioning in order to be able to ask more intelligently the questions that make up the second round. This two-step procedure appears to work well for the interviewers also.

(6) A long sequence of questions in exactly the same form should be avoided as far as possible, and be broken up by a different type of question. Lists of questions in the same form can be boring or irritating, or can put the respondent in a frame of mind where he tends to answer mechanically without paying attention to individual questions.

4.4 THE HOUSEHOLD ROSTER

The listing of household members and the enumeration of their basic demographic and background characteristics is such a common feature of household survey interviews that the design of this part of the questionnaire deserves special attention. Typically this takes the form of a single sheet roster, which may be used by itself or as a part of a longer questionnaire. In the latter case, the roster usually forms the first substantive section of the questionnaire. Its objective is to enumerate and define the population covered in the household and, as relevant, to identify individuals who are eligible for subsequent detailed questioning on the basis of certain specified characteristics. Examples of special sub-populations which may be of interest are agricultural holders, operators of other household enterprises, persons of working age, women in child-bearing age, disabled persons, young children, immigrants, students and so on.

For many applications, information on basic characteristics of household members is required over samples of relatively large size. Furthermore, it is generally impractical to interview each member personally to obtain the necessary information. The typical pattern is for a

single member to report on all the members of the household. These requirements mean that:

(1) In content, the household roster should be relatively simple. The number of questions should be limited and they should relate to simple matters within the capacity of most respondents to answer, not only regarding themselves but also regarding other members of the household.

(2) In form, the roster should be relatively compact. The ideal arrangement is to pack in a fairly large amount of information - say 10 to 15 items on up to 10 or 12 members of each household - on to a single sheet. Such an arrangement is especially desirable in the case of censuses and large-scale surveys, where the cost of production and transportation of survey questionnaires is a major component of the total survey costs. Confining the questionnaire to a single sheet can enhance the efficiency of the operations of data editing, coding and their entry into the computer.

4.4.1 Some practical considerations in design of the roster

Though alternative arrangements are possible (see Section 4.4.2), the most commonly used form of the household roster for censuses and surveys provides for the listing of individuals in a household row-by-row, with particulars for each individual recorded under various column headings. An example from the Philippine Integrated Survey of Households (1976) is shown in Illustration 4.5.

The main issues in designing such questionnaires are:

- the appropriate choice of questions, and their sequencing;
- the determination of column headings, widths, and other aspects of layout; and
- the provision for recording and coding of responses.

The following description draws on the brief but telling discussion provided by Casley and Lury (1981) of the practical issues in the design of household rosters.

Illustration 4.5: A Typical Household Roster

PART I. DATA

A. DEMOGRAPHIC CHARACTERISTICS

Line No. (Enter in appropriate line)	Name of household member (As of date of visit)	Relationship to the HH. head (Enter code)	Sex M F	Age as of last birthday (check Col. 6 for members 10 years old and over)	Marital (civil) status 1 S 2 M 3 WD 4 D/SEP 5 Unknown (Enter code)	Highest grade completed (Enter code/ specify degree)	Usual occupation/status during the last 12 months. (Specify, e.g. Palay farmer, Elementary teacher, Jeepney driver, Student, Housekeeper, Retired, Disabled)	Do not fill	Did he have a job/business or unpaid work on family farm or business even for only one hour at any time during the past quarter from ___ to ___? 1 Yes 2 No (If no, skip to Col. 16)	(If Yes in Col. 11) Did he work at all during the past quarter? 1 Yes 2 No	What was his primary job or business (P) during the past quarter? What other job or business (O) did he have during the past quarter? Please include one for only a few days, unpaid work on family farm or business, raising chickens, etc. Gainful occupation (Specify, e.g. Palay farmer, Elementary teacher, Jeepney driver, Exclude Student, Housekeeper, etc.) P — Primary O — Others	Do not fill
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
01												P O	
02												P O	
03												P O	
04												P O	
05												P O	
06												P O	
07												P O	
08												P O	
09												P O	
10												P O	
11												P O	
12												P O	

Codes for Col. 3 — Relationship

01 — Head
02 — Wife/Spouse
03 — Son
04 — Daughter
05 — Son-in-law
06 — Daughter-in-law
07 — Grandson
08 — Granddaughter
09 — Father
10 — Mother
11 — Other relative
12 — Boarder
13 — Domestic help, etc.

Codes for Col. 8 — Highest Grade Completed

00 — No grade completed

Elementary

11 — 1st grade
12 — 2nd grade
13 — 3rd grade
14 — 4th grade
15 — 5th grade
16 — 6th and 7th grade

High school

21 — 1st year
22 — 2nd year
23 — 3rd year
24 — 4th year

College Undergraduate

31 — 1st year
32 — 2nd year
33 — 3rd year
34 — 4th year
35 — 5th year or higher

For college graduates

Specify the Bachelor's or higher degree completed and field of study

12/ Reprinted from the original schedule.

As previously noted, the content of the household roster should be relatively brief and simple. It should be suitable for large-scale operations and responses by proxy by one household member on characteristics of other members. Consequently, it is best to confine the roster to a few relatively factual items which can be indicated in an abbreviated form as column headings. Most commonly included are questions on demographic characteristics such as age, sex, relationship to the head and marital status; and selected socio-economic characteristics such as literacy and level of education, ethnic group, work status, occupation, migratory and residential status. Surveys focused on population change often include a number of other questions on fertility, mortality and migration which, at least in form, are relatively straightforward.

Sensitive questions, requiring skilled probing, or questions depending critically on exact wording, retrospective questions extending over a number of years, economic questions such as income and hours worked, are unsuitable for the general household roster.

Some questions such as, age, sex and kinship, apply to all persons. Other questions such as marital status, education and work status apply to persons above a certain minimum age; questions on occupation apply to those currently working, and so on. Appropriate "skip instructions" have to be included in the column headings to indicate clearly which questions apply to a particular respondent. The compact tabular format of the roster is, however, not convenient for handling complex skip instructions, as discussed further in the next section.

Interviewers need to be told how to proceed down columns and across rows. The recommended practice is first to go down to obtain a complete list of all persons, recording their name, sex and relationship, probe to ensure that the list is complete, and then take each row separately to obtain further information on each person, one at a time.

The tabular format listing questions as columns is not suitable for lengthy questions. Simple headings such as "age", "sex", "literacy" etc. are suitable, but not questions such as "If you neither worked nor looked for work last week, when did you last look for work?". The above is quoted by Casley and Lury from a 1978 survey. Such a long question, printed in full as it is intended to be used by

the interviewers, is unsuitable for this type of questionnaire, and is not in accord with the requirement that headings should be short and unambiguous. A problem to be avoided is to have column widths determined primarily by the length of the question rather than by the amount of space necessary for recording the answer. This means that the questions should be brief or suitably abbreviated as necessary. If occasionally it becomes essential to give the full wording of a lengthy question, then that could be done better in a footnote to the questionnaire, with only an abbreviated item code in the column heading. Details of the codes to be used should also preferably be in footnotes unless they are very simple and brief. An example of the last mentioned practice is shown from a survey in Ethiopia (Illustration 4.6).

In short, careful attention needs to be given to layout and design. The column headings should be clear but brief. They should provide all the essential information, such as the information to be obtained, the sub-population to which it applies and the units in which the information is to be recorded. These cannot be relegated to footnotes. Other details can be indicated in footnotes to the extent necessary, or elsewhere as a part of the interviewers' and coders' instruction manuals. Long questions and detailed instructions squeezed into column headings are in any case difficult for interviewers to read. Furthermore, if too much space is devoted to column headings, the number of rows available may become too small to record information on all the members of a household, thus requiring the use of more than one sheet per household. This would negate many practical advantages of having the roster confined to a single sheet.

On the question of recording and coding the information, an important point to remember is that the volume of data generated in a typical household roster is often quite large, easily exceeding that in a standardized questionnaire extending over many pages. This makes it highly desirable to precode as much as possible of the information. Two possible methods of precoding responses are:

Illustration 4.6: Provision of Codes of a Household Roster

Job I.D. No.	1 2 3 / 2 0 2	RURAL LABOR FORCE SURVEY 1981/82	Page 1	Strictly confidential, for Statis. use only	RLFS 1981/82 C.S.O. Addis Ababa.
1. REGION	4 5	2.AWRAJA 6 7	3.WEREDA 8 9	4.FARMERS A. 10 11 12	5. I. No. of Sample HH. 13 14 15 16
					6.Serial No. of Selected H.H. 17 18
7. Survey Round	19	0	8. Date	20 21 M.	

9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
							FOR PERSONS TEN YEARS AND OVER					For Persons Who Worked(Usual		
Serial No.	Name of usual Household Members	Relation - ship to the head of Household	Sex	Age	Place of Birth	Length of Continuous residence	Marital Status	Literacy	Highest grade completed	Were you engaged in productive work in most of the last 12 months. 1=Yes 2=No	If the answere is no in Cl. 19, reason for not working?	Occupation	Status	Industry
24 25		26	27	28 29	30	31 32	33	34	35 36	37	38	39 40	41	42
0 1														
0 2														
0 3														
0 4														
0 5														
0 6														
0 7														
0 8														
0 9														
1 0														

X=Samp Place
1=Same Awraja in a town
2=Same Awraja in a rural area
3=Same Region another Awraja in a town
4=Same Region another Awraja in a rural area
5=Another Region in a town
6=Another Region in a rural area
7=Outside Ethiopia

XX=Since birth
00=Under one year
01=Over one Y. but less than 2 Ys.
98=98 years And over

1.Single
2.Married
3.Widowed
4.Divorced

1. Literate
2. Illiterate

1=Unemployed
2=On Job leave
3=Student
4=Home-maker
5=Pensioner
6=Old age
7=Disabled

1. employer
2. employee
3. O.A.W.
4. Unpaid Family Worker
5. Apprentice

(i) to provide "boxes" for each response category in a column, and ask the interviewer simply to circle or check one of them, or

(ii) to ask the interviewer to write down the appropriate code for the response in the space provided.

(a)

Sex	
1	2
(M)	F
M	(F)
M /	(F)

(b)

Sex	
M	F
(1)	2
1	(2)
1	(2)

(c)

Sex
M/F
M
F
F

(d)

Sex M = 1 F = 2
1
2
2

In the above, (a) and (b) are examples of method (i); and (c) and (d) of method (ii) with the interviewer writing down the codes say "M" or "1" in the first row for a male, and "F" or "2" in the next two rows for females. Method (i) maybe easier for the interviewer. But it requires listing of all the response categories, which may not be convenient if their number exceeds 2 or 3. The use of appropriate symbols (e.g. M and F rather than 1 and 2 for male and female) as in (a) and (c) is convenient for the interviewers and less prone to error. However, its major disadvantage is that in most cases data ultimately have to be coded in the numerical form.

In view of the above, probably the most convenient and commonly used form is (d) as given in Illustration 4.5 from Ethiopia.

It may not be possible to precode certain items of information, such as relationship of the head, occupation, industry, and place of residence. Adequate space needs to be provided for recording descriptive responses to such questions. This requirement is not always easy to meet in a compact tabular format.

The roster should be designed in such a way that all items are either precoded, or can be coded onto the questionnaire itself for direct entry into the computer without the need to transcribe them onto separate coding sheets. This requires that:

(i) As many items as possible are precoded.

(ii) Items which cannot be precoded have spaces provided on the questionnaire for subsequent entry of their codes. (See for example item numbers 11, 14, 21 and 23 in the illustration from Ethiopian Rural Labour Force survey).

(iii) Information on the roster can be entered into the computer in the form of "records", such as 80-column cards or card-images on disk or tape. For that purpose, the questionnaire should specify the position or "column number" of each item of information on this record. Column numbers 24-42 in the above-mentioned illustration are meant for that purpose. Columns 1-23 are used for identification and administrative information.

These considerations related to coding and data processing are, of course, relevant to any questionnaire, not only the type of household roster being discussed here. These are considered more fully in the NHSCP study Survey Data Processing (United Nations, 1982) and will be referred to in subsequent sections of this chapter. They need to be specially emphasized in the present context for at least two reasons. Firstly, the efficiency of the coding and data entry operations is a more critical consideration here because this type of household rosters are frequently and repeatedly used in household survey programmes, the sample sizes involved are often relatively large, and, in contrast to the physically compact layout of the roster, the amount of data to be handled per interview is usually quite voluminous. Secondly, there have been many instances in survey practice which show that these considerations are not always appreciated and given insufficient attention in questionnaire design. In fact, it is not easy to find good illustrations of fully precoded household rosters. Even the otherwise well-designed household schedule recommended by the WFS, and used in many of the developing countries who participated in the programme, is not precoded, nor is the model Demographic Survey Questionnaire recommended in the Manual on Demographic Sample Surveys in Africa (United Nations ECA, 1974).

4.4.2 Alternative arrangement of rows and columns

It was noted above that the most commonly preferred arrangement is to list individuals in the household row-by-row and to record particulars for each individual under various column headings. Of course, it is possible to arrange the information the other way around, with columns for individuals and rows for items of information. Two examples of the latter format are shown in Illustrations 4.6 and 4.7, the first from 1978-1979 Canadian Health Survey (already referred to in Section 4.2.1) and the second from 1983 Encuesta Demografica Nacional (EDENH II) of Honduras.

There are a number of possible advantages of the alternative arrangement shown in these illustrations. It does not suffer from the space constraints of column headings: questions and instructions can be more clearly and fully written out along the rows and they are more convenient and easier for the interviewers to follow. This format can also handle more complicated skip instructions. It is relatively easy to accommodate a larger number of questions by going on to a second and subsequent sheets.

But there are also some serious disadvantages of this arrangement. Firstly, a sheet of manageable size can accommodate data for a relatively small number of persons. This may not be a serious problem in developed countries with preponderance of small households; but it is likely to be so in developing countries with many large households. In principle, of course, it is possible to add additional sheets to cover more members and additional rows to record more items of information on each member. However, such "two-way extension" can be very confusing and should be avoided. A better arrangement in such a situation would be to provide entirely separate sections (one or more sheets) for each member, repeating all the necessary questions in each section. One way extension of space for additional rows or additional columns seems to be the general practice. The example for Canada (Illustration 4.7) continues downwards with additional sheets for more questions on each member; the number of persons that can be accommodated in the columns on a single sheet tend to be relatively small. The questionnaire from Honduras (Illustration 4.8) extends rightwards with additional sheets for more columns (household members) in view of the many large households encountered in the survey.

Illustration 4.7: 'Transposed' Household Roster

Canada Health Survey / Enquête Santé Canada

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HOUSEHOLD RECORD CARD

DOCKET No	MULT. OF	ASSIGNT	TYPE
REG	SEGMENT	LIST No	MO DATE YR

ADDRESS

02. IS THIS A SINGLE DETACHED DWELLING? NO (1) YES (2) (06)

03. FLOOR LEVEL OF MAIN ENTRANCE OF DWELLING

04. TOTAL NUMBER OF FLOORS IN BUILDING

05. TOTAL NUMBER OF UNITS IN BUILDING

CALL No.	DATE DAY
1	
2	
3	
4	

HOUSEHOLD RESPONSE CO

PERSON No. = PAGE No. AND COLUMN No.

	PAGE No 1	PAGE No. 2	PAGE No 3	PAGE No. 4	PAGE N
08 Please name the members of your family who now live here.	GIVEN NAME 05	GIVEN NAME 19	GIVEN NAME 33	GIVEN NAME 47	GIVEN NA 61
09 Are there any other members of your family who usually live here? NO ○ YES ○ ➧ WHO?	SURNAME 06	SURNAME 20	SURNAME 34	SURNAME 48	SURNAME 62
10 Is there anyone else who usually lives here? (If yes), please name by family					
11 ASSIGN THE FAMILY NUMBER(S)	FAMILY No 07	FAMILY No 21	FAMILY No 35	FAMILY No 49	FAMILY N
12. What is_____'s date of birth? CALCULATE AGE	MONTH 08 YEAR 09	MONTH 22 YEAR 23	MONTH 36 YEAR 37	MONTH 50 YEAR 51	MONTH 64
13. That would make_____'s age_____.	AGE 10	AGE 24	AGE 38	AGE 52	
14. VERIFY SEX AND "X" APPROPRIATE CIRCLE	MALE (1) 11 FEMALE (2)	MALE (1) 25 FEMALE (2)	MALE (1) 39 FEMALE (2)	MALE (1) 53 FEMALE (2)	MALE (1)
15. What are the relationships of household members to (the reference person)? Reference person 01 SEE REFERENCE CARD FOR OTHER CODES	CODE 12 OR SPECIFY 13	CODE 26 OR SPECIFY 27	CODE 40 OR SPECIFY 41	CODE 54 OR SPECIFY 55	CODE 68
CONTROL — FIRST VISIT I.A.Q. COMPLETION STATUS	(1)C (2)P (3)N-I 14	(1)C (2)P (3)N-I 28	(1)C (2)P (3)N-I 42	(1)C (2)P (3)N-I 56	(1)C 70
S.A.Q. DROPPED-OFF	NO (1) YES (2) 15	NO (1) YES (2) 29	NO (1) YES (2) 43	NO (1) YES (2) 57	NO (1)
SECOND VISIT APPOINTMENT DATE	DATE TIME	DATE TIME	DATE TIME	DATE TIME	DATE
S.A.Q. PICKED-UP	NO (1) YES (2) 16	NO (1) YES (2) 30	NO (1) YES (2) 44	NO (1) YES (2) 58	NO (1)
PHYSICAL MEASURES — COMPLETION STATUS	(1)C (2)P (3)N-I 17	(1)C (2)P (3)N-I 31	(1)C (2)P (3)N-I 45	(1)C (2)P (3)N-I 59	(1)C 73
ISSUED - NURSE'S INITIALS					
RECD - INTERVIEWER'S INITIALS					

COMMENTS

88 _____ 89 _____

Illustration 4.7 (cont'd)

Canada Health Survey / Enquête Santé Canada

Health and Welfare Canada / Santé et Bien-être social Canada

Statistics Canada / Statistique Canada

FAMILY HEALTH INTERVIEW

61

DOCKET NO.

QUESTIONNAIRE NO.

001

Interview Component 01 3251

RECORD OF CONTACTS, TIME.

Contact No.	Date		Contact Time		COMMENTS
	Day	Month	Start	Finish	
1			02	03	
2			04	05	
3					
4					

Illustration 4.8: Another Example of Transposed Household Roster

SECCION IV: CARACTERISTICAS DE LAS PERSONAS

PREGUNTAS		PERSONA TRECE | 13	PERSONA CATORCE | 14	
NOMBRE *Anote el nombre y apellido de cada una de las personas que habitualmente residen en la vivienda. No olvide los menores de 1 año.*	1			1
RELACION O PARENTESCO CON EL JEFE DELA FAMILIA ¿QUE RELACION O PARENTESCO TIENE CON EL JEFE DE LA FAMILIA?	2	Cónyuge ☐ 2 Otro pariente ☐ 6 Hijo o hijastro ☐ 3 Servicio doméstico ☐ 7 Padres o suegros ☐ 4 Otro no pariente ☐ 8 Nieto ☐ 5 Colectivo ☐ 9	Cónyuge ☐ 2 Otro pariente ☐ 6 Hijo o hijastro ☐ 3 Servicio doméstico ☐ 7 Padres o suegros ☐ 4 Otro no pariente ☐ 8 Nieto ☐ 5 Colectivo ☐ 9	2
EDAD ¿CUANTOS AÑOS CUMPLIDOS TIENE? *Si es menor de 1 año, anote 00* ¿EN QUE FECHA NACIO?	3	Edad en años cumplidos ☐☐ Día ☐☐ Mes ☐☐ Año ☐☐	Edad en años cumplidos ☐☐ Día ☐☐ Mes ☐☐ Año ☐☐	3
SEXO ¿ES HOMBRE O MUJER?	4	Hombre ☐ 1 Mujer ☐ 2	Hombre ☐ 1 Mujer ☐ 2	4
CONDICION DE ORFANDAD ¿ESTA VIVA LA MADRE? SI LA MADRE HA MUERTO: ¿EN QUE AÑO FALLECIO? SI LA MADRE ESTA VIVA: ¿VIVE EN EL EXTERIOR?	5	Viva ☐ 1 Muerta ☐ 2 No sabe ☐ 9 ☐☐ Año 19 ☐☐ Exterior ☐ 10 Hond ☐ 20 No sabe ☐ 90 ☐☐	Viva ☐ 1 Muerta ☐ 2 No sabe ☐ 9 ☐☐ Año 19 ☐☐ Exterior ☐ 10 Hond ☐ 20 No sabe ☐ 90 ☐☐	5
¿ESTA VIVO EL PADRE?		Vivo ☐ 1 Muerto ☐ 2 No sabe ☐ 9 ☐	Vivo ☐ 1 Muerto ☐ 2 No sabe ☐ 9 ☐	
LUGAR DE NACIMIENTO ¿EN QUE DEPARTAMENTO, MUNICIPIO Y LUGAR POBLADO NACIO? *Si nació en el mismo lugar poblado donde se hace la entrevista, marque AQUI.* *Si nació en el extranjero indique el país y el año de llegada a Honduras.*	6	AQUI ☐ ☐☐ Departamento: ☐☐ Municipio: ☐☐ Lugar poblado: ☐☐ País: ☐☐ Año de llegada: ☐☐	AQUI ☐ ☐☐ Departamento: ☐☐ Municipio: ☐☐ Lugar poblado: ☐☐ País: ☐☐ Año de llegada: ☐☐	6
PARA LA POBLACION DE 5 AÑOS Y MAS				
LUGAR DE RESIDENCIA HACE 5 AÑOS ¿EN QUE DEPARTAMENTO, MUNICIPIO Y LUGAR POBLADO VIVIA EN..... DE 1978? *(Hace 5 años)* *Si vivía en este mismo lugar poblado, marque AQUI.* *Si vivía en el extranjero indique el país.*	7	AQUI ☐ ☐☐ Departamento: ☐☐ Municipio: ☐☐ Lugar poblado: ☐☐ País: ☐☐	AQUI ☐ ☐☐ Departamento: ☐☐ Municipio: ☐☐ Lugar poblado: ☐☐ País: ☐☐	7
NIVEL DE INSTRUCCION ¿CUAL ES EL ULTIMO AÑO O GRADO APROBADO EN PRIMARIA, SECUNDARIA, SUPERIOR O UNIVERSITARIA?	8	Ninguno ☐ 00 Superior o Universitaria ☐ 3 Primaria ☐ 1 Secundaria ☐ 2 Ignorado ☐ 99	Ninguno ☐ 00 Superior o Universitaria ☐ 3 Primaria ☐ 1 Secundaria ☐ 2 Ignorado ☐ 99	8
PARA LA POBLACION DE 10 AÑOS Y MAS				
CONDICION DE ACTIVIDAD ¿QUE ACTIVIDAD HIZO DURANTE LA ULTIMA SEMANA? *Para las personas que contestaron los codigos 4, 5, 6 ó 7, pase a la pregunta 11.*	9	Trabajó ☐ 1 Tenía trabajo pero no trabajó ☐ 2 Buscó trabajo ☐ 3 Estudió y no trabajó ☐ 4 Quehaceres del hogar ☐ 5 Vive de su renta o jubilación ☐ 6 Otra: ☐ 7	Trabajó ☐ 1 Tenía trabajo pero no trabajó ☐ 2 Buscó trabajo ☐ 3 Estudió y no trabajó ☐ 4 Quehaceres del hogar ☐ 5 Vive de su renta o jubilación ☐ 6 Otra: ☐ 7	9
OCUPACION, RAMA DE ACTIVIDAD Y CATEGORIA OCUPACIONAL ¿CUAL ES LA OCUPACION, OFICIO O PROFESION QUE DESEMPEÑA? ¿A QUE CLASE DE ACTIVIDAD SE DEDICA LA EMPRESA?	10	Ocupación: ☐☐ Rama: ☐☐	Ocupación: ☐☐ Rama: ☐☐	10
¿QUE ERA EN ESE TRABAJO?		Trabajador por cuenta propia ☐ 1 Patrón ☐ 2 Asalariado ☐ 3 Trabajador sin sueldo ☐ 4 No sabe ☐ 9	Trabajador por cuenta propia ☐ 1 Patrón ☐ 2 Asalariado ☐ 3 Trabajador sin sueldo ☐ 4 No sabe ☐ 9	
PARA LA POBLACION DE 12 AÑOS Y MAS				
CONDICION DE VIUDEZ ¿ESTA VIVO SU PRIMER ESPOSO(A) O COMPAÑERO(A)?	11	Vivo ☐ 1 Muerto ☐ 2 No tuvo ☐ 3 Ignorado ☐ 9	Vivo ☐ 1 Muerto ☐ 2 No tuvo ☐ 3 Ignorado ☐ 9	11
ESTADO CONYUGAL ACTUAL ¿ES UNIDO, CASADO, VIUDO, SEPARADO, DIVORCIADO O SOLTERO?	12	Unido ☐ 1 Casado ☐ 2 Viudo ☐ 3 Separado ☐ 4 Divorciado ☐ 5 Soltero ☐ 6	Unido ☐ 1 Casado ☐ 2 Viudo ☐ 3 Separado ☐ 4 Divorciado ☐ 5 Soltero ☐ 6	12
PARA LAS MUJERES DE 12 AÑOS Y MAS				
HIJOS TENIDOS ¿HA TENIDO ALGUN HIJO NACIDO VIVO? *(Sea que esté vivo o que haya muerto). Si la respuesta es No o No sabe, pase a la persona siguiente.*	13	Si ☐ 1 No ☐ 2 No sabe ☐ 9	Si ☐ 1 No ☐ 2 No sabe ☐ 9	13
¿EN QUE FECHA NACIO SU ULTIMO HIJO NACIDO VIVO? *(Sea que esté vivo o que haya muerto).* ¿ESTA VIVO SU ULTIMO HIJO NACIDO VIVO?	14	Día ☐☐ Mes ☐☐ Año ☐☐ No sabe ☐ 9 Si ☐ 1 No ☐ 2 No sabe ☐ 9	Día ☐☐ Mes ☐☐ Año ☐☐ No sabe ☐ 9 Si ☐ 1 No ☐ 2 No sabe ☐ 9	14
¿CUANTOS HIJOS NACIDOS VIVOS HA TENIDO? DE ESOS HIJOS NACIDOS VIVOS, ¿CUANTOS HAN FALLECIDO? ¿CUANTOS ESTAN ACTUALMENTE VIVOS?	15	Hijos tenidos ☐☐☐ Hijos fallecidos ☐☐☐ Hijos vivos ☐☐☐	Hijos tenidos ☐☐☐ Hijos fallecidos ☐☐☐ Hijos vivos ☐☐☐	15
MIGRACION INTERNACIONAL DE SUS HIJOS ACTUALMENTE VIVOS, ¿CUANTOS RESIDEN EN EL EXTRANJERO?	16	Ninguno ☐ Total ☐☐ Hombres ☐☐ Mujeres ☐☐	Ninguno ☐ Total ☐☐ Hombres ☐☐ Mujeres ☐☐	16

The second major problem with this 'transposed' design can be the inconvenience in data entry. Usually data have to be entered person-by-person, i.e. column by column, breaking with the pattern usually followed in most of the questionnaires, and possibly in other parts of the same questionnaire. If more than one sheet is used, the data entry clerk has to flip repeatedly through pages for each person. With more sophisticated data processing facilities, it may be possible to minimize these problems for example by transposing the data after entry or using procedures such as optical mark or character readers which altogether eliminate mechanical data entry operations. But in the developing countries with limited data entry facilities these considerations need to be taken more seriously.

It is for the above reasons that the format described in section 4.4.1 is widely followed in censuses and large-scale surveys, in which the items to be enumerated are relatively simple and small in number. However, the alternative arrangement is worth considering for more detailed enquiries, with more items of information and more elaborate skip patterns. The arrangement may be particularly suitable for surveys aimed at selected sub-groups of the population in which several but not all members of a household are to be interviewed. In this case, the limitation in the number of persons (columns) which can be accommodated onto one sheet may not be important. This design in such a situation is really an alternative to having separate questionnaires for each individual respondent, has the advantage of being more compact, economical and easier to handle, and permit more error-free linkage of the data on individuals within the same household.

4.5 SKIPS, FILTERS AND OTHER ASPECTS RELATING TO SEQUENCING OF QUESTIONS

4.5.1 Skip instructions

Not all questions in a questionnaire necessarily apply to each and every respondent selected in the survey. For example, in a general demographic survey, questions on marital status, education and occupation apply only to individuals above a certain age, and those on fertility only

to women in the child-bearing ages (and often to only ever-married women). Similarly, sections of the questionnaire may be meant for specific groups such as mothers, children, old persons, the head of the household, employed persons, farm operators, immigrants and so on. Often questions fall into sequences in which the leading or filter question determines whether or not subsequent questions in the sequence apply to a particular respondent, as for instance in the question:

Are you now married? Yes (1) (go on to Question 2)
No (2) (skip to Question 8)

The instruction following each response category indicates to the interviewers that only married respondents are to answer questions 2-7. Unmarried respondents only answer questions from 8 onwards.

The questionnaire has to contain unambiguous instructions on the flow of the interview, indicating which particular questions apply to a particular respondent. Directions to the interviewers for this purpose are called "skip instructions". The objectives of such instructions are:

(a) to avoid asking irrelevant questions to the respondents;

(b) to facilitate the work of the interviewers to ensure that all the relevant and only the relevant questions are asked, and that generally the interview flows smoothly;

(c) to ensure a clear distinction between questions which are not applicable to a particular respondent, and those which though applicable were not asked, answered or recorded;

(d) and related to the above, to facilitate processing of the data by ensuring that the flow of the interview follows predetermined rules on the basis of responses already obtained. Without such rules it may be impossible to distinguish "not applicable" from "not recorded" questions, and to edit and tabulate the data and compute various rates, ratios and other estimates correctly.

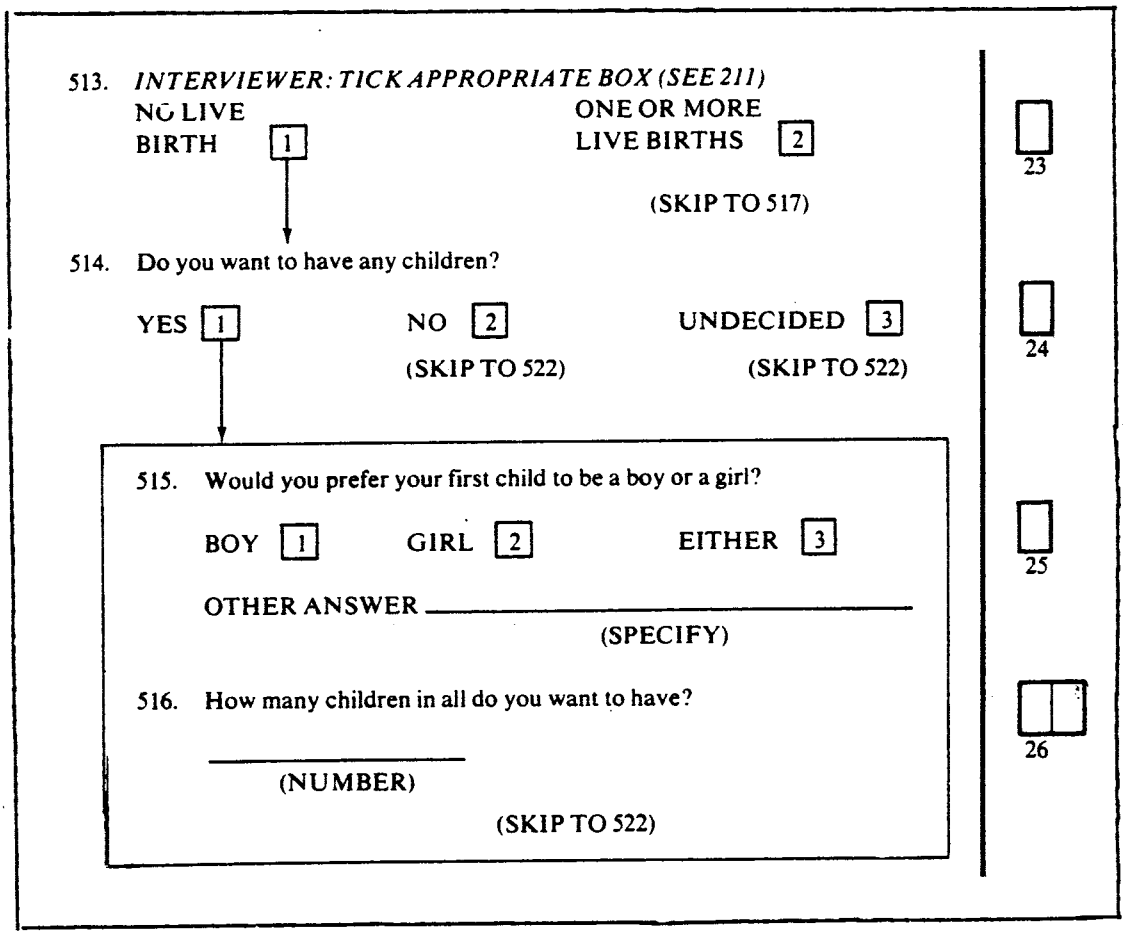
Skip instructions may be indicated in various forms: as explicitly written out instruction to "skip to question so and so", as arrows drawn to indicate the flow of the questionnaire, as column headings in a tabular format, by enclosing questions in boxes and so on. The basic requirement is that of clarity and convenience for the interviewer. Illustration 4.8 is a good example of clearly laid out skip instructions from the WFS questionnaire. The arrow following "Yes" in question 514, for example, directs the interviewer to the next applicable questions (515-516). The latter questions are enclosed in a box to provide a visual aid to the interviewer to skip over these questions if the response to question 514 is "no" or "undecided". In addition, skip instructions are also written out explicitly following these response codes.

Sometimes branching in the questionnaire depends in a more complicated manner on responses obtained in some previous question or questions. This requires the interviewer to check back to those earlier questions. Care has to be taken to ensure that the process of referring back is not too complex as otherwise it confuses the interviewers, break the flow of the interview, or make the respondents impatient. It is a good practice to provide an explicit "filter" to transcribe the earlier information to where it is needed to determine the branching of the question sequence. This "redundancy" also facilitates checking that the interviewers followed the instructions correctly, and can be useful during the computer editing stage. Question 513 in Illustration 4.9 is such a filter, referring back to question 211 earlier in the questionnaire.

Sometimes it is convenient to divide the questionnaire into separate blocks, each applying to a different category of respondents. Such blocks can be convenient for the interviewer even if some (hopefully a minority) of the common questions need to be repeated in more than one block. For example, following a question on employment status respondents may be branched into different blocks (i) "currently working", (ii) "not working but looking for work", and (iii) "others", depending upon their response to the question. Blocks can be clearly demarcated by putting a title prominently at the beginning, enclosing them in thickly marked boxes, using different pages, or even pages of different colours if such facilities are available and affordable. It might be worth repeating some questions

which apply to all categories of respondents, e.g. on demographic characteristics, in each block for the convenience of the interviewers. The "net-work diagram" shown later in this section provides another illustration of this technique.

Illustration 4.9: Example of Well-laid Out Skip Instructions



As noted in Section 3.5, a basic reason for a more complicated skip pattern in a standardized questionnaire is that different categories of respondents need to be channelled to different set of questions, which even if equal or similar in content, may have to be worded differently to suit the exact circumstances of the different categories of respondents. (Naturally such skip patterns are avoided when the requirement of exact wording are less stringent.) For example, future child-bearing desires of women are enumerated in the WFS questionnaire as shown in Illustration 4.10.

Illustration 4.10: Example of Alternative Wordings for Similar Questions

For women who have never had a child:

"Do you want to have any children?"

followed by, if "yes":

"Would you prefer your first child to be a boy or a girl?"

For women who have had one or more children, the corresponding sequence is:

"Do you want to have another child sometime?"

and

"Would you prefer your next child to be a boy or a girl?"

These sequences appear in different parts of the questionnaire, to which the interviewers skip depending on characteristics of the particular respondent.

Experience shows that in many situations it is possible, with proper design and layout, to avoid skip instructions which are difficult to handle or are prone to errors by the interviewers - provided the designer is willing and able to be liberal with space and spread out the questionnaire over many pages, clearly separating out sequences of questions for different categories of respondents. Difficult to handle skip patterns may result when too much effort is made to conserve space, or simply because of poor design and layout as for example in Illustration 4.11 (Casley and Lury, 1981):

Illustration 4.11: Example of Poorly Designed and Laid-out Questionnaire

46 Has (s)he ever been employed before? (Note replies to 10, 11, and 15 before asking question)
Yes, within last year ——— 1
Yes, one to five years ago ——— 2 → 50
Yes, more than five years ago ——— 3
No, never employed before ——— 4 → 60

Particulars of work

50 (a) Describe the kind of economic activity (industry, business or service) of the enterprise in which the person was mainly employed (or most recently employed)

(b) Interviewer check item
(Mark appropriate code)
Agriculture 1 Non-agriculture 2

51 Describe the kind of work (occupation) (s)he was doing at that enterprise

52 Was this person :
Self-employed
- employer ——— 1
- own-account worker ——— 2
- unpaid family worker ——— 3 60
- member of a producer cooperative ——— 4

Paid employee
- regular wage or salary earner — 5
- casual worker ——— 6

Other (specify) — 7

53 Interviewer check item
If 2 in 50b and 1 in 20 | Otherwise→60
If 2 in 50b and 1 or 2 in 30 ↓

Indicate whether the enterprise

	Yes	No	Don't know
(a) requires a licence?			
(b) is registered?			
(c) is externally audited?			
(d) has a pension scheme?			
(e) issues invoice?			
(f) gives paid leave?			

55 How many persons were engaged in the enterprise?
Ten or more → 57 Don't know → 56
Less than ten ↓

(a) Number of hired workers ———
(b) Number of unpaid family workers ———
(c) Number of apprentices ———
(d) Others (speciy) ———

56 What was the approximate value of tools, equipment used for production?
5,000 Rs or more 1 → 57
Less than 5,000 Rs. 2
(Specify value) ———

57 Indicate the means of operation of the main productive equipment of the enterprise
Manual ——— 1
Animal power ——— 2
Mechanical ——— 3
Electricity, fuel or power ——— 4
Other (specify) ——— 5

58 Indicate the nature of the location of the enterprise
Fixed, within own home ——— 1
Fixed, outside own home ——— 2
Not fixed ——— 3

59 What was his/her average monthly income from employment?
——— Rs per month → 60

Labour time disposition

60 What was the DAILY economic activity of this person during the last 7 days
(Circle day of interview and begin with the preceding day)
Enter 2 for full-day activity; 1 for half-day activity

Mo	Tu	We	Th	Fr	Sa	Su	Total
1	2	3	4	5	6	7	

Do you have a job or business or do you normally work on the farm belonging to the household, but did not work yesterday?

Yes/No ---- Go to 2.4.1 if 2.2.1 eq. No
Go to 2.3.4 if 2.2.1 eq. Yes

And, later in the same questionnaire:

Were you seeking work (employment yesterday? Yes/No

Go to 2.5 if 2.1.1, 2.2.1 and 2.3.1 eq. No.

As noted previously tabular forms of presenting questions, though compact, economic and convenient for checking, are less suitable for handling complex skip patterns than more liberally spaced out questionnaires schedules. There are many examples where, due to lack of space, the skip patterns are allowed to become too complex to handle and check. Consider the following, taken from a recent labour force survey:

17. Did (name of person) work previously?

Yes (1) : Go to 18, 19 and 25, then end interview.
No (2) : End interview for this person.

.....

35. Ask for those who answered 3, 4 or 5 in 25 except the cultivator.

Number of persons working in each business except employees. .....

These are more complicated skip instructions than simple "go to ..." referred to earlier. In Question 17, the interviewer is not only asked to go to Question 18, but also given the sequence to be followed subsequently. There are, of course, no corresponding instructions in questions 18, 19 or 25, nor could those be easily accommodated since the sequencing in those questions for other categories of respondents is not the same as those for persons coming from

Q17. In Question 35, the instruction qualifies the codes of Q25 referred to by the phrase "except the cultivator", making the decision process for the interviewers more complicated and unclear. All this is greatly complicated by the fact that the questions are laid out in a long tabular form (consisting of 39 questions, some very long), with little space for clear specification of the skip pattern.

Illustration 4.12 provides another example of the type of design that should be avoided, which is worth quoting in full. Here again the situation is further exasperated by the constraints on space due to tabular presentation of a complicated sequence of questions.

Sometimes tabular, schedule type of layout only appears to have simpler skip pattern just because it does not explicitly specify that certain questions are not applicable to certain categories of respondents. This, of course, does not imply that tabular presentations ar not useful or should be avoided. On the contrary, as discussed in Section 4.3 and 4.4 they are extremely convenient and efficient ways of laying out the questions for certain purposes. They are not suitable for long sequences of lengthy questions with elaborate skip instructions.

In conclusion, it should be emphasized that clarity and convenience of use and checking are the important considerations in choosing the design. The skip pattern should be kept simple to the extent possible. Once the required sequence of questioning is given, it is often false economy to be excessively concerned with saving space.

Illustration 4.12: An example of the Type of Questionnaire Design to be Avoided (Casley and Lury, 1981)

"If skip instructions are to be used, the designer needs to draw a flow chart to ensure that all possibilities have been covered sensibly. In the following example there are several ambiguities; but, in any case, do we need to ask a young man who has been in his first job since school for two months if he looked for work last week? The reader may care to trace other possible combinations through this sequence, which in the original was in the form of columns, making the process even harder.

42. Did you work or have a job last week? YES/NO
If 'yes' go to 43, if 'No' go to 44-45.

43. Have you been working in your present job 3 months?

44-45. When last did you work (In completed weeks, months or years)?

46. If 'yes' in Col. 43 or 3 months in 44-45 is/was this your first job? If 'yes' go to 48, if 'no' go to 47.

47. Why did you leave your last job?

48. Did you look for work last week? YES/NO.

49. If 'yes' in Col. 48 how did you look for work?

50-51. If you neither worked nor looked for work last week, when last did you look for work?

52. Did you look for work for the first time within past 6 months?

53. If you neither worked nor looked for work last week why did you not look for work?

By this time the respondent and most interviewers will be completely befuddled! Note also that the reply in columns 44-45 can be in any one of three units with no instruction on the form itself to specify which has been used."

4.5.2 Net-work or flow diagram for the questionnaire

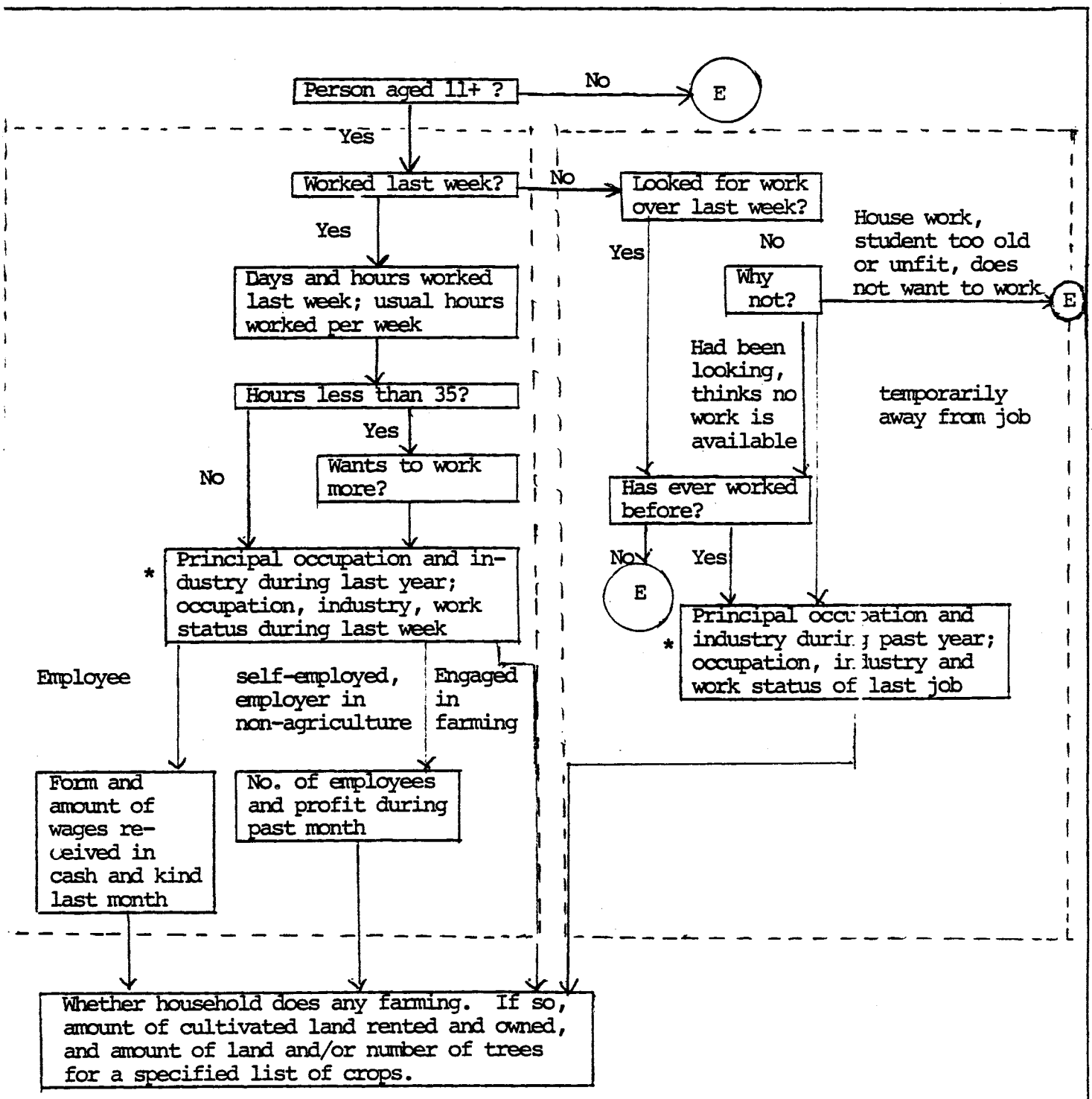
A diagrammatic representation of the questionnaire can be a very useful tool to develop and clarify the structure of the questionnaire, and determine appropriate sequencing and skip instructions. Illustration 4.13 is an example of such a net-work diagram for part of the questionnaire used in the 1982 Labour Force survey of Thailand. Following the "filter" on age, the sequence of questions applies to each household member aged 11 and over. Two separate blocks are developed: one for those who worked during the reference week, and the other for those who did not. To avoid mixing the two groups (which would complicate subsequent skip instructions considerably) two questions - on principal occupation and industry - are repeated in each sequence. After completing the relevant sequence for each member, the questioning returns to the level of household farming activities.

Network diagrams can be useful in a number of ways (see also Sirken, 1972):

(1) They can help in questionnaire development by clarifying the flow, structure and layout of the questionnaire. They can show how complications in the skip pattern may be reduced by properly sequencing the questions, for example by dividing them into major blocks for separate categories of respondents, and possibly repeating a small subset of questions in more than one block to obtain a clear separation. Illustration 4.13 provides an example of this. In fact the questionnaire from which this illustration is adapted did not repeat the questions on principal occupation (marked with an asterisk in the illustration) in the two blocks, and consequently the skip instructions involved in that questionnaire became substantially more complex than implied in the illustration.

(2) Sometimes the actual questionnaire may itself be laid out in the form of a network diagram - using boxes, arrows etc. - so that the interviewers can follow the flow of the interview with greater ease. Illustration 4.9 given earlier provides a good example of this.

Illustration 4.13: Example of a Net-work or Flow Diagram of Part of a Questionnaire



NOTE: 'E' = end of questioning for the household member concerned.

* = Identical subset of questions is repeated for the two groups of respondents to avoid more complex skip patterns.

(3) Network diagrams can be helpful during interviewer training by clarifying and providing an overview of the structure of the interview. For this purpose, a hierarchy of diagrams may be developed giving increasing levels of detail: starting with an overview showing major sections of the questionnaire, down to detailed diagrams for each section or subsection showing individual questions.

(4) Such diagrammatic representation can also be extremely useful at the data preparation and processing stages. Once a diagram is prepared showing the range of answers to each question together with the skip and filter patterns for the entire questionnaire, it becomes an invaluable instrument for the specification of various types of computer editing checks, for recoding and processing of the data, as these specifications can be directly and readily obtained from the net-work diagram itself. Illustration 4.14 is from an earlier version of the WFS Data Processing Guidelines. It shows the net-work diagram for two short sections of the questionnaire. Since the diagram is designed for use at the processing stage, it is not considered necessary to include in it the actual wording or description of the questions - only their sequence numbers. The diagram is followed by an explanation of the conventions used to secure maximum clarity in the diagram.

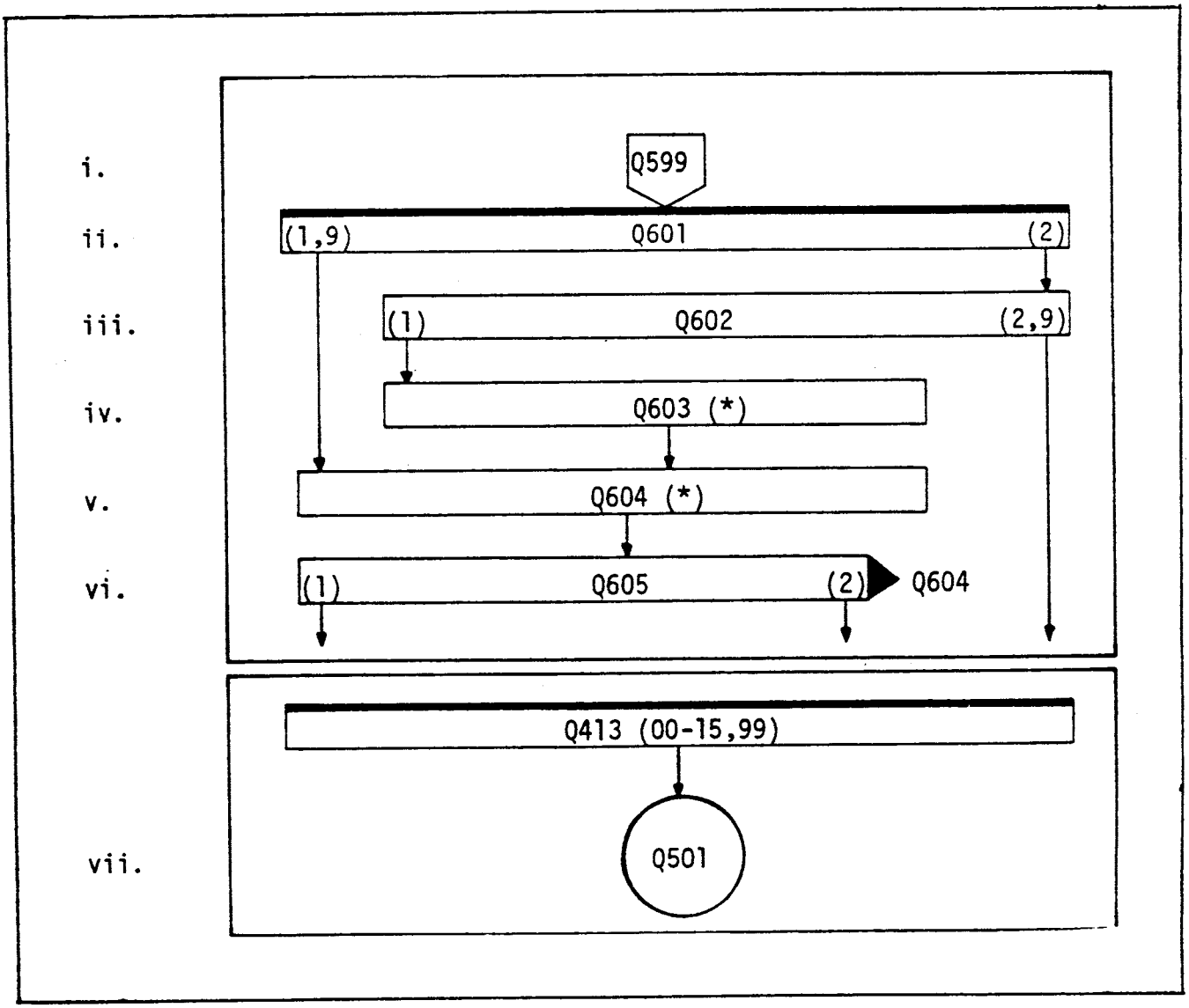
4.6 SUMMARIES AND SUBTOTALS

It is useful to provide various provisions in the questionnaire to facilitate cross-checking of internal consistency, to assess plausibility of the information, to produce preliminary summaries of the results for quality and operational control as well as for early release of the data, and so on. These and other objectives of providing summaries and subtotals at various places in the questionnaire are discussed below.

The structure of a net-work diagram

The diagrams consist of a series of boxes enclosing question numbers and range values, with branches connecting the boxes. Below are two examples highlighting all features of the diagram; one is from section 6 and the other from section 4 of the (WFS) Core Questionnaire.

Illustration 4.14: A net-work diagram developed to facilitate data processing



Below follow explanations of the notation used in the net-work diagrams:

i. This notation is used to indicate which question(s) immediately precede the first question on this page; in the example, Q599 precedes Q601 unconditionally (it is possible to specify more than one question; each question can have a condition attached).

ii. All questions with a heavy line on top of the box are always asked of all respondents; this means that the NA (Not Applicable) code is not valid for these questions.

iii. In this example (which also applies to Q601 and Q605) the value of the question determines the next question to be asked. The complete range of codes (except the NA code) is contained in the "question box".

iv. This question (and it also applies to Q604) is an example where the answer to the question has no bearing on the next question to be asked, i.e., regardless of the answer to Q603, Q604 will always be asked (provided, of course, that Q603 was asked in the first place).

v. The (*) indicates that the range values for this question are to be determined at a later stage; this asterisk may sometimes appear together with a (partial) list of codes.

vi. The "arrow" at the right hand side of the box is used to indicate that the filter question Q605 derives its answer from Q604.

vii. This notation is used to indicate that the next question in sequence is to be found on another page; this notation is usually used between sections or subsections, which are normally coded on separate pages.

4.6.1 Cross-checking internal consistency of the data

In surveys involving the collection of very detailed information (for example surveys of household income and expenditures, and economic activity), the primary objective in providing subtotals for various categories and sub-categories of items is to verify that the quantities and values reported are reasonably consistent with each other and that the patterns of response are plausible. For instance, the recording of individual items of expenditure under a category such as food may be followed by a total of expenditure in the category. Similarly, at a later stage during the interview, a balance sheet may be drawn to compare consumption expenditure and incomes in cash and kind for each sample household. The objective would be to provide the interviewers with an idea of the overall pattern of responses, so that any major discrepancies or implausibilities in the data can be identified during the interview itself. This would enable the interviewers to probe further and correct or explain the information obtained, as the case may be. Illustration 4.15 is an example from the Indian household consumer expenditure survey. Illustration 4.16 is another example taken from the income and expenditure survey in Argentina.

4.6.2 Quality and operational control

A closely related objective of maintaining summaries is to enhance control over various survey operations and data quality. This facilitates the checking of the information by the interviewers during the interview itself, scrutiny of questionnaires by field editors and supervisors, and keeping a tab over the overall pattern of the results being obtained. The usefulness of such information for monitoring and evaluation of survey operations is enhanced if the information is summarized according to individual interviewers, interview teams, sample areas, survey rounds or other administrative divisions of the survey.

4.6.3 Production of preliminary results

Another important objective of summarizing the detailed information collected during the survey is to facilitate the production and early release of the preliminary results. Especially for relatively detailed surveys with field-work

spread over an extended period, prompt release of the main findings, even in a preliminary form, is often an important requirement. In many situations, the preliminary results have to be issued on the basis of manual compilation and tabulation, and the questionnaire has to be designed to facilitate manual extraction of the main results. For instance, as mentioned in Section 4.2.3, space can be provided on the cover sheet of the questionnaire to record selected items of information for easy reference and summarization (see Illustration 4.3). Similarly, basic information on employment and income may be extracted from the questionnaire for quick summarization of the main results. Illustrations 4.16 and 4.17 provide examples from an income and expenditure survey from Argentina.

4.6.4 Data reduction

In many surveys a distinction needs to be made between the degree of detail which is necessary to ensure the collection of the information required with reasonable accuracy, and the detail which is actually necessary for the analysis of the data. If the former significantly exceeds the latter, consideration may be given to manually reducing (summarizing) the data before coding and entering them into the computer. Data reduction is all the more important when original data are voluminous and data entry is expected to be a critical and time-consuming operation. For instance, in a survey of household economic enterprises, information on various inputs, expenditures and gross sales may have to be collected to make reasonably reliable estimate of net returns from the enterprise. In so far as only the net returns are of analytic and substantive interest, there may be little point in coding and entering the preceding details for further processing and analysis. Of course, something is lost in reducing the data before computer processing - for instance their internal consistency cannot be checked so rigorously. However, the advantage of reducing the coding, data entry and processing workload may be overwhelmingly more important.

Illustration 4.15: Indian Household Consumer Expenditure Survey 1977-1978: Example of Summarizing Detailed Information in the Questionnaire

The questionnaire has been divided into a number of blocks or sections. In Block 10, the interviewer transcribes a summary of the information on consumption collected in detail for individual items in earlier blocks of the questionnaire. The value of monthly cash purchases, as well as home-grown and total consumption is recorded for the following subgroups. The number of individually recorded items totalled in each subgroup is also indicated below:

Subgroup	Individual items totalled in sub-group	Subgroup	Individual items totalled in sub-group
Food		Non-food	
Cereals	21 items	Intoxicants	open (up to 23)
Grams	2 items	Fuel and light	open (up to 13)
Cereal sub-stitutes	1 item	Clothing	open (up to 20)
Pulses	Open (up to 5)	Footware	open (up to 10)
Milk and milk products	Open (up to 7)		
Edible oils	Open (up to 5)	Miscellaneous goods and services	Open (up to 34)
Meat, egg, fish	Open (up to 4)	Rents and taxes	Open (up to 5)
Vegetables	Open (up to 8)		
Fruit and nuts	Open (up to 7)	Durable goods	Open (up to 32)
Sugar	Open (up to 4)		
Salt	Open (up to 2)		
Spices	Open (up to 5)		
Refresh-ments etc.	Open (up to 5)		
Subtotal-food	(Up to 76 items)	Subtotal-non-food	(Up to 137 items)

Total consumer expenditure: _____
Household size : _____
Per capita consumer-expenditure : _____

Illustration 4.16: Example of a Summary Sheet Giving Main Items from a Questionnaire

2- PLANILLA RESUMEN DE INGRESOS Y GASTOS DE LA U. DE G.

Cód. área | Orden Listado | Hogar | U. de G. | Enc. | Anal. | Nº M. del hogar | Nº M. de U. de G. | Est. | Año T Mes S | Nº P. de Ingreso

Cód.	Pagos del período Col. PAGO=1	P.	PAGOS DEL MES Grupos	PAGOS DEL MES Capítulos
2				
200		1		
3				
313		3		
320		2		
Resto F. 3		1		
4				
411+412		6		
413		3		
Resto F. 3		1		
423		1		
5				
512		3		
Resto F. 3		1		
511		1		
6				
612 A		6		
614		12		
615		3		
620		2		
Resto F. 3		1		

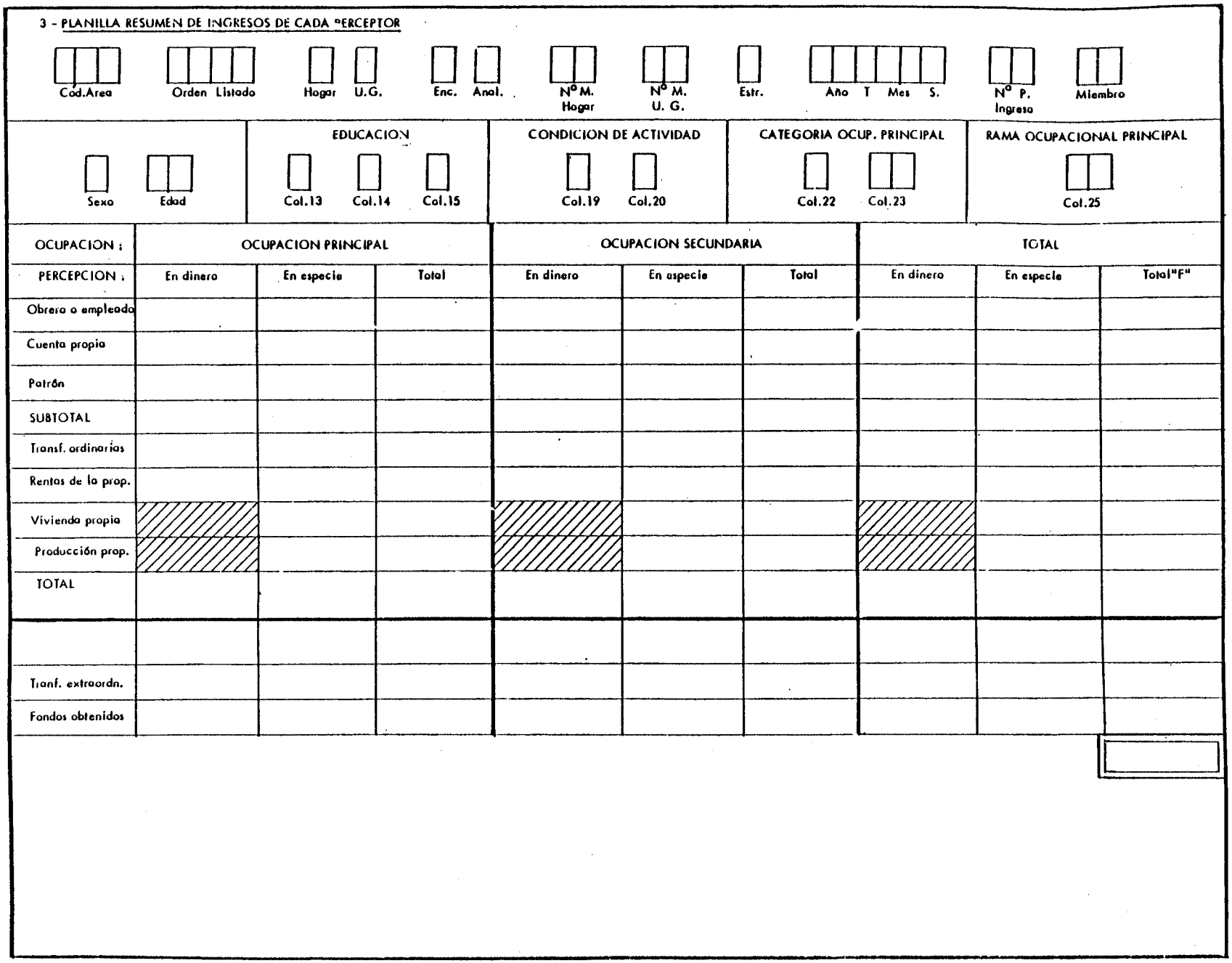
Cód.	Pagos del período Col. PAGO=1	P.	PAGOS DEL MES Grupos	PAGOS DEL MES Capítulos
7				
712		3		
721+722		6		
Resto F. 3		1		
733		1		
8				
F. 3		1		
821		1		
9				
F. 3		1		
911		1		
SUMA "B" capítulos 2 a 9				
960		1		
970		1		
SUMA "C"				
Alimentos: TOTAL MENSUAL "A"				
TOTAL PAGOS DEL MES "D"				
TOTAL CONSUMOS PAGADOS EN EL MES "E"				
De lo cual, valor locativo imputado vivienda propia				

CONTROL DEL GASTO

Cod.	TOTAL	Cod.	TOTAL
200		423	
300		511	
400		733	
500		821	
600		911	
700		SUMA	
800		-P=2	
900		-6128	
960			
970		SUMA "C"	

OPCION (2)	OPCION (5)	INGRESOS DE LA U. de G. Suma planillas de miembros TOTAL "F"
Obrero o empleado		
Cuenta propia		
Patrón		
Transferencias ordinarias		
Rentas de la propiedad		
Vivienda propia		
Producción propia		
TOTAL "I"		
Transferencias extraordinarias		
Fondos obtenidos		
TOTAL "H"		

Compruebe igualdad con línea 2 6 5 del cuadro 10 del F. 6, según "opción".



3 - PLANILLA RESUMEN DE INGRESOS DE CADA PERCEPTOR

Cód.Area | Orden Listado | Hogar | U.G. | Enc. | Anal. | Nº M. Hogar | Nº M. U. G. | Estr. | Año T Mes S. | Nº P. Ingreso | Miembro

Sexo | Edad

EDUCACION: Col.13 | Col.14 | Col.15

CONDICION DE ACTIVIDAD: Col.19 | Col.20

CATEGORIA OCUP. PRINCIPAL: Col.22 | Col.23

RAMA OCUPACIONAL PRINCIPAL: Col.25

OCUPACION :	OCUPACION PRINCIPAL			OCUPACION SECUNDARIA			TOTAL		
PERCEPCION :	En dinero	En especie	Total	En dinero	En especie	Total	En dinero	En especie	Total"F"
Obrero o empleado									
Cuenta propia									
Patrón									
SUBTOTAL									
Transf. ordinarias									
Rentas de la prop.									
Vivienda propia									
Producción prop.									
TOTAL									
Tranf. extraordn.									
Fondos obtenidos									

Illustration 4.17: Example of Summary of Individuals' Characteristics and Income by Source

4.6.5. Facilitating data linkage between surveys

In a system of related surveys carried out over a common sample of respondents, the tabulation and analysis plan may require drawing information simultaneously from more than one survey or questionnaire type. Ideally, this would be achieved by constructing a data file linking the various surveys at the micro-level i.e. at the level of individual units. However, linking of records is often a difficult operation. This becomes even more formidable if the types of units in different surveys are not all of the same type or hierarchy (e.g. households in one survey, individuals in another), or if there are frequent errors in questionnaire identification numbers, or if the units covered by different surveys are not the same due to changes in the sample over time. In such circumstances, it is simpler to have the essential items of information transcribed to another questionnaire and processing it separately.

This sort of situation frequently arises in surveys involving two or more arrangements, for instance when a larger scale survey is used to screen or identify respondents for a subsequent smaller, but perhaps more intensive, survey. Some of the information collected in the first survey may be relevant for analysis of the second survey, and may be manually transcribed on to the questionnaires for the units selected for the latter. An example might be useful. Consider a household survey in which information is obtained, among other items, on income, socio-economic status and housing conditions. Subsequently, selected individuals in the households are interviewed in greater detail on some other topic using a different questionnaire. Some of the information on household characteristics obtained in the first interview may be pertinent in the analysis of individual survey results. If this involves only a limited number of items, it may be simpler to transcribe these items from the household to each individual questionnaire in the household than try to link the data files from the two surveys.

4.7 SOME OTHER ASPECTS OF QUESTIONNAIRE LAYOUT

Several other aspects also need to be considered in determining the form and layout of the questionnaire such as: the numbering of questions; instructions for the interviewers; space for recording responses; record layout, coding scheme and other details for processing; and so on. While these aspects need simultaneous attention along with the questionnaire design, form, layout and structure discussed so far in this chapter, they are, relatively less dependent on the particular subject matter content of the survey. They are discussed more fully in the next chapter concerned with physical production of the questionnaire and supporting documentation.

In the following paragraphs, some of the salient points concerning these aspects are summarized. The summary should also serve as a reminder that they should be kept in view right from the beginning in drafting questionnaires, and that the close involvement of data processing experts from an early stage is essential to ensure that the data produced by the questionnaire is processable.

4.7.1 Numbering of questions

It is necessary to decide on a convenient system of numbering of questions which, apart from being clear and easy to use, should ensure that each question is uniquely identified. Usually, it is convenient to have the numbering system follow the sequence of major sections of the questionnaire, for instance to use a number '101' to indicate the first question (01) of Section 1, and '413' to indicate the thirteenth question of Section 4 etc.. For relatively brief questionnaires, it may be more convenient to number questions sequentially and consecutively through the whole document irrespective of its sections. Both these (and other) variations have been followed in the past as illustrations given in the next chapter (Chapter 5) show. Convenience of use has to be the determining factor. The system adopted should aid the smooth flow of the interview, help the interviewers in correctly following the skip instructions, and should make it easy, without ambiguity, to refer to specific questions in interviers' instruction manuals, during training, at the editing, coding and data processing stages, and in the survey report.

4.7.2 Interviewers' Instructions

Provision of interviewers' instructions in the questionnaire plays an important role in structuring the interview and ensuring uniform standards. Two basic issues to be considered concern (i) the appropriate amount of detail to be included and (ii) the most effective location of the instructions in the questionnaire. On the one hand, it is important to include clear and plentiful instructions on all essential and critical points; for example, interviewers should know who the respondents should be, how to skip and follow the flow of the interview, in what units to record the answers, and, where relevant, on how to probe to seek clarification or additional information. On the other hand, it is equally important to avoid unnecessary cluttering of the questionnaire with elaborate instructions: after some training and field experience interviewers soon learn how to handle most questionnaires, and it often becomes neither necessary (nor desirable) for them to read through detailed instructions during each and every interview. Instructions should be placed nearest to where they are most necessary and most likely to be referred to. The best place is to have them next to the question to which they apply; for example, units for recording a response should be written underneath or alongside the space provided for recording the response. Some general instructions applicable to a whole section may be written at the beginning of the section concerned, or occasionally at the beginning of the questionnaire. It is not appropriate to relegate critical and important instructions to the interviewers' manual.

4.7.3 Recording of responses

The form in which answers need to be recorded depends upon the nature of the questions. It is generally desirable to minimize the amount of writing which the interviewers have to do during the interview. It is most convenient for them to check or circle appropriate boxes rather than write the answers; an attempt should be made to maximize the proportion of such check questions. A little less convenient are the questions where the interviewers write in a simple numeric or alphanumeric code such as '12' or 'F'. Recording of verbatim or descriptive responses is time-consuming not only for the interviewers but also for the coders: their use at least in large-scale surveys should be minimized, though the descriptive form is clearly unavoidable in certain types of questions.

Whatever the form of recording, an obvious requirement is that an answer-space should be clearly identifiable with the question to which it applies, and, even more important, with the response category to which it refers to. Cluttering the questionnaire to save space and paper is almost always a false economy. The recorded answers should stand out, to be easily noticed and picked up by the interviewers (to check their own work), editors, coders and data entry clerks. Several other considerations should be kept in view in the placing of answer spaces, for instance: where the responses have to be coded or transcribed onto a different place, they should be located as near to that place as possible; they should be placed so as to facilitate manual tabulation and summarization of the data where necessary; similarly, they should be placed so as to help the interviewers in correctly 'skipping' and following the flow of the interview.

4.7.4 Coding and other data processing aspects

It has been repeatedly stressed in this document that careful attention must be paid in questionnaire design to data processing requirements. Failure to do so has resulted many times in long delays in the release of the survey data, and even in no release at all. In designing questionnaires, it is essential to consult - early, regularly and often - with data processing staff. Furthermore: the individual(s) responsible for survey data processing should be included as permanent members of the questionnaire design team. In the design of questionnaires careful attention has to be paid to the systems used for coding and data entry.

Coding is the process in which questionnaire entries are assigned numeric values, in order to prepare the data in a form suitable for entry into the computer. Coding may involve (i) assigning numeric codes to responses recorded in words or in some other form which needs to be modified before data entry, or (ii) simple transcription of already assigned values into special spaces provided on the questionnaire or on separate coding sheets, or (iii) no action at all when the responses as originally recorded can be used directly for data entry. Especially, in large-scale surveys it is generally desirable to minimize (i), avoid (ii) and maximize (iii) as far as possible. Whatever the system, it is important to ensure that the coding layout is designed to facilitate accurate data entry.

There are two basic systems of coding: source coding and fixed field coding (see Section 5.3.1 for a description). Fixed-field coding is the more commonly used system. With this system, the questionnaire is broken down into one or more "record types", each record type consisting of a specified set of data items, and each data item assigned a fixed location within a record. For instance, a questionnaire may be divided into five record types, each record corresponding to say one section of the questionnaire and consisting of 80 columns reserved for specified questions in fixed locations. Some details and examples of record layout will be discussed in Chapter 5. Here it is enough to note that careful attention needs to be paid to record layout in designing the questionnaire. Record types should be clearly identified, each preferably beginning at a new page and/or beginning of a new section, with the required number of columns reserved for questionnaire and record identification; spaces provided for coding the information should also indicate the corresponding column numbers on the record, and so on.

The coding system should be clear and consistent. For instance, if "yes" is coded as "1" and "no" as "2" in some question, the same system should be followed in all the other questions where these response categories appear. Similarly, "not available", "not stated", "not applicable", etc. should be coded in a uniform way, and distinguished from each other as necessary. Except for questions where the number of response categories or codes is large (say exceeds 6 to 8), an attempt should be made to specify the codes on the questionnaire itself. This would save time and reduce the incidence of coding errors. Particular care is required in devising codes for open-ended, semi-open-ended and especially multiple response questions.

The system used for entering the data into the computer also affects the questionnaire design. Data entry refers to the transference of data to a computer readable medium. Depending on the sophistication of available facilities, we may distinguish between two approaches:

(1) Reading the data directly by optically scanning the questionnaire (or coding sheets). This system can have advantages when dealing with large volumes of data, but it requires sophisticated facilities, precision in design and printing of documents, and use of high-quality paper and special ink for printing. These

conditions are not generally satisfied in developing countries - indeed, the technique has been rarely used even for full-scale censuses in developing countries.

(2) The alternative and more appropriate approach in many circumstances is operator-controlled data entry. Increasingly with the development of micro-computer and distributed computer power, countries are acquiring facilities for interactive data entry. This means that data can be scrutinized as they are entered. Also, with suitable software the data entry clerks can be aided in other ways; for instance, they can be provided with video images of each page of the questionnaire as they enter the data. These facilities have the potential of greatly facilitating the task and reducing the incidence of data entry errors. In relation to questionnaire design, they permit greater flexibility in layout of questions and coding boxes etc. so that greater weight can be given to the requirements and convenience of the interviewer vis-a-vis subsequent stages of data handling, in the design and layout of the questionnaire.

However, in the present circumstances, the bulk of survey data entry continues to remain an operator-controlled, non-interactive keying in of the coded data on to cards, tape or disk. And in this context, the problem remains of insufficient attention being given in questionnaire design to the requirements of efficient, convenient and accurate data entry and subsequent computer processing. The basic requirement is that the data entry proceeds systematically, in an orderly and almost mechanical manner and at a high speed without introducing too many errors.

All these considerations are discussed in greater detail and with illustrations in the next chapter.

CHAPTER 5

QUESTIONNAIRE PRODUCTION

5.1 INTRODUCTION

In the previous two chapters we have considered principles of questionnaire design from a substantive point of view: determination of survey content, formulation and wording of questions, specification of response categories, grouping and sequencing of questions, provision of introductory and control information, and so on. This chapter deals with a number of other, more formal, aspects of the questionnaire design, such as its physical size, shape, typographic style, coding and other data processing requirements, printing and reproduction for the full-scale survey. It also briefly describes the nature of interviewers' aids and supporting document which need to be developed before the questionnaire can be administered in the field.

To a certain extent, the aspects of questionnaire design discussed in this chapter are less specific to the particular subject-matter of the survey. They require expertise in draftmanship, a knowledge of survey data processing requirements and procedures, and familiarity with printing and reproduction of documents. While all these requirements need to be kept in view from the outset, they require special attention while finalizing the questionnaire for printing. It may become necessary at this stage to add to the design team persons with special skills in these areas.

In the following discussion reference will be made to several illustrations taken from various country surveys. They are:

Illustration 5.1: From Labour Force Survey, Jamaica

SECTIONS II TO V FOR PERSONS 14 YEARS AND OVER ONLY

SECTION II – ECONOMIC ACTIVITY

12. What were you doing most of the time during Survey Week? — Col. No.

Working	With job	Looking	Keeping	School	Crippled	Other
[1]	[2]	[4]	[5]	[6]	[7]	[9]
Go to Q. 16 (Other Specify)	Not working Q. 17	for work Q. 17	House Q. 13	Q. 13	Disabled Stop*	(Specify) Q. 13

24

13. Although you had no job and were not working, did you wish to work?

[7] Yes (Go to Q. 15) [9] No (Go to Q. 14) — 25

14. Did you wish to work at any time during the past three months?

[7] Yes (Go to Q. 15) [9] No (Go to Q. 17) — 26

15. What would prevent you taking a job if offered during Survey Week?

Would	Would not be	Pregnant	No one to care	Had no	Not
[0]	[2]	[4]	[5]	[7]	[9]
accept Go to Q. 17	prepared Q. 17	thus unable Q. 17	for children Q. 17	need for job Q. 17	reported Q. 17

27

16. How many hours did you work during Survey Week?

1 - 8	9 - 16	17 - 24	25 - 32	33 - 40	41 - 48	49+	N R
[1]	[2]	[3]	[4]	[5]	[6]	[7]	[9]

28

17. How many months did you work during the 12 months prior to Survey Week?

None	Under 1	1 & Over	2 & Over	4 & Over	6 & over	8 & Over	10 & Over	12	NR
[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
		Not 2	Not 4	Not 6	Not 8	Not 10	Not 12		

29

18. What kind of work were you doing during the Survey Week?
(if unemployed during Survey Week, state previous occupation)

..... [ ][ ][ ][ ] 30-33

19. In what kind of business or industry was this job?

..... [ ][ ][ ][ ] 34-37

Illustration 5.2: From Agricultural Survey, Dominican Republic

SECCION IV – INSUMOS Y PRODUCCION DE CULTIVOS – Continuación

ENTREVISTADOR > Si hay cultivos secundarios, al hacer las preguntas 21–37 esté seguro de incluir todos los insumos utilizados para todos los cultivos asociados (principales y secundarios).

21a. ¿Se utilizaron fertilizantes, insecticidas, herbicidas, fungicidas o plaguicidas en este cultivo durante los últimos doce meses? 0177
1 ☐ Sí – *Siga a 21b*
2 ☐ No – *Pase a 22a*

b. Especifique el tipo, fórmula, costo y cantidad de fertilizantes químicos usados en este cultivo durante los últimos doce meses.

Fórmula de abonos químicos	PARA USO DE LA OFICINA	Cantidad	Unidad	Peso por Unidad	PARA USO DE LA OFICINA	Costo Total
(1)	0178 Código				0179	0180 $ .00
(2)	0181 Código				0182	0183 $ .00
(3)	0184 Código				0185	0186 $ .00

(4) ¿Usó estos fertilizantes en base a recomendaciones de un análisis químico del suelo? 0187
1 ☐ Sí
2 ☐ No

c. Cantidad y costo total de abonos orgánicos para este cultivo . . . . . PARA USO DE LA OFICINA 0188 Cantidad | 0189 Costo $ .00

Cantidad | Unidad | Peso por unidad

d. Costo total de pesticidas (insecticidas, fungicidas) para este cultivo . . . . . 0190 $ .00

e. Costo total de otros productos químicos (yerbicidas, c[illegible]os) para este cultivo . . . . . 0191 $ .00

f. COSTO TOTAL *(Sume 21b–21e)* ⟶ 0192 $ .00

22a. ¿Se irrigó este cultivo durante los últimos doce meses? 0193
1 ☐ No – *Pase a 23*
2 ☐ Sí – *Siga a 22b*

b. ¿Cuántas veces durante el ciclo se regó este cultivo? . . . . . 0194 Número

INSUMOS – MAQUINARIA

23. ¿Se utilizó maquinaria agrícola motorizada como tractor para preparar la tierra, sembrar o trabajar este cultivo, aplicar fertilizantes o cosechar? 0195
1 ☐ Sí – *Siga a 24*
2 ☐ No – *Pase a 26*

24. ¿La maquinaria fue – 0196
* 1 ☐ Propia?
2 ☐ Alquilada de particulares?
3 ☐ Alquilada del gobierno?
4 ☐ Cedida sin pago?
5 ☐ Otro?

FORMA LASA-AG-2 (11-28-78)

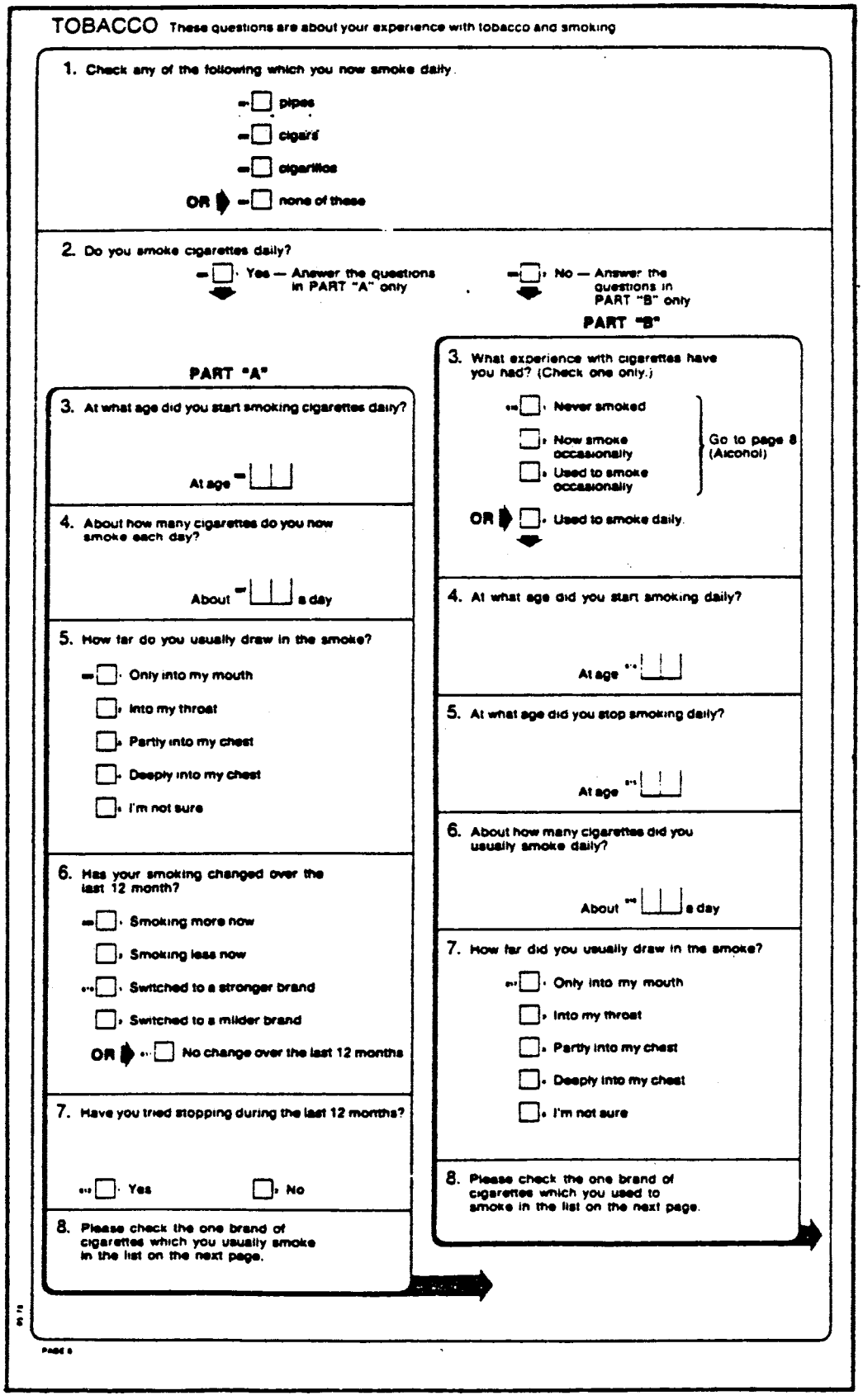
Illustration 5.3: From Socio-economic Survey, Nicaragua

V. CARACTERISTICAS SOCIO-ECONOMICAS
(Para Personas de 10 años y más de Edad)

No. de Línea 2–3 ☐☐ *Nombre y Apellidos:* _____

1. TRABAJO LA SEMANA PASADA? (Se refiere a cualquier Actividad Laboral realizada una hora semanal o más excluyendo al trabajo voluntario y los quehaceres domésticos).	4 SI ☐ 1 NO ☐ 2 (Pase a 4)
2. GANO ALGO EN SU TRABAJO? (Sueldo, salario, comisión, ganancia o especie).	5 SI ☐ 1 (Pase a 7) NO ☐ 2
3. CUANTAS HORAS DE LA SEMANA PASADA LE DEDICO A ESE TRABAJO?	6 Menos de 15 Hrs./Sem. ☐ 1 (Pase a 6) 15 Hrs./Sem. o más ☐ 2 (Pase a 7)
4. TIENE ALGUN TRABAJO DEL QUE HAYA ESTADO AUSENTE LA SEMANA PASADA POR ALGUNA RAZON CIRCUNSTANCIAL? (Vacaciones, enfermedad, maternidad, falta de insumos, de materia prima, problemas climáticos, etc.)	7 SI ☐ 1 (Pase a 7) NO ☐ 2
5. ESTUVO BUSCANDO TRABAJO LA SEMANA PASADA?	8 SI ☐ 1 NO ☐ 2 (Pase a 16)
6. HA TRABAJADO ANTES ALGUNA VEZ?	9 SI ☐ 1 NO ☐ 2 (Pase a 17)
7. QUE TIPO DE TRABAJO REALIZO LA SEMANA PASADA O LA ULTIMA VEZ QUE LO HIZO? (Si tiene o tenía más de un trabajo anote la ocupación en su trabajo principal, es decir al que le dedica mayor tiempo, describala ampliamente).	10–13 ☐☐☐☐ _____ _____ _____ _____
8. DONDE USTED TRABAJO LA SEMANA PASADA O POR ULTIMA VEZ, COMO QUE LO HIZO?	14 Patrón ☐ 1 Cuenta Propia ☐ 2 Trabajador no Remunerado ☐ 3 Asalariado ☐ 4 Cooperativista de Producción ☐ 5
9. A QUIEN PERTENECE LA EMPRESA, ESTABLECIMIENTO, FINCA U ORGANISMO DONDE USTED TRABAJO LA SEMANA PASADA O POR ULTIMA VEZ?	15 Sector Privado ☐ 1 Sector Estatal ☐ 2 Sector Mixto ☐ 3 No Sabe ☐ 9
10. A QUE SE DEDICA LA EMPRESA, ESTABLECIMIENTO, FINCA U ORGANISMO EN QUE TRABAJA O TRABAJABA? (Si es cuenta propia, describa su actividad)	16–19 ☐☐☐☐ _____ _____ _____ _____

Illustration 5.4: From Health Survey, Canada



TOBACCO These questions are about your experience with tobacco and smoking

1. Check any of the following which you now smoke daily.
   - = ☐ pipes
   - = ☐ cigars
   - = ☐ cigarillos
   - OR ➧ = ☐ none of these

2. Do you smoke cigarettes daily?
   - = ☐ · Yes — Answer the questions in PART "A" only
   - = ☐ · No — Answer the questions in PART "B" only

PART "A"

3. At what age did you start smoking cigarettes daily?
   At age = ☐☐

4. About how many cigarettes do you now smoke each day?
   About = ☐☐ a day

5. How far do you usually draw in the smoke?
   - = ☐ · Only into my mouth
   - ☐ · Into my throat
   - ☐ · Partly into my chest
   - ☐ · Deeply into my chest
   - ☐ · I'm not sure

6. Has your smoking changed over the last 12 month?
   - = ☐ · Smoking more now
   - ☐ · Smoking less now
   - •• ☐ · Switched to a stronger brand
   - ☐ · Switched to a milder brand
   - OR ➧ •• ☐ No change over the last 12 months

7. Have you tried stopping during the last 12 months?
   - •• ☐ · Yes
   - ☐ · No

8. Please check the one brand of cigarettes which you usually smoke in the list on the next page.

PART "B"

3. What experience with cigarettes have you had? (Check one only.)
   - •• ☐ · Never smoked
   - ☐ · Now smoke occasionally
   - ☐ · Used to smoke occasionally
   - } Go to page 8 (Alcohol)
   - OR ➧ ☐ · Used to smoke daily

4. At what age did you start smoking daily?
   At age •• ☐☐

5. At what age did you stop smoking daily?
   At age •• ☐☐

6. About how many cigarettes did you usually smoke daily?
   About •• ☐☐ a day

7. How far did you usually draw in the smoke?
   - •• ☐ · Only into my mouth
   - ☐ · Into my throat
   - ☐ · Partly into my chest
   - ☐ · Deeply into my chest
   - ☐ · I'm not sure

8. Please check the one brand of cigarettes which you used to smoke in the list on the next page.

PAGE 6

Illustration 5.5: From Hospital Survey, Canada

SURVEY OF INPATIENT FACILITIES FOR THE TREATMENT OF EMOTIONALLY DISTURBED CHILDREN
ENQUÊTE SUR LES ÉTABLISSEMENTS DE TRAITEMENT DES ENFANTS AFFECTIVEMENT PERTURBÉS
CANADA, 1974

Is the name and address label of your facility correct? / *Cette étiquette est-elle complète et exacte?* — Yes / *Oui* [1] No / *Non* [2]

If "NO", please provide correct information below
Si "NON", inscrivez les renseignements exacts ci-dessous

NAME – *NOM*

ADDRESS – *ADRESSE*

POSTAL CODE *POSTAL*

* PLEASE SEE DEFINITIONS – * *CONSULTEZ LES DÉFINITIONS*

I Historical and Administrative Data – *Données chronologiques et administratives*

1. Please indicate type of your facility (check one only)
Indiquez le genre d'établissement (ne cochez qu'une case)

- * RESIDENTIAL TREATMENT CENTRE / *CENTRE RÉSIDENTIEL DE TRAITEMENT* [1]
- * ALTERNATE LIFESTYLE RESIDENCE / *INTERNAT DE RÉADAPTATION À UNE VIE NORMALE* [2]

UNIT IN A HOSPITAL / *UNITÉ D'UN HÔPITAL*:
- GENERAL HOSPITAL / *HÔPITAL GÉNÉRAL* [3]
- CHILDREN'S HOSPITAL / *HÔPITAL PÉDIATRIQUE* [4]
- MENTAL RETARDATION CENTRE INCLUDING HOSPITAL TRAINING SCHOOLS / *CENTRE POUR ARRIÉRÉS MENTAUX (COMP. ÉCOLE DE FORMATION)* [5]
- PSYCHIATRIC HOSPITAL / *HÔPITAL PSYCHIATRIQUE* [6]

OTHER (specify) / *AUTRE (précisez)* ▶ [7]

2. When did your facility commence operations for the treatment of emotionally disturbed children?
Quand votre établissement a-t-il commencé à s'occuper du traitement des enfants affectivement perturbés?

MONTH / *MOIS* [ ]

YEAR / *ANNÉE* [ ]

3. (a) Are you licensed to operate a facility for the treatment of emotionally disturbed children?
Avez-vous un permis vous autorisant à exploiter un établissement de traitement des enfants affectivement perturbés?
Yes / *Oui* [1] No / *Non* [2]

(b) If "YES", is your facility licensed by a municipal or a provincial government? (Check one only and name the department or ministry that was directly responsible for the licensing)
Si "OUI", indiquez le niveau de gouvernement (ne cochez qu'une case) et donnez le nom du ministère ou service qui vous a délivré ce permis.

MUNICIPAL / *MUNICIPAL* [1]

PROVINCIAL / *PROVINCIAL* [2]

NAME – *NOM* ▶

4. Please indicate type of ownership (check one only)
Indiquez le genre de propriété (ne cochez qu'une case)

Ownership: (i.e. person, group of persons, agency or corporate body who is the registered owner according to the deed.

Propriété: (c.à.d. personne, groupe de personnes, organisme ou corporation qui, selon l'acte d'enregistrement, est le propriétaire en titre).

- * Proprietary / *Privée à but lucratif*
  - INDIVIDUAL OWNERSHIP / *PROPRIÉTÉ D'UN PARTICULIER* [1]
  - PARTNERSHIP / *SOCIÉTÉ EN NOM COLLECTIF* [2]
  - CORPORATION / *CORPORATION* [3]
- * Voluntary / *À but non-lucratif*
  - LAY (VOLUNTARY LAY BODY) / *SOCIÉTÉ LAÏQUE (BÉNÉVOLE)* [4]
  - RELIGIOUS / *ORGANISME RELIGIEUX* [5]
  - CORPORATION / *CORPORATION* [6]
- Government / *Gouvernement*
  - MUNICIPAL / *MUNICIPAL* [7]
  - PROVINCIAL / *PROVINCIAL* [8]

OTHER (specify) / *AUTRE (précisez)* ▶ [9]

5. (a) Is this facility a part or a member of a chain of two or more facilities?
Cet établissement fait-il partie ou est-il membre d'une chaîne de deux établissements ou plus?
Yes / *Oui* [1] No / *Non* [2]

(b) If "YES", please name the parent or controlling body:
Si "OUI", nommez l'établissement principal ou la corporation dirigeante:

NAME – *NOM*

ADDRESS – *ADRESSE*

POSTAL CODE *POSTAL*

4-2301-57 28-4-75

Illustration 5.6: From World Fertility Survey, Core Questionnaire

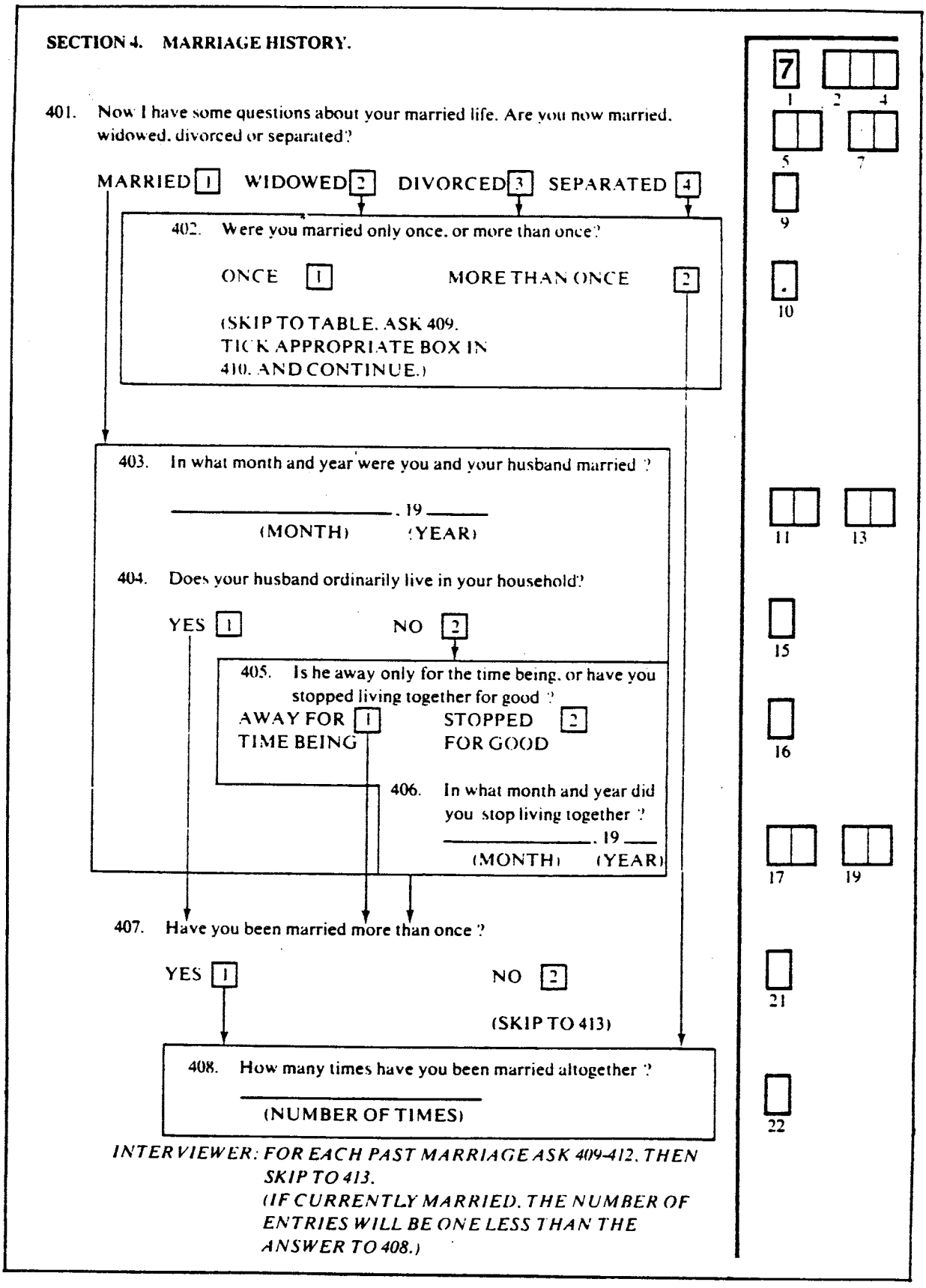
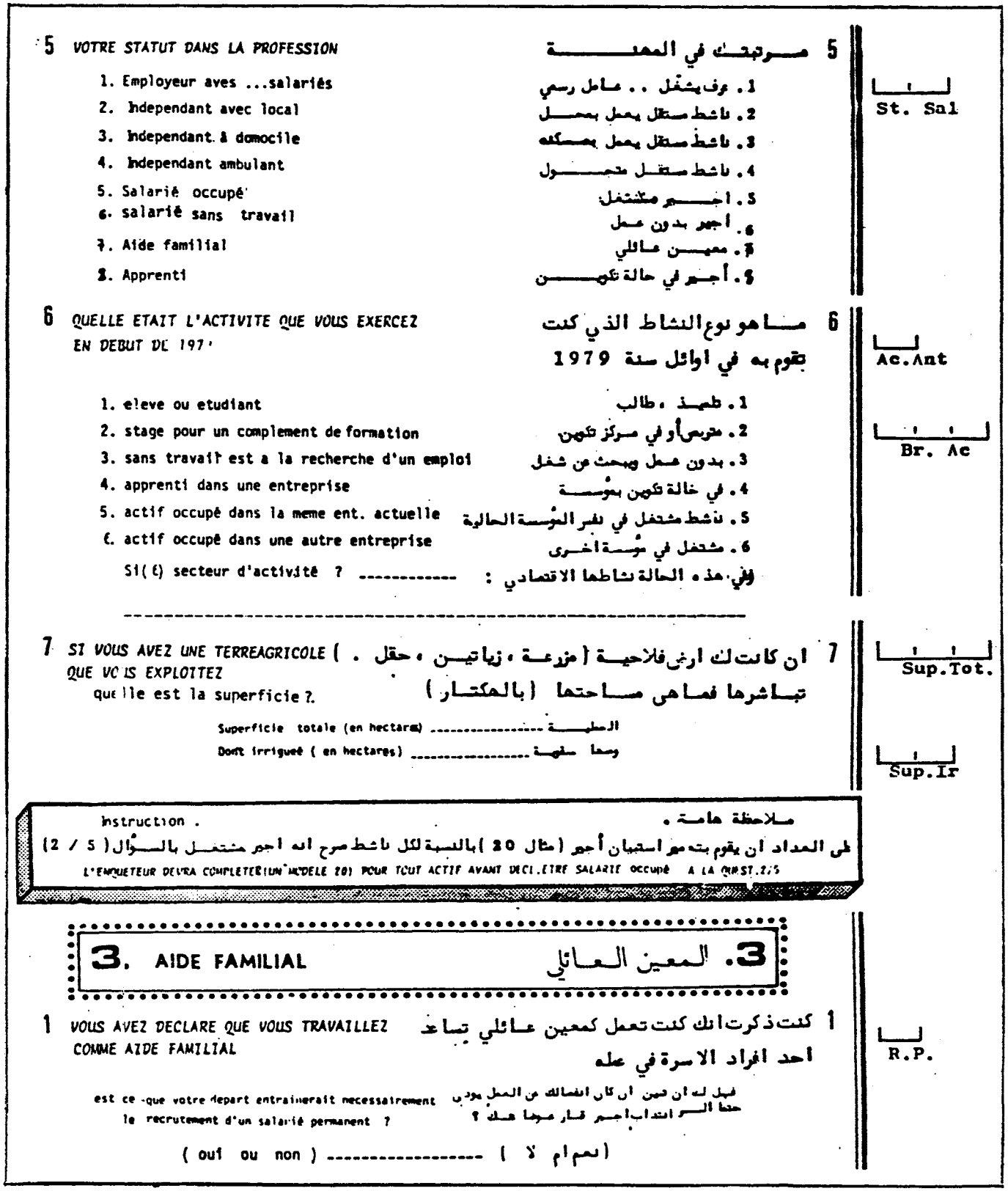


Illustration 5.7: From Employment Survey, Tunisia



5 VOTRE STATUT DANS LA PROFESSION — 5 صـــوتبتـــك في المهنـــــــة

1. Employeur aves ...salariés — 1. عرف يشغل .. عـامل رسمي
2. Independant avec local — 2. ناشط مستقل يعمل بمحـــل
3. Independant à domocile — 3. ناشط مستقل يعمل بمسكنه
4. Independant ambulant — 4. ناشط مستقـل متجـــــول
5. Salarié occupé — 5. اجـــير مشتغل
6. salarié sans travail — 6. اجير بدون عمل
7. Aide familial — 7. معيـــن عـائلي
8. Apprenti — 8. أجـير في حالة تكهـــــن

St. Sal

6 QUELLE ETAIT L'ACTIVITE QUE VOUS EXERCEZ EN DEBUT DE 197' — 6 مـــاهو نوع النشاط الذي كنت تقوم به في اوائل سنة 1979

1. eleve ou etudiant — 1. تلميـذ ، طالب
2. stage pour un complement de formation — 2. متربص أو في مـركز تكهن
3. sans travail est a la recherche d'un emploi — 3. بدون عمل ويبحث عن شغل
4. apprenti dans une entreprise — 4. في حالة تكهن بمؤسسة
5. actif occupé dans la meme ent. actuelle — 5. نشط مشتغل في نفس المؤسسة الحالية
6. actif occupé dans une autre entreprise — 6. مشتغل في مؤسسة اخرى
Si(6) secteur d'activité ? ---------- — وفي هذه الحالة نشاطها الاقتصادي :

Ac.Ant

Br. Ac

7 SI VOUS AVEZ UNE TERREAGRICOLE QUE VOUS EXPLOITEZ quelle est la superficie ? — 7 ان كانت لك ارض فلاحيـة (مزرعـة ، زياتيـن ، حقل . تباشرها فما هي مساحتها (بالهكتار)

Superficie totale (en hectares) ---------- الجملية
Dont irriguée (en hectares) ---------- وسقيـة

Sup.Tot.

Sup.Ir

Instruction . — ملاحظة هامة .

L'ENQUETEUR DEVRA COMPLETER(UN MODELE 20) POUR TOUT ACTIF AVANT DECLARE SALARIE OCCUPE A LA QUEST.2/5

على العداد ان يقوم بتعمير استبيان أجير (مثال 20) بالنسبة لكل ناشط صرح انه اجير مشتغل بالسؤال (5 / 2)

3. AIDE FAMILIAL — 3. المعين العـائلي

1 VOUS AVEZ DECLARE QUE VOUS TRAVAILLEZ COMME AIDE FAMILIAL — 1 كنت ذكرت انك كنت تعمل كمعين عـائلي تساعد احد افراد الاسرة في عمله

est ce -que votre depart entrainerait necessairement le recrutement d'un salarié permanent ? — هل لك ان تبين ان كان انفصالك عن العمل يؤدي حتما الى انتداب اجير قار مكانك ؟

(oui ou non) ---------- (نعم أم لا)

R.P.

5.2 PHYSICAL DESIGN; DRAFTMANSHIP

Once the questionnaire has been drafted, reviewed, tested and finalized in content, its physical form and layout needs to be carefully worked out before it is sent for printing and large-scale reproduction. A variety of points need to be attended to in the final layout: the numbering of questions, placing of interviewers' instructions and response categories, the provision of answer-spaces as they would actually appear on the printed version, use of abbreviations, punctuation and typographic differentiation between questions, response categories and instructions, inclusion of more than one language version in the questionnaire, and so on.

5.2.1 Numbering of questions

As noted in Section 4.7.1, it is necessary to decide on a convenient system of numbering to ensure that each question is uniquely identified, and that the system is clear and easy to use at the interviewers' training, data collection and processing stages.

For a relatively brief questionnaire, it may be most convenient to number the questions sequentially through the whole document, starting with '1' at the beginning and proceeding onwards till the end without paying attention to the sections into which the questionnaire may have been divided. Illustration 5.1 follows this system. Questions in Section I (not shown) are numbered 1 through 11, those in Section II simply proceed from 12 onwards. Each question is given a unique number, and under each number only a single question appears.

Illustration 5.2 follows the same system with sequential numbers, disregarding the sections: for example, Section IV begins with question number '21', '20' being the last question in Section III (not shown). However, small sequences of consecutive and closely-related questions have been given a common numeric number, and individual questions within the sequence are distinguished by an additional character (e.g. 22a and 22b). This system emphasizes the connection between questions in a group. For instance in Illustration 5.2, questions 21(a) to (f) all refer to the use of fertilizers and insecticides, and questions 22(a)

and (b) to irrigation. Apart from pointing to a logical relation between questions in a sequence, this system can also facilitate skip instructions. Frequently, the first question in the sequence calls for a "yes-no" answer, and the remainder of the sequence is applicable only if the response to this is "yes". Question 21(a) in Illustration 5.2 is of this type. This system can be helpful to the interviewers in following the skip instructions correctly and easily. Another situation where the system may be convenient is when long, pre-specified lists of items have to be enumerated, as for example in a survey of household expenditure. In such a situation, a group of items may be identified by the main question number, and individual items in the group by sub-numbers such as (a), (b), (c) ... or (i), (ii), (iii)... etc.

Occasionally, more than one level of sub-numbers may be used, as for example questions 21b(1) - (4) in Illustration 5.2. However, such a system can easily become cumbersome; more than two sub-levels should be avoided.

Another point to be noted is that the sub-numbers should identify a clearly demarcated list of items/questions of the same type, i.e. they should represent a natural grouping. This, for example, is the case for questions 21b(1) - (3) in the illustration, which is an open-ended list of chemical fertilizers. However, question 21.b(4) does not belong to this subgroup, and it would have been preferable to number it as 21(c), with appropriate adjustment to the numbering of subsequent questions.

In longer questionnaires, it is generally more convenient to number the questions separately within each section. For example, in Illustration 5.3, Section V (as any other section) begins with question number '1'. The section and the explicit question number together can be used to identify each question uniquely, e.g. "V.3" for the 3rd question in Section V and IV.4" for the 4th question in Section IV although this is not done explicitly in the illustration. The World Fertility Survey questionnaire provides perhaps a better variant of the same system. Here the questionnaire is divided into seven sections, numbered 1 to 7, and questions are given 3-digit number: the first digit identifying the section and the next two digits the sequence within the section. Thus the very first question is numbered 101; question 224 is the 24th question of section 2 and 508 the 8th question of section 5.

Whatever be the system, it should be clear and easy to remember and refer to. For instance, the use of numbers longer than 3 digits (or characters) can be cumbersome and should be avoided. Usually it is also not convenient to mix roman and arabic numbers such as IV.8. The use of purely arabic numerals is perhaps the most convenient, especially at the data processing stage. For the same reason it may be desirable to use a system with fixed numbers of digits (e.g. 101, 112 etc. rather than 1.1, 1.12 for the 1st and 12th questions in section 1). Finally, it is better to have the section number explicitly included in the question number, especially if skips from one section into another are involved.

Occasionally, it may become necessary to introduce one or more additional questions at a relatively late stage of questionnaire development. A choice has to be made whether to renumber the entire questionnaire to accommodate the added questions properly, or to leave the existing numbers unchanged and give the added questions special numbers (such as "21A" for a question added after existing question "21"). Renumbering is preferable to retain simplicity and clarity. However, sometimes it may be too inconvenient to adjust all the numbers, e.g. if the change would involve modifying all the interviewers' manuals and instructions, data processing specifications and computer programs. Such changes may be especially inconvenient in repeat surveys for which the system has been set up and the interviewers are already thoroughly familiar with the existing question numbers. The final choice would depend upon a balance between these factors.

One final remark: at the beginning of this subsection it was emphasized that the numbering system chosen, apart from being clear and easy to use, should ensure that each question is uniquely identified. For instance, if parallel series of questions are developed for two categories of respondents, then the questions in each series should preferably be numbered distinctly from questions in the other series. This has not been followed for example in Illustration 5.4, though in other respects the questionnaire is very well laid out. The two sequences ("Part A" and "Part B" in the illustration) following question 2 are both numbered 3-8, even though the questions and the coding schemes in the two sequences are not identical. Generally this practice is not recommended.

5.2.2 Space for recording responses

Type of responses

Responses during an interview can be recorded in various ways such as checking a box or circling a code, entering a code or a number, or writing the information in words, either verbatim or in a condensed form. More specifically, five forms of recording may be distinguished (World Fertility Survey, 1976):

(a) Fixed-alternative questions: in this case all possible or alternative answers are predetermined (such as yes/no) and the interviewer simply checks or circles only one of those.

(b) Multi-coded questions: same as above, except that the interviewer checks or circles as many codes as apply. An example is of questions enumerating reasons for something, when more than one reason may be given by the respondents to a particular question.

(c) Number or value questions: here the answer is specified as a numeric value which can be directly used as the code. Examples are age,. number of persons.

(d) Open-ended questions: here the response is descriptive either because the possible answers are too many to be precoded, or are too complex or unknown for this purpose.

(e) Semi-open-ended questions: these represent a mixture of types (a) - (c) with type (d). Ideally, the "fixed" part covers the great majority of responses, but provision exists for recording open-ended responses where necessary.

It is usually more efficient to adopt alternatives (a) - (c) since they take less space, require less time during the interview and reduce the amount of coding required in the office. By contrast, the coding of open-ended questions can require substantial time and effort depending upon the complexity of the answer. Sometimes it is not possible to avoid open-ended questions without sacrificing the completeness or richness of the responses. However, an effort should be made to keep the number of open-ended questions

within limits, and to choose the "fixed" or at least the "semi-open-ended" form where possible. For a detailed discusssion, see Section 3.7 above.

Positioning of answer spaces

Whatever be the form of recording, an obvious requirement is that answer-spaces could be clearly identified with the question to which they apply. The following example illustrates the kind of confusion that can arise, in a question on age class, when the answer-spaces are too crowded:

___under 20 ___20-34 ___35-49 ___50-64 ___65 or over

An interviewer, faced with a respondent whose age falls in one of the middle classes, could easily enter the check-mark to the right rather than to the left of the correct category. Even if the answer-spaces are shown to the right of the questions, as might seem more logical in terms of reading from left to right, there is still a danger that the answer could be checked in the wrong place. A better layout would be to list each class on a separate line, one below the other. If that is not feasible, the following layout would be an improvement:

under 20 /_/ 20-34 /_/ 35-49 /_/ etc.

Even if the answer-spaces are listed one below the other, with answer-spaces right justified, errors might still occur if the space between the question and the answer-space is too great. For instance, the interviewer's eye could slip up or down a line in the middle of the following layout:

under 20 _____
20-34 _____
35-44 _____
45-54 _____
55-64 _____
65-74 _____
75 and over _____
don't know _____
refused _____

If it is not possible to position the category names close to the answer-spaces, a dotted line connecting the answer and the recording space could help cut down errors in recording.

Illustration 5.3 from the Nicaragua Socio-economic Survey provides an example of a well-designed and clear layout. The spaces for recording responses are clearly distinguished from the questions and instructions. The data can be entered into the computer directly as recorded without the need for any transcription into separate coding boxes.

Both forms of placing response categories - along a vertical line near the margin, or stringing them horizontally below the questions - have been widely used in practice. Illustration 5.5 provides an example of the former; Illustrations 5.1 and 5.6 are examples of horizontally placed answer-spaces. Each system has its advantages and disadvantages.

If answer categories are placed one below the other along a column near the margin (right margin for languages read from left to right, left margin for those read the other way round), it is easier to code and enter data for computer processing. For instance in Illustration 5.5, the responses as recorded in the boxes can be directly used for data entry, whereas in the horizontal arrangement the recorded responses have to be usually transcribed onto special coding boxes on the margin for the convenience of data-entry (see Illustration 5.6). Transcription requires more time and may introduce additional clerical errors.

Placing of answer categories along a vertical line can also facilitate manual tabulation and summarization of the data. For manual tabulation, if all the codes to be counted are towards the right edge of the page (e.g., in the last 2 or 3 centimetres), it may be feasible to pin or staple several copies of the same page from completed questionnaires so that just the code-area of each page is visible. The tabulator can then readily add values across several pages for each question.

When the response category labels or descriptions are long, or when a response has to be written out at length the necessary space is more easily provided by placing the response categories one below the other rather than horizontally in a line. The same applies when the number of categories is too large to be accommodated on a single line.

However, the major disadvantage of placing response categories vertically is that this arrangement requires additional space. If there is a large number of list-type questions, putting them all one below the other would result in a questionnaire of many pages long, with the left half of many pages almost completely unused. In these circumstances, it may be better to allow for lists of answer-categories to be spread across the page, or even be shown in the form of a matrix or a table.

One advantage of placing response categories strung across a line is that it is usually easier to lay out the skip instructions, using boxes, arrows and explicit "go to..." instructions etc. placed in the immediate vicinity of where the response is recorded and the decision to skip is taken. A comparison of Illustrations 5.5 and 5.6 would clearly demonstrate this point.

With recent developments in data entry facilities in many statistical offices, it is becoming possible to avoid the need for transcription even with the latter type of layout.

5.2.3 Interviewers' instructions

Provision of interviewers' instructions in the questionnaire on how to proceeed with the interview and how to ask and record specific questions plays an important part in structuring the interview and ensuring uniform standards.

Two important questions to consider are: how much instruction to provide and where to place the instructions in the questionnaire. It is important to include clear and ample instructions on a number of aspects of the interview including the following:

- Instructions on who the respondent is and to whom the information applies, for the whole or parts of the questionnaire.

- Instruction on skips and filters at various points in the questionnaire to direct its flow. As discussed earlier, these instructions can be conveyed in various forms. For instance the use of arrows and boxes as well as explicitly written out "skip to..." instructions can be used to direct the flow of the interview.

- Instruction on recording the information as required for each question. It is most important to ensure that the units in which the information is to be recorded are clearly specified.

- For specific questions, it may be necessary to provide explicit instructions on how to probe, to seek clarification or obtain additional information. For instance, if the objective is to obtain a complete list of household members, the questionnaire could indicate the special probes required to enumerate more completely categories of persons easily missed such as infants and toddlers.

- Sometimes it is useful to give detailed instructions on how to complete a particular section of the questionnaire which may be particularly difficult or important. For instance, the WFS questionnaire includes fairly detailed instructions on completing the birth history section and the section on knowledge and use of contraceptive methods.

In relation to the last point mentioned above, it is worth noting that it is equally important to avoid unnecessary cluttering of the questionnaire with elaborate instruction. Through training, study of instruction manuals, and above all through practice, interviewers can learn the detailed procedures to conduct interviews. It is neither necessary nor possible to include a description of all these procedures in the questionnaire. One has to be selective and concentrate on the most critical areas.

Instructions to interviewers concerning a particular question, or group of questions, should be placed directly above the question(s) concerned. In this position, they are most likely to be read and acted upon. The next best place is at the beginning of each section of the questionnaire. Yet another way is to put them at the beginning of the questionnaire. There is, however, the risk that they may be read once and then forgotten. Critical instructions should not be relegated to the interviewer's manual. If it is ever read, it is very unlikely to be referred to again especially in the middle of an interview. The interviewers' manual is primarily for training, or for clarification of doubts and should not be expected to be used as a reference guide during the actual interview.

The end of instructions referring to a group of questions should be signalled clearly, usually by another instruction.

5.2.4 Abbreviations, punctuation and typographic differentiation

Abbreviations should be avoided, unless they are definitely known to be very common and understood by all respondents.

Care should be taken in choosing labels for response categories which make the meaning of the category explicit and clear to the extent available space permits. Here are some examples (based on Illustration 5.6):

1. Were you married only once, or more than once?

   Only once /__/ More than once /__/

2. Were you married more than once?

   Yes, more than once /__/ No, only once /__/

Note that in the first example above, the question specifies both the alternatives, but the second version explicitly states only one of the alternative responses. In the latter type of questions, in particular, it would be clearer to have the response categories labelled to reflect the actual response as fully as possible, rather than simply as "yes" and "no".

Similarly, it is useful to specify the units in which a value is recorded, even if that is clear from the question. Here is a good example (see Illustration 5.4):

> About how many cigarettes did you usually smoke daily?
>
> About /__/__/ a day

Care should be taken to properly punctuate the questions. This can be especially important in verbatim questionnaires. It is often helpful to underscore (or print in bold letters) important words or parts of the questions which need to be emphasized, for instance, to a change in reference period:

> "Now we'd like to talk about last week, did you....?"

Typographic differentiation of various types can be used to make the layout of the questionnaire clear, and at the same time more pleasant to the eye. For instance, different types of lettering may be used to distinguish section headings, question wordings, labels of response categories, interviewers' instructions, spaces for coding and so on. Illustrations 5.1 - 5.7 provide a number of useful examples. For instance, Illustration 5.1 uses bold letters and 5.3 capital letters to distinguish question wordings from response categories. Illustration 5.6 uses this system in reverse: capitals for response categories and interviewers' instructions (in romans and italics, respectively), and ordinary type for question wordings. Illustration 5.2 marks "PARA USO DE LA OFICINA" (for official use only) very prominently, while Illustration 5.3 distinguishes the main questions from examples and probes which the interviewer may use. Note how Illustration 5.4 handles multi-response questions: in questions 1 and 6, either only the last category applies, or any number of the other categories may be checked. The layout of the questionnaire makes this clear. The same clarity is attained in question 3, where the instruction is to go on to Q4 if the last category is checked ("used to smoke daily"), or to skip to Q8 if any of the others is checked.

Similar care is required in designing the space for coding of responses. In Illustration 5.6, the responses marked during the interview are later transcribed to the coding boxes on the right hand margins. In most of the questions, the interviewer simply circles the box within which the appropriate code to be transcribed to the margin is already preprinted. Underneath each box is written the appropriate column number as defined by the record layout (see Section 5.3.1). This facilitates data entry. The system followed in Illustration 5.7 is similar, except that instead of specifying the column numbers, the coding boxes are accompanied by an abbreviated description of the item

of information to be coded there. By contrast, Illustrations 5.1 - 5.5 avoid the need for transcription altogether, though the actual layout used differs from one case to the other.

Illustrations 5.4 and 5.5 also show how spaces provided for recording responses may be designed to distinguish between the type of information to be entered. For instance, closed boxes of smaller size are used where the interviewer is supposed to simply check or circle a box, while slightly larger and open "boxes" are used where a numeric value is to be written, and simple lines are provided to write descriptive responses. Another example is provided by Illustration 4.7 in the previous chapter. Here, circles are used to indicate responses that have to be checked, open boxes to record numerical responses, and closed boxes where categorical responses are to be coded or described.

5.3 CATERING FOR DATA PROCESSING REQUIREMENTS

The basic principles of designing questionnaires to cater properly for data processing requirements are relatively simple. Many questionnaires, however, fail to meet these requirements adequately probably due to a failure to involve data processors in questionnaire design, as also due to a tendency among some other survey specialists to overlook even elementary data processing considerations. This section provides a general description of some of these considerations.

5.3.1 Record layout

Record layout refers to the scheme of organizing information collected in the questionnaire for further processing. A record refers to the information pertaining to a particular unit in the sample according to this scheme. In principle, it is possible to define a record as a complex structure consisting of information at various levels for a hierarchy of units. For example, in a survey involving interviewing of households and individual household members , a 'record' may be defined to consist of both

the household and individual levels of information put together with one record for each sample household. In practice, it is more convenient to divide a questionnaire into a number of (simpler) record types. Frequently, individual record types are defined in the form of 80-column (or some other size) cards or card images on disk or tape, confined to one level of data. For instance in a general household survey collecting information of household characteristics and basic socio-demographic attributes of individual members in the households, the questionnaire may be divided into two record types:

(i) A record for the household level information.

(ii) A record for the information on each household member, (one record per member).

If a large amount of information is collected on each member, it may sometimes be convenient to divide this into a number of separate record types. Frequently, one record type is defined to cover each section of the questionnaire. One reason for limiting each record type to 80 columns is that it facilitates the use of certain computer package programs for survey data processing. For some applications, it may be more convenient or efficient to use a subset of the record types at a time, rather than the whole interview.

There are essentially two systems of organizing individual items of information within a record: the use of "fixed format" record types, or the use of "source codes". The former is the more traditional approach whereby the questionnaire is broken down into a fixed number of record types, and each item of data is located in a fixed position on a particular record type. This results in each record having a fixed length. A number of examples of this have been provided in this and the previous chapter. For instance, in Illustration 4.2, the information on the cover sheet is coded in 41 columns, comprising a record type numbered "10" (preprinted in columns 1-2); each item of information appears in a fixed location, for example the day of interview in columns 27-28. Similarly in Illustration 4.6, one record is created for each member. In all, 41 columns of information are recorded on each record according to a specified format. Columns 1-3 identify the record type (same - "202" - for all records of this type); columns 4-19 provide identification information and 20-21 the date of interview (same for all members in a household); columns

24-25 give the sequence number for each person, which is the same as the serial number of a record within a given household; this is sometimes referred to as the "record subtype"; finally, columns 26-41 give substantive information on each member.

See Illustrations 5.1 and 5.6 for additional examples.

The alternative system using "source codes" implies the assignment of a unique code to each item of data in the questionnaire. This code identifies what item of information is being coded, and is followed by the actual information (value fields) for that item in the particular questionnaire. The data are entered as a series of source code and value fields. Within a record, all source codes are of the same length. Only these items or source codes which actually have values need to be entered. Examples of use of this system are provided in Illustration 5.2, 5.4 and 5.5. In the first illustration for example, the four-digit source code "0177" to 0196" identify the item being coded; each source code is followed by a certain predetermined number of columns giving the value for the item. If, for example, in a particular questionnaire, questions 22b and 24 are not applicable, source codes 0194 and 0196 need not be entered at the data-entry stage. However, when this system is used, it is often useful to reformat the data to obtain records of fixed length before further processing.

Each of the two systems described above has its own advantages and disadvantages. For some further discussion and examples, see NHSCP study Survey Data Processing (pp. 13-17).

Records of various types put together for units in the sample comprise the data file. The relationship between different record types determines the structure of the file. This structure can be quite complex in surveys involving the collection of information on a variety of units of different types. This is even more so in a continuing programme of surveys where linkage of the data between surveys (often of different types) is an important consideration. In finalizing the design of a questionnaire, attention also has to be paid to the resulting file structure the data would generate, and the link of these data to those from other related surveys and questionnaires.

Broadly, two types of file structures are encouraged in surveys: flat or rectangular files, and hierarchical or structural files. For a description, see Survey Data Processing (pp. 32-34). In general, processing of flat files is simpler than that of hierarchical files. Indeed, much available general purpose software requires data in the flat form. In any case, the questionnaire designer should appreciate the type of data structure that would be generated, how this will be linked to data from related questionnaires and surveys, and what the data processing implications and requirements are.

Most important in this connection is the need to adopt a proper system of identification of records which will permit linkage between data from different records, as well as include sampling and other information, as required for tabulation and analysis. These requirements have been discussed at length in Sections 4.2.2 - 4.2.3.

5.3.2 Choice of the coding system

Coding is the process in which questionnaire entries are assigned numerical values in order to prepare the data in a form suitable for entry into the computer and subsequent processing. A number of aspects need to be taken care of in designing the questionnaire to ensure its processability.

First of all, a decision has to be made on how information from each question will be coded. Each possible response to the question has to be represented by a code. Generally, it is best to use numeric codes; and each question must have a code of fixed length, determined by the maximum value encountered. For instance, if responses to a question vary in the range 1-12, a two-digit code with the range '01' to '12' will be required. Provision has also to be made to cater for special codes such as for non-applicable, not available and not stated cases. If, for example, the range of values encountered in a question is 0-9, a two digit code will still be required to accommodate these special codes. As noted earlier (Section 4.7.4), the coding system chosen should be clear, consistent and uniform. If for example 'yes' is coded as 1, 'no' as 2, and 'not stated' as 9 in some questions, the same system should be followed in all the other questions where these categories appear.

Particular care is required in coding multiple response questions: for example in determining the maximum number of responses to be recorded, and whether or not the code should indicate the relative priority or order in which the various responses appear.

A very important consideration in questionnaire design is to provide maximum possible information on the coding system on the questionnaire itself. This will facilitate and speed up the coding process and minimize coding errors. For instance, where the response categories have been predetermined, the code corresponding to each category should be preprinted within (or along) the box or circle which the interviewers check to record the response. Numerous examples of this have been cited before (see Illustrations 4.7 and 5.6). Where the interviewers have to enter the code, or the number of categories involved is not too large, they should be specified on the questionnaire itself (see Illustrations 5.5 and 5.6). Finally, to the extent possible, questionnaire should be designed to avoid unnecessary transcription, or separate coding sheets.

5.3.3 Data entry considerations

The layout for recording and coding of responses should be designed to facilitate efficient and accurate data entry. In most situations, data entry for sample surveys is operator controlled and it probably will continue to remain so in the foreseeable future. The data entry operator should be able to scan the responses as recorded or coded easily and systematically, without having to shift from place to place or turning pages back and forth. It is for this reason that placing the response categories or coding boxes along the margin of the questionnaire is recommended. Furthermore, the questionnaire should indicate, as far as possible, how the various items of information to be entered are located on the corresponding data records. Depending upon the system used, each item of information should be accompanied either by the source code (as in Illustration 5.2) or the appropriate column number (as in Illustrations 5.1, 5.3 and 5.6). This requirement can be related with some new interactive modes of data entry which are becoming available. In most situations this remains a critical requirement, and unfortunately it does not often receive adequate attention in questionnaire design.

5.4 PRINTING AND REPRODUCTION

5.4.1 General format

A number of other decisions have to be made regarding the physical size and form of the questionnaire depending upon the available printing facilities. When the quality of paper available is relatively poor, and printing facilities limited, the only option may be to have simple typed versions cyclostyled onto single side of paper, and have single sheets put together by stapling on an upper corner or two or three times down the side. This form of printing has been quite common in the past, and some experts have strongly recommended that for large-scale surveys in developing countries, questionnaire should be printed simply, and on one side of paper only. However, improved printing facilities are gradually becoming available to many statistical offices, and fairly sophisticated forms of questionnaire reproduction are in evidence, as numerous illustrations from developing countries in this document demonstrate.

With the availability of better printing facilities, countries can take advantage of more sophisticated formats of questionnaire reproduction, which are easier for interviewers to handle, less prone to errors in data collection and processing, and probably less bulky. For longer questionnaires, our recommendation would be to have questionnaires printed on both sides of paper in a book form, i.e. on large sized paper (30 cms by 42 cms) folded in the middle and "saddle-stitched". For special purposes, more sophisticated designs may also be considered. For example, where the questions to be asked of each household member run across several pages, the names of household members may be listed on the inside flap of the cover sheet such that they can be seen and referred to in entering the information on any subsequent page of the questionnaire. A number of countries such as Thailand and Indonesia have used such formats successfully. Another possibility is the use of coloured pages to distinguish different sections of the questionnaire applicable to different categories of respondents. The World Fertility Survey, for example, encouraged this practice on a large-scale. This can be convenient for the interviewers, but may be too expensive. Some countries adopted the less expensive procedure of printing different colour bands on the top corners of pages to distinguish different parts of the questionnaire. The coloured corners provide an easy visual identification of each section.

Sometimes the same effect has been achieved by printing in different colours on ordinary white paper. However, care should be taken to ensure that colours chosen are not hard to read as often the interviewers have to work in poor or artificial light. Certain colours (such as blue) are also not reproducible by certain kinds of photocopying procedures. When coloured pages are used, it is best to use light pastel shades since black print on dark-coloured paper may be hard to read.

5.4.2 Type-setting vs. off-set printing

Another choice to make in the production of questionnaires is between type-set and off-set process of printing. Type-setting may provide a greater flexibility and compactness in the design, layout, formatting and typographic differentiation. On the other hand, the time required, and possibly the cost also, would be higher. Off-set printing of a typed version can be much faster, and often less expensive. The appropriate choice depends upon available facilities and time. Where questionnaires have to be produced in large numbers and/or repeatedly for use in several survey rounds, it may be worthwhile to have them type-set. For example, the Indian National Sample Survey has almost invariably used type-set questionnaires. For smaller scale especially one-time surveys, or when the questionnaires have to be produced quickly, off-set printing from a typed version may be more convenient and economical. In the latter case, the use of good quality electric typewriters is desirable so as to achieve an evenness of quality, and, if possible, to introduce typographic differentiation. Since few electric typewriters can reproduce such symbols as arrows or circles, these may have to be drawn by hand. Good draftmanship can be handy here - and often such skills are available among the data processing staff in statistical offices. It might also be feasible to acquire books of sets of symbols (such as boxes, arrows and circles) that can be cut out and pasted onto the pages to prepare camera-ready versions for off-set printing. In some cases it may be possible to have access to computer facilities that include a text editing program with various symbols, which can be used to prepare a camera-ready copy.

Needless to say, in many situations only rather limited printing facilities are available, and there is an accute shortage of paper. It is even possible that the limitation in paper and printing facilities may be an important factor in determining the length of the questionnaire - including the choice of a more compact "schedule format" as opposed to a lengthier verbatim questionnaire form and, in restricting the number of languages in which written versions are produced. For these reasons it is always desirable to determine early in the planning process just what printing and duplication facilities will be available, as these may fundamentally affect the type of questionnaire design chosen and even the plans for interviewers' training.

5.4.3 Handling different types of questionnaires in the same survey

It is also worth-drawing attention to a special consideration which may arise in surveys with more than one type of questionnaire, for example separate questionnaires for the household and for each household member. Should the various types of questionnaires be all put together to make a single "book" which caters for each household and its individual members? Or should the various types of questionnaires be kept separate and used flexibly as and when required in each type of interview? The first option can be helpful in orderly implementation of the survey and automatic linkage between related questionnaires (e.g. from the same sample household). But it can also be wasteful as several questionnaires in the booklet may remain unused. The choice depends upon the sampling arrangements and whether there is a one-to-one or at least a predictable correspondence between various types of units to be interviewed.

An example would be useful here. In the World Fertility Survey, usually two types of interviews were held: a household interview using a short household schedule, and a detailed interview of all women of child-bearing age in the sample household using a lengthy individual questionnaire. In many countries, the latter interview was confined to ever-married women only, and it so happened that the average number of eligible women per household was often close to one. Furthermore, a large proportion of households (often around 75%) had exactly one eligible woman per household. The strategy adopted was to

bind the household and the individual questionnaires (one of each) together. This facilitated easy linkage between interviews from the same household. In a majority (about 75%) of the cases, both parts of the resulting questionnaire were fully used; in 15% or so of the cases where the household contained no eligible woman as well as 5-10% of the households which could not be successfully contacted, the lengthy individual questionnaire was wasted; and in 5-10% of cases where the household contained more than one eligible woman, the household schedule went unused for the second and subsequent woman. The above figures are approximate, but fairly typical of the situation encountered. The most serious wastage was the unused individual questionnaires, and it is debatable whether the 20-25% wastage was justified in relation to the resulting gain in operational convenience and control.

In some other countries, the WFS involved interviewing all women in the child-bearing ages, irrespective of marital status. Here the average number of eligible women per household tended to be substantially larger (about 1.4), and consequently the proportion of households with no eligible woman notably smaller. As a result, compared to the previous case, the proportion of unused individual questionnaires tended to be much smaller, while the wastage of household schedules was greater. But since the first questionnaire was many times bulkier than the second, the net advantage of putting the two questionnaires together was more than the previous case.

In yet another variant, the household interview was carried out over a larger sample, and the individual interview was confined to a subsample (often 25%) of the former. Here the solution was to have two versions of the questionnaire: one consisting simply of a household schedule applied to households where no eligible woman was selected for the individual interview; and the other consisting of both the household and individual questionnaire bound together, applied to the remaining households.

5.4.4 Questionnaires in more than one language

Where survey interviews have to be conducted in more than one language, various options exist:

(i) Written versions of the questionnaire may be produced in only one language, and interviewers trained to verbally translate the questions into other languages during the interview. This has been by far the most common practice in multilingual surveys, especially in developing countries.

(ii) Separate written versions may be produced in different languages of the survey.

(iii) Questions in more than one language may be printed in the same questionnaire.

(iv) Or some combination of the above may be adopted for different parts of the survey.

Whether to produce written versions in different languages is an important substantive question which can greatly affect the cost and quality of the survey; see Section 3.6.4 for a brief discussion of the issues involved. If a decision has been made to produce written versions in several languages, choice has still to be made between options (ii) and (iii). Where the use of different languages is reasonably clustered into identifiable sample areas, the number of questionnaires required in different languages can be predicted reasonably well, and the delivery of different questionnaires to respondents according to their language can be managed, the alternative of producing entirely separate versions in different languages will probably be more convenient and economical. This will be necessary in any case if the number of languages exceeds two or three.

Sometimes, however, it is more convenient to print the questions in more than one language in the same questionnaire. One way is to write all questions and instructions in various languages one after the other, but to provide a common space for recording of answers and/or coding for each question. Illustration 5.5 provides an example of this. The system followed in Illustration 5.7 is similar, except that common spaces are provided only for writing the descriptive responses; as in question 7 of Part 2 and question 1 of Part 3. In questions where only a precoded response is to be circled, the codes have been printed separately for each language version.

Printing questions in two or more languages in the same questionnaire necessarily makes the layout more congested and the physical size of the questionnaire more bulky. Typographic differentiation between different languages can be helpful in obtaining a clearer layout.

Another possibility is to have a combination of forms (ii) and (iii), i.e. to have the two language versions printed in the same physical questionnaire, but on separate sets of alternative pages. When printing can be done on both sides of paper, the most convenient layout is perhaps to print the languages separately in a back-to-back or "tumble" format. In other words, the questionnaire is printed in a book form and reads in one language from one side, and in the other language when turned over from the other side.

5.4.5 Number of questionnaires to print

Finally attention needs to be paid to the appropriate number of copies to print. Printing too many is wasteful, but printing too few can be disastrous, or at least inconvenient and expensive. Enough copies of questionnaires should be printed to meet various requirements in addition to the planned sample size:

(i) Trainers and trainees need copies to work on, for classroom training as well as pretesting in the field.

(ii) Provision has to be made for the possibility that the actual sample size turns out to be substantially larger than the planned size. The variability in sample size depends upon the design, and its likely range can be predicted, at least approximately, in many situation. For instance, if the sample is selected from a pre-existing list of ultimate units to be interviewed, the sample size can be controlled quite accurately. On the other hand, if the sampling units consist of clusters of variable and uncertain size, the number of interviews actually obtained may vary considerably.

(iii) There is always a certain degree of spoilage or loss of questionnaires, some indication of the magnitude of which may be available from past surveys in similar circumstances.

(iv) Provision needs to be made for mismatching in the distribution of questionnaires to various interviewers and sample areas. Firstly, each interviewer must have enough copies to meet any eventuality. The desirable safety margin would depend upon how predictable workloads and speed of work of individual interviewers are, and how frequently interviewers can be resupplied under prevailing conditions of travel and communication. Secondly, the possibility of mismatches increases when different types of questionnaires are required for different categories of respondents. This would require a larger safety margin in determining the number of questionnaires to be distributed.

(v) Finally, additional copies will be required for general distribution to interested individuals, national and international agencies etc. as well as for filing and inclusion in the final survey report.

Anywhere from a minimum of 10% to a maximum of 100% of the expected number of completed interviews may be required in excess depending on the nature of the survey, respondent population, sample design etc.. As a rough rule-of-thumb, about 25% more than the expected number of interviews would usually be adequate for surveys of up to 3,000 interviews, with a smaller proportion beyond this number. If the expected total sample size is not known with precision, clearly a larger margin of printing overrun will be required. Extra copies should, of course, be printed in all the language-versions if applicable.

It is important to realize that, as far as possible, the necessary number of copies should be obtained in a single printing run, as it is often costly and difficult to arrange for reruns. This is because usually preparation charges have to be paid for each printing run regardless of the number of copies printed; and even more important, there can be serious delays in printing.

5.4.6 Quality control of printing

The copy sent to the printer and the galley proof received from the printer, should be reviewed with great care to detect typographical errors. When the printed questionnaires are received they should be subjected to a sample inspection. As stated in the UN Handbook of Household Surveys:

"It is not uncommon to find that certain batches of the printed form may be too light, or smudges, or missing certain sections, etc. A sufficient sample of each batch should be examined to be sure that these problems do not exist. Otherwise, it may be discovered too late that there is an inadequate supply of usable forms."

5.5 INTERVIEWER AIDS AND ACCOMPANYING DOCUMENTATION

In implementation of the survey, the questionnaire needs to be supported by various types of other documents and aids to facilitate the collection and processing of the data.

5.5.1 Instruction manuals

Firstly, instruction manuals are required to explain the survey procedures and content to the trainers, interviewers, supervisors, editors, coders and other categories of workers engaged in the survey. While lengthy, discursive manuals (which few survey workers would read) should be avoided, it is necessary to develop comprehensive documentation covering all important points. For large-scale surveys, in particular, developing good instruction manuals is an important means of ensuring the application of uniform methods and procedures. The more diverse, and long-term the survey activity is, the more necessary and, at the same time, more cost-justifiable it is to devote care and resources to the development of detailed survey manuals. The following types of manuals may be considered:

(1) A manual on survey organization. It may cover topics such as the objectives, general nature and organization of the survey programme; administrative and organizational arrangements including line of authority and functional responsibilities at various levels; the scope, time-table, overall technical content and design of the survey programme; relationship between various surveys and survey operations; possibly some information on costs and

resource requirements; and so on. The main purpose is to describe the detailed plan of action and overall procedures; the audience should include not only the senior and middle-level management of the survey but also the user community and other organizations interested in or collaborating with the survey organization.

(2) A manual on training. This may be aimed primarily at the trainers and supervisory staff, including those engaged in field pretesting and evaluation of the questionnaire. The manual may cover topics such as the objectives, organization and procedures of the training programme; identification of the role and training needs of survey staff at various levels; general content and timing of training for various operations such as preparation and selection of the sample, pretesting, recruitment and selection of field and office staff, field supervision, interviewing, editing, coding, data entry, and subsequent processing of the data. For each category of personnel and each operation in the survey programme, the manual should describe the outline of the training programme; training facilities required (documentation, lecture room and other space requirements, duration and hours for which the trainers and trainees should be available, the type of trainers needed, training aids, lists of sample units where field practice will be due, etc.); training methods e.g. demonstration, role-playing and field practice interviews, use of tape recorders or other audio-visual aids, procedures for evaluation of trainees' work, procedures for dealing with special requirements such as training in more than one location or in more than one language; and a detailed time-table for the training course.

(3) An instruction manual for field supervisors. This manual may highlight the organizational and administrative aspects of the survey which are of direct concern to field supervisors and other intermediate level staff. It may define, for example, the role of the supervisors, what their functions and administrative duties are; arrangements for field supplies, travel, accommodation, despatch of the completed questionnaires, supervisory functions they have to perform; assignment of work to interviewers,

spot-checking and observing their work, dealing with non-response and other problems of implementation, reporting on interviewers' performance, producing summaries of results, etc.. Two major tasks of field supervisors are (i) scrutiny of questionnaires completed, and (ii) monitoring and control of survey operations. The instruction manual should provide detailed instructions on both of these aspects of the supervisors' work.

(4) An instruction manual for interviewers. In a certain sense, the interviewers' instruction manual is the most critical document accompanying the questionnaire, since the interviewers are the personnel most directly concerned with its implementation. Apart from defining the interviewers' tasks and providing instructions on interviewing procedures and techniques, the manual should provide detailed explanation of each question in the questionnaire and the underlying concepts and definitions, how each question should be asked, how probing may be done to obtain more complete information, and how responses should be recorded. It should focus on common practical difficulties which the interviewers may encounter in conveying the intention of each question to the respondent and soliciting relevant and complete responses. While the most critical instructions should be included in the questionnaire itself to the extent possible, no questionnaire can accommodate all that is necessary to convey to the interviewers and the respondent, nor can it cater for all eventualities and variations encountered in the field. With practice, as the field-work proceeds, the interviewers may not need to refer to the instruction manual very frequently, but the use of the manual can be critical at earlier stages of field-work and particularly during interviewer training.

(5) Instruction manuals for document control, office editing and coding. It is necessary to develop one or more manuals to cover aspects of work following the receipt of the questionnaires from the field. These manuals should describe the organization and responsibilities in relation to data preparation, including procedures for receipt and control of documents; editing, correction and imputation as

required; coding and transcription of responses; and data entry procedures as well. The preparation of a detailed coding manual providing a complete description of the codes used is essential not only for data preparation and processing, but also for subsequent analysis and reporting of the survey results and ensuring proper documentation of the data for their wider and long term use.

5.5.2 Training and interview aids

Attention also needs to be paid to preparing aids or additional documents that would be useful during the training of interviewers, and for the interviewers in soliciting the required information during field-work. For example, large-sized blown-up versions of important sections of the questionnaire, audio and/or audio-visual recordings of typical as well as model interviews, physical demonstration of the instruments, devices or other materials used during the interview, can greatly facilitate the training process. Similarly, the interviewing process can be helped by aids such as "prompt cards" which guide the inteviewer in probing for additional information, "show-cards" which guide the respondents in understanding the questions and providing the responses and historical calendars or "even-charts" which assist in fixing dates and durations for various events about which information is being sought. The choice of the most effective aids to accompany the questionnaire would depend upon the survey situation and its substantive content.

CHAPTER 6

TESTING AND EVALUATION OF QUESTIONNAIRES

6.1 INTRODUCTION

While past experience of surveys is essential in questionnaire development, it does not always provide sufficient guidance as to what formats or specific questions are likely to be most successful in controlling non-sampling errors. Furthermore, it is necessary to evaluate how a questionnaire has actually performed in the field to guide proper analysis and use of the data as well as to identify ways of improving questionnaires for future surveys. The latter consideration is especially important in the context of a continuing programme of surveys if gradual and sustained improvement in survey procedures is to be achieved over time.

There are certain techniques which may be useful in developing questionnaires, especially when the topics covered are not well-researched and prior experience is insufficient to determine the most suitable way to formulate questions. Group interviews, unstructured or semi-structured interviews, interviews with in-depth probing and intensive study through participant observation are some such techniques.

The initial developmental work has to be followed by field testing and evaluation. Though the distinction between testing and evaluation is not clear-cut, it is nevertheless useful to make this distinction as the two operations are related to different stages of the survey. The purpose of testing a questionnaire is to ensure the relevance and accuracy of the data to be collected and to minimise the errors contributed by the questionnaire. It precedes the main survey. Evaluation, on the other hand,

provides information on the magnitude and sources of errors introduced in the data at various stages. Thus, questionnaire testing, including its analysis, refers mainly to activities carried out before the full-scale survey is launched, while evaluation refers to operations during and after the collection of survey data. In terms of methodology, the distinction is somewhat arbitrary, since some of the methods could in principle be used either for testing or evaluation. The suitability of specific techniques at various stages depends upon the cost, time, and availability of trained personnel and facilities. Specific programmes of testing and evaluation have to be developed with these factors in mind. The considerations involved may differ from country to country at different stages of survey development.

This chapter describes some common techniques of questionnaire testing and evaluation. Not all the techniques may be applicable or relevant in all circumstances. Four stages in questionnaire testing and evaluation are considered, with a description of the techniques likely to be useful at each stage:

(1) developmental phase, prior to the actual drafting or formulation of the wordings of questions (Section 6.2);

(2) informal and formal testing and refinement of the questionnaire following initial draft (Section 6.3);

(3) monitoring and evaluation during the main survey (Section 6.4); and

(4) evaluation of questionnaire, related procedures and data-quality through special operations after the completion of the survey (Section 6.5).

6.2 DEVELOPMENTAL PHASE

An essential step in the developmental phase is the maximum utilisation of past survey experience - of one's own, of other national organizations, of other countries, and of international organizations. Beyond that, the use of other specific techniques described below would depend

upon the extent and adequacy of the experience already accumulated. For example, in undertaking a survey on new topics with little prior experience, techniques such as group, unstructured and in-depth interviews and participant-observer or anthropological types of studies described below may be necessary to develop suitable question form and wording. By contrast, in a continuous or frequently repeated survey, the starting point has to be the questions as asked in the previous rounds.

6.2.1 Review and use of experience, and familiarisation with the survey topic

As noted in Chapter 2, given the general objective of the survey and an indication of users' needs and priorities, it is primarily the task of survey statisticians and subject-matter specialists to elaborate and refine these objectives and determine the required methodology and procedures - of course with constant reference back to users at various stages. Broad questions of relevance and feasibility as well as a host of more specific technical questions need to be considered at an early stage of survey development. For instance: What is the nature of the topics to be covered? What data have been collected previously on these topics? What is the nature of the population to be surveyed, and conditions under which the survey has to be conducted? What are the target coverage, scope, concepts and definitions to be used? What is the substantive and operational relationship of the particular survey to other surveys and related operations in the programme? What are the choices in data collection methodology, and sampling and field-work arrangements? What are the required sample size, frequency and periodicity of the survey? What are the implications of these and numerous other technical and practical considerations? While the above are examples of general survey design considerations, they directly affect - as discussed in Chapter 2 - the choices in questionnaire content and design.

Careful study and review of the literature - including international recommendations, published articles, published and unpublished documentation of the experience, and above all, questionnaires actually used in the past by different organisations and countries - has to be an indispensable part of the process of questionnaire

development. The objective of this review should be not only methodological i.e. how various approaches have fared in terms of the quality of data obtained, but also to find out to what actual uses the resulting data have been and could be put.

Once the general content of the survey and the approach has been determined, it may be necessary to go through a number of stages of gradual refinement before a reasonable formulation of actual questions can be obtained; this is likely to be the case at least for surveys dealing with new and unfamiliar topics. Some possible techniques for doing this are indicated below.

6.2.2 Group Interviews

One technique, hitherto used mainly in market research but recently adapted for general survey practice, is to conduct a series of interviews - or rather discussions - with groups of potential respondents to obtain more precise answers to issues such as: Does the list of survey variables cover all the important aspects of the survey topic(s)? What is the respondents' evaluation of the relevance and feasibility of the survey? How willing and able would the respondents be to provide the information requested? What would be the most appropriate respondent rules and reference periods? What terms and wordings do the respondents themselves use to describe the survey variables of interest?

In group interviewing, it is generally desirable to limit the size of each group to a relatively small number (say up to 10) of respondents. It is preferable to confine each group to respondents with similar and fairly homogenous background, and to focus the group interview on a specific subset of topics or aspects of the survey. In order to carefully steer the group discussion without choking promising avenues, the key role is that of the "moderator". The moderator controls and guides the discussion to seek answers to specific questions. He should be thoroughly familiar with the survey objectives, and should keep the purpose of the group interview in mind and play a creative and constructive role in eliciting relevant comments from all members of the group.

The group-interview technique has several advantages in situations where it is applicable and can be managed. Group interviews are relatively inexpensive and can be analysed within a short time. The techinique is especially useful when the questionnaire designers know relatively little about the appropriate modes of investigating a topic or specific characteristic of the population to be investigated, and need to develop a better understanding of the situation. The technique is also flexible and allows the investigators to pursue new paths that may open-up during the group interviews.

Needless to say, it may not be possible to employ the technique usefully or successfully in all circumstances. Firstly, it requires experienced moderators to guide the discussion, analyse it and draw implications relating to questionnaire and survey design. It is difficult to find persons with such skills especially in statistical organizations of developing countries. Secondly, due to the large social gap which frequently exists between survey organisers and many sections of the general population, it may not be easy to promote unstructured, free and spontaneous discussion on issues of interest during the group interviews. Thirdly, several groups would be required to represent varied segments of the survey population, since it is desirable that each particular group be reasonably homogenous in background. Usually, one may have better success with groups of urban educated respondents than of less educated or illiterate rural respondents; yet for the survey as a whole the participation of the latter groups, often representisng a majority in the survey population, can be critical. Lastly, it should be noted that group interviewing as a technique of questionnaire development is still new and has to be tried widely in social surveys.

6.2.3 Unstructured or semi-structured interviews

Skilled interviewers may be provided with an interview guide which is more a list of the survey information requirements, than a fully formulated set of questions. Interviewers are instructed to contact individual respondents to obtain the required information, but are left relatively free to choose the form, sequence and wording of questions and the manner of probing as they consider appropriate during the interview. Responses and observations are recorded in detail (preferably tape

recorded), and subsequently discussed in detailed review sessions by the interviewing, supervisory and survey design staff to clarify concepts and definitions, evaluate the feasibility of collecting the type of information required, and above all, to identify the most suitable ways to formulate survey questions. In this manner a clearer and structured form of interview is gradually developed.. This developmental process involves itemising the information to be collected in greater detail, evolving more precise wording and sequencing of questions, determining appropriate response categories to "closed" and "open-ended" questions, and especially identifying critical and difficult items which may require further study and testing before a satisfactory formulation can be achieved.

The major requirement to use these techniques fruitfully is, again, the availability of skilled interviewers and supervisory staff with a wide range of experience and thorough understanding of the survey content. Even though the number of field staff required will be generally small, such interviewers are not easy to come by. Another equally critical factor is the availability of experienced professional staff to supervise and evaluate the work and make use of this experience in developing the questionnaires. Organizations with some experience in continuing survey operations and possessing permanent field staff may be better equipped to meet these requirements.

Another technique that might be tried if resources permit is as follows: Ask selected staff members or professional interviewers to frame their own questions, after a discussion of the survey objectives. Then instruct them to go out for one day and interview people. The next day they discuss their interviews, concentrating on areas where the replies were incomplete or not relevant to the objectives. Repeat this process several times, each time sending the interviewers out with more standardized versions of the questions. Each time there will be fewer alternatives to consider and eventually agreement will be reached about how to ask the questions. By this time enough responses will probably have been obtained to begin to evaluate them in the light of tabulation plans. Questionnaires incorporating questions developed this way should still be tested, for example, to see whether average interviewers can carry out the interview.

6.2.4 Interviewing with in-depth probing

A variant of (or the next logical step to) the above procedure is to provide experienced interviewers with a more structured questionnaire, but to instruct them to follow-up a subset of questions with open-ended, in-depth probing to gauge the respondents' understanding of the context, scope and meaning of the questions, and to assess the general reliability of the responses obtained to the initial questions. The objective here is similar to group or unstructured interviewing, viz, to rationalise and refine the survey content, discover best ways to itemize and formulate questions, and identify major problems and areas of difficulty in respondents' comprehension of the questions being asked.

While the addition of probes to a subset of questions may add little to the overall length of the interview, proper analysis and use of the information obtained can be more time-consuming and demanding on professional skills. Too many probing questions can also be irritating or disturbing to the respondent. Nevertheless, with careful and selective application, probing interviews can yield very useful information at a relatively low cost.

6.2.5 Intensive study through participant observation

Intensive observation and enquiries of anthropological type on a small number of carefully selected groups can be a valuable tool in developing and evaluating instruments for more formal and structured interviewing. At the survey developmental stage, intensive case studies can enhance understanding of the topics to be investigated and of the environment in which the survey will be undertaken. Case studies can also identify problems relating to operationalisation and communication of concepts and definitions, mobility and stability of the sampling units to be observed, typical patterns of respondent behaviour, and above all, the respondents' general ability and willingness to provide the type of information to be collected in the survey.

At a later stage, case-studies can be useful also in evaluating the quality of the data collected in the less intensive survey. More importantly, they can provide complementary information for proper interpretation of the survey results.

The major constraints in the use of intensive participant observation case studies are of course the high cost, time and special skills required. Their limited coverage and representativeness must also be kept in view. In fact, it is hardly ever feasible to plan and undertake such enquiries specially and exclusively for the purpose of survey development and evaluation. It may be more useful to explore whether intensive studies planned or carried out primarily with some other objective can provide inputs for survey development and evaluation. Apparently such opportunities exist but they remain grossly under-utilised. It is important to remember that qualitative or even impressionistic information, if intelligently used, can often provide valuable insights for testing and interpretation of large-scale survey data.

6.3 TESTING OF DRAFT QUESTIONNAIRES

On the basis of users' requirements, prior experience, subject-matter knowledge, review of the literature, and possibly selective and in-depth investigations of the type described in the previous section, it becomes possible at some stage to produce a reasonably complete draft of the questionnaire, with some confidence that its overall structure and general content will not require fundamental revision in the course of further testing and evaluation.

Nevertheless, it is strongly recommended that the draft questionnaire, should be carefully reviewed and tested before the full-scale survey is launched. There are countless examples where apparently very minor or purely accidental slips went unnnoticed due to inadequate testing, and caused serious inconveniences to interviewers and unnecessary damage to the survey results.

Testing of a questionnaire is usually an iterative process during which an improved version from previous examinations is subjected to further testing and evaluation. The primary objective of field testing is to identify specific problems and possible solutions. For example, if there are difficulties in a particular question due to the complexity or sensitivity of the information

sought, one may reconsider whether the question should be included, or try to reduce the problem by, say, modifying the question, by reducing or increasing the amount of detail sought, breaking it into a series of simpler questions, asking the question differently, or simply by moving it to a different place in the questionnaire.

Testing may also be required in the more formal, context of choosing between alternative formulations or approaches. This is because experience with surveys and survey data, though important, does not always provide by itself sufficient guidance as to what formats or specific questions are likely to be most successful in controlling non-sampling errors.

Finally, it is also necessary to carry out a dress rehearsal, not only of interviewing but also of all the other important aspects of the survey before launching it full-scale.

In view of the above remarks, we may distinguish the following steps in the process of review and testing of draft questionnaires:

(i) technical review by the survey team, including review of the expected outputs in consultation with the users;

(ii) pre-testing of the questionnaire in the field, focusing on specific problems and solutions;

(iii) more formal testing of alternative approaches where required; and

(iv) pilot testing of the questionnaire as well as of all other survey procedures prior to main field-work.

6.3.1 Review of the draft

A careful word-by-word review of the draft questionnaire is an indispensible step: the need for testing in the field should not be allowed to obscure the importance of a review in the office.

The review should involve not only those directly responsible for the production of the draft, but also other professionals - not necessarily connected with the particular survey - both within and outside the organization, as well as field and office workers responsible for execution of the survey. It is generally the case that a thorough review of the draft document results in substantial improvement and identification of errors and omissions even before further field testing. In fact, the more carefully the questionnaire is prepared to begin with, the more useful will be the subsequent field testing.

It is desirable that, to the extent possible, the review process is organised in the form of formal meetings. The reviewers may be provided with a check-list of points which would assist them in making and organising their comments. Written records should be kept of the discussions and comments made. Sometimes, the recommendations made by different reviewers may not be mutually consistent. Or if taken together and adopted in their entirety, the recommendations may result in unmanageably long or difficult questionnaire. Hence it is usually necessary to reconcile the various recommendations or comments received and take an overall view before introducing further changes the questionnaire. As discussed in Chapter 2, the task of actually revising the questionnaire should be preferably entrusted to the same group of professionals who were mainly responsible for development of the questionnaire. The small 'design team' may then report back to the broader review groups, and the process may be repeated several times. The introduction of changes without careful consideration and overall evaluation can be dangerous.

The review process should concern both the general issues of relevance and appropriateness of the survey, as well as specific technical and substantive issues relating to particular questions and groups of questions. Of course many of the general considerations, especially those concerning the overall survey content and approach, may have been discussed and settled earlier, but a further review is always useful at the time of developing the questionnaire. Simultaneously with the technical review, the draft should also be reviewed by the end-users of the information, focusing in particular on the relationship of the questions to the expected outputs from the survey. Actually, to the extent possible, all reviewers should be encouraged to make their recommendations in the light of the effect any proposed changes in the questionnaire would have on the statistical outputs expected from the survey.

The following are some points which the reviewers may be asked to consider:

(i) General relevance and appropriateness of the survey: whether the information sought in the survey is relevant, and especially whether some or all of it could be obtained more conveniently from other sources or by alternative means; whether the survey is feasible in terms of data collection and processing workload within the resources and time available; whether the statistical outputs have been formulated in accordance with the survey objectives, and whether the content of the questionnaire as formulated corresponds in detail to these outputs; whether the concepts, definitions and classifications used are clear, consistent, and compatible with previous practices and with international recommendations to the extent intended.

(ii) Technical design of the questionnaire: whether the language, flow and sequencing of the questions is clear and uncomplicated; whether the overall length of the questionnaire is manageable not only for the interviewer but, and specially, also for the ordinary respondents, in terms of their willingness and ability to provide the information requested and the respondent burden involved; whether there are any particularly sensitive or otherwise difficult to obtain items which may need reconsideration; whether the wording, form and layout, units for recording answers, etc. are clear and consistent; whether adequate care has been taken of coding and data processing requirements, and so on.

Finally, it is important to emphasize that it is not enough to discuss and review the questionnaire alone: it is highly desirable to include in this process a review of tabulation and analysis plans, and of accompanying documentation such as interviewers' and supervisors' instruction manuals, interview aids, training arrangements, and editing and coding procedures.

6.3.2 Pre-testing

It is useful to distinguish between a 'pre-test' and a 'pilot'. Pre-testing of the questionnaire refers to one or more series of interviews conducted for the specific purpose of identifying and correcting shortcomings in the questionnaire. A pilot usually has broader objectives. It refers to small-scale testing of general survey procedures under conditions and arrangements as representative as possible of the full-scale survey; it is a dress rehearsal of the full set of collection procedures, and to some extent of data processing procedures as well.

Hence the objective of pre-testing is to evaluate the general receptivity and feasibility of the questionnaire and identify specific problems of communication between the interviewer and the respondent. Here are some of the type of questions a pre-test may be designed to answer: are most of the respondents willing and able to answer the type of questions being proposed? How long is the interview? Does the questionnaire flow smoothly and is it easy to handle and use by the interviewers? Are the recording spaces adequate and are the skip and other instructions clear? Do any of the questions emerge as being particularly difficult, sensitive or unreliable?

Depending upon the needs of a particular survey and the available resources, considerable latitude may be exercised at the pre-test stage in the choice of interviewers and respondents, and in sampling and interviewing procedures. A pre-test may be of relatively small size, say 50-200 interviews. Sample size requirements would depend upon the actual objectives. For example, a test for establishing precodes for open-ended questions would need a larger number of interviews than, say, testing out a short, fairly simple and well-tried precoded schedule. Special requirements such as statistical testing of alternative approaches (see Section 6.3.3) may require substantially larger samples and a more sophisticated and representative design. However, it is often neither possible nor necessary to adopt a fully representative probability sample design when the objective is primarily the refinement and general testing of a given approach. Convenience, close observation, rapid feed-back and quick utilisation of results are often more important considerations than comprehensive coverage and higher sampling precision. However, the selected respondents must be

relevant ("in scope") to the study population, and represent the various important, typical and critical groups in it. For instance, it would not suffice to confine the test to a few urban neighbourhoods when the main survey is to cover both urban and rural areas; though the rural areas to be included in the test may be purposely selected on the basis of accessibility (e.g. proximity to urban centres) and their number kept quite small. Before interviewing a more representative sample of respondents, it may be useful to try out the questionnaire on colleagues, relatives and other persons known to the interviewers, but such ad hoc testing is, of course, not sufficient.

Depending upon the complexity of the survey and prior experience, it may be necessary to carry out more than one pretest. In so far as a pre-test results in significant changes in the questionnaire, it is desirable to make these changes as rapidly as possible and repeat the operation until no further changes or only minor changes are considered necessary. In Kenya's fertility survey (1978) for instance, a second pre-test was carried out since the first test resulted in significant revisions of the questionnaire and it was necessary to field-test the revised version as well. Another reason for considering more than one pre-test is that each test may focus on a particular aspect or on particular segments of the survey population. For instance, in view of the complex linguistic situation in Cameroon, a special operation - a language pre-survey - was carried out before the actual testing and execution of Cameroon Fertility Survey (Ware, 1977, Cameroon 1983). Special techniques such as in-depth probing of selected items, comparison with in-depth studies, and comparison with alternative sources of information may be used to evaluate the results of the pre-test. Techniques such as record checks and reverse record checks (see Section 6.5.2) may be particularly fruitful in identifying sources and magnitude of non-sampling biases. Reinterview studies (especially studies involving careful follow-up and reconciliation of interview-reinterview discrepancies; see Section 6.5.1), even if carried out on a small-scale, can prove extremely useful in identifying questions which suffer from high response variability.

It is desirable to use experienced interviewers for pre-testing who thoroughly understand the survey objectives and strategy and can report on problems and possible solutions. Close involvement of professional staff, especially of those directly concerned with questionnaire development is essential. They may not only supervise the pre-test operation, but even conduct some interviews themselves. The use of permanent supervisory staff, where available, for pre-test interviewing can often be an effective way of using the opportunity of pre-test to provide training to the staff on the survey.

A most important requirement of any pre-test is to ensure detailed and prompt feed-back of the experience. Following the interview with the respondents a debriefing session for interviewers and other field staff should be arranged. Its purpose is to pinpoint the deficiencies, ambiguities and difficulties associated with administering the questionnaire. A mode of constructive criticism and balance should be adopted in the debriefing session. Exaggerating the importance of a single or a handful of respondents who got into difficulties or got upset, or the other extreme of uncritical acceptance, should both be avoided. A debriefing session involves organizing a well-directed meeting of interviewers and relevant field staff to discuss field operations step by step from the time the interviewers knock on the door to the time they leave the respondents. Comments on the administration of the questionnaire are invited from participants. This type of discussion generates a wealth of information that can be used to improve the questionnaire.

Typical questions that might be considered during debriefing could range from a set of very general questions, useful to start the discussions, through to more specific ones. Some questions that might be asked are:

- How did the interview go? How long did it take? Who provided the responses?

- Did the interviewers have any problems with the questionnaire?

- Were there any questions that respondents didn't seem to understand, or that had to be explained to them?

- Were there any questions that required respondents to think hard, or to hunt for papers or documents to be able to give answers?

- Were there any questions in connection with which the interviewers felt respondents were guessing the answers?

- Did any respondents give the impression of being embarrassed or irritated?

- Did the interviewers have any trouble in following the sequence of questions, the skip-patterns or the instructions?

- Were there any places where there wasn't room enough to enter the answers?

- Were there any semi-open or closed questions for which the list of answers was not complete or categories were not clear, overlapped with one another, or it was hard to correctly categorized the answer?

- Were there situations where the numerical answers given didn't fit the categories, or were given in vague quantities that respondents couldn't or wouldn't make more specific?

- For questions not fully worded in the questionnaire (schedule form): Were there any difficulties in communicating the meaning of questions to the respondent?

- Were there any questions the wording of which was found awkward or the words used seemed strange and not the kind which people commonly used? What were the problems in translating the questions into languages or dialects of the respondents?

Most evaluations at this stage are qualitative. The sensitive nature of questions, clarity of questions, length of material, potential recall problems and items related to respondent burden can be assessed. Except for possible travel costs to specific areas, the costs of debriefing sessions should be a small fraction of the cost of the total survey. Debriefing before the field operations might also be useful to see if interviewers, just from their experience, can see any flaws or room for improvement, before they try to use the test questionnaire.

Illustration 6.1 provides an example of some of the points which emerged from analysis of the results of a pre-test prior to a recent health survey in Ethiopia.

6.3.3 Testing of Alternatives

Sometimes situations arise in which available experience and knowledge are not sufficient to choose decisively between alternative approaches, any of which may appear equally feasible. For example, in retrospective questioning of past events, would it be better to begin with the earliest event and proceed forward chronologically, or to start with the most recent event and proceed backward? What should be the appropriate reference periods for the various types of items? What difference would it make to the quality of the data to provide detailed wordings of questions, or use formally translated versions of the questionnaire in a multilingual situation?

As a result of the pre-test, the questionnaire and interviewing procedures were improved to overcome several of the problems noted above. The major conclusion of pretest was that the degree of agreement between lay and medically-trained interviewers was reasonable except for the classification of diseases in some instances. This confirmed the decision to use lay interviewers in the main survey.

The design of formal experiments to scientifically test and compare alternative procedures is not easy and generally requires specialised knowledge. Experimentation can be expensive and taxing on available technical resources. The various alternatives to be tested have to be implemented in realistic conditions and the sample sizes have to be large enough to estimate the differences in the cost and performance of the alternatives with sufficient precision. Judgement is also required in choosing between alternatives when many of the considerations involved are qualitative in nature, e.g. when the comparison is between degrees of respondent burden or inconvenience to the interviewers.

Illustration 6.1: Example of some points emerging from a pre-test report

The following remarks are summarized from a draft report on pre-test of a health survey in Ethiopia. It illustrates the type of information which may emerge for improving questionnaires and procedures for the main survey.

The pre-test was carried out in two phases. In the first phase, 10 high school graduates acted as interviewers and completed around 100 household interviews. On the following day, 21 senior year medical students canvassed the same sample of households. The objective of the test was not only to validate the questionnaire but also validate the data on diseases and injuries collected by lay interviewers in the first phase. This was a crucial question because the main survey was to use lay rather than medically-trained interviewers. Comparison of the two interviews provided a powerful means of identifying various sources of errors in the survey. The following summary does not necessarily imply that the survey was unusually problem ridden. Rather, it is more indicative of the high quality of the pre-test.

In relation to training and general survey procedures, the important findings were as follows: There was a tendency among the interviewers to introduce the survey objectives incorrectly, sometimes given the impression that the particular respondents could expect an improvement in health facilities as a direct result of the surveys. Often the interview had to be carried out with someone other than the preferred respondent which was the head of household or spouse. Finally, there was generally a lack of privacy during the interview, which may adversely affect its results.

Regarding the questionnaire itself a number of problems emerged. The list of diseases included proved to be incomplete. The question on injuries was not properly worded: it was frequently misunderstood as referring to "suffering of any kind" rather than only to accidental injuries; consequently malnutrition or illness were sometimes misreported

(Illustration 6.1 - cont'd)

under injuries. The question on assistance received from a doctor or other medical practitioner was prone to be misunderstood to mean financial (rather than medical) assistance. The precodes specified for the reasons given by respondents where no treatment was received for illness were insufficient to capture a substantial proportion of the responses. Some women misunderstood the question on help received during delivery; the question did not clearly distinguish between the type of person who provided the assistance and the type of institution (if applicable) where assistance was received. There was an underreporting of help received from trained medical personnel who acted in their capacity as neighbours or friends rather than in their official capacity. The use of some sensitive terms such as "defaecate" caused embarrassment during the interview, indicating the need to find more polite (socially acceptable) wordings. There was also some unnecessary information collected, for instance questions were asked on all births, when the primary objective of the survey was to investigate only the current or recent situation.

Several other conceptual and interviewing problems were noted. Interviewers often failed to read out the specified response categories to questions on sources of treatment for illness and injury, resulting in item non-response. Since the question of illness referred to a short reference period, some respondents misunderstood it to refer only to temporary illness and failed to report long-term or chronic sickness. The concept of "traditional healers" was conveyed by giving an example of "witch doctors", which was inappropriate and misleading since witch doctors are officially and socially disapproved of, while generally there is an encouragement of the use of many traditional forms of medical care. The question on protected sources of water supply failed to cater for the possibility many households had more than one source of supply, some protected and some not protected. Finally, some instances of unnecessary probing and failure to skip appropriately were also noted.

Consequently, carrying out specially organized experimental studies frequently proves beyond the capacity or resources available to developing country survey organizations. On the face of it, building experimentation into the main survey itself may be a more economical alternative. However, incorporation of alternative approaches within a full-scale survey may result in serious disruptions and inconveniences, and may even adversely affect the overall quality of the results obtained. Even when alternative procedures can be used in the same survey, a major question still remains as to what to do if the alternatives result in significantly different estimates. In any case, the primary benefit of built-in experimentation is likely to be largely for future surveys rather than for the current survey itself.

It is difficult to resolve these issues in the case of a single ad hoc survey. However, in the context of continuing survey activity, conducting specially designed experimental studies can be more feasible as well as rewarding.

6.3.4 The Pilot Study

A pilot study or survey may be regarded as the final stage of testing. The objective is to test as many aspects of the survey as possible, of which the questionnaire is only one. It is to demonstrate the feasibility and evaluate overall performance of the survey before full-scale field-work is launched. The objective of the pilot study may include the following:

(1) Final testing of the questionnaire in wider and more representative conditions. If the previous steps in questionnaire development have been carried out properly, the pilot study may not lead to any significant revisions in the content. However, in so far as the pilot sample is larger and more representative than the pre-test sample(s), it may permit a more thorough testing of editing, coding and processing procedures, and hence contribute towards improving those aspects of the questionnaire design. Information may be obtained in particular for 'closing' some of the open-ended questions and developing coding schemes for other questions. The pilot study may also provide useful information for

the improvement of the physical form of the questionnaire, and contribute towards the refinement of the tabulation and analysis plans.

(2) Testing and checking of other aspects of data collection procedures and survey materials and documents, such as those concerning field listing, sub-sampling, field-work logistics, document flow, instruction manuals and training procedures.

(3) Testing the management and control procedures of the survey, and obtaining information on operational characteristics, costs and errors that would be useful for refining survey design and procedures.

(4) Providing training to field and office staff on the survey.

The purpose of the pilot survey is to discover any major problems that may still remain, or new ones which may arise when all aspects of the survey design are put into operation at the same time. As noted above, the sample size for the pilot survey usually needs to be somewhat larger than that of a more 'informal' pre-test - normally several hundred, say at least 200-300 units. The sample design also needs to be more representative, to capture better the variety of conditions encountered in the field. Nevertheless, as in the case of a pre-test but to a lesser extent, considerations of convenience, close supervision and economy would still predominate in selection of the design. The total number of interviewing staff should be kept manageable - say not exceeding 10-15 - to ensure close observation and detailed feed-back. It is desirable to use staff from among those who will subsequently participate in the main survey, preferably as supervisors. In this way, a fuller use can be made of the pilot survey for training the field and office staff under realistic survey conditions.

6.4 EVALUATION AS A PART OF THE MAIN SURVEY FIELD-WORK

Evaluation procedures may be designed to (i) identify survey errors and their sources; (ii) analyse them to eliminate them or reduce their impact; (iii) provide a measure of their impact on data quality to facilitate

proper interpretation and use of the data; and (iv) obtain information that can be used to improve the design and execution of future surveys.

As part of the main survey operations, evaluation may be carried out on the basis of observation as well as documentation and analysis of the information collected more-or-less routinely during the survey execution. It is also possible to design the survey operations in such a way that permits a more quantitative estimation of some components of error as a by-product.

6.4.1 Information from supervision and monitoring of survey operations, and analysis of survey returns

With proper planning it is possible to obtain, more or less routinely and as a by-product of the normal administration of the survey, a good deal of information useful in evaluating survey questionnaires and in designing future questionnaires. Several steps may be taken to facilitate this process.

(1) Records of survey conditions and interviewers' observations

As noted in Chapter 4, the cover-sheet of the questionnaire may record the outcome of the interview, number of call-backs required to complete the interview, the respondents who provided the information, reasons for non-response if the interview was not completed, time taken to complete the interview, and so on. These records may indicate, for instance, that non-contact is caused primarily by inadequate description of the location of the sampling units, or inappropriate respondent rules, or refusals resulting from the exceptional complexity or sensitive nature of the topics covered in the survey. The time taken for the interview is another crucial factor determining the content and design of the questionnaire. Another item of information which may be particularly useful in designing future surveys in certain circumstances is the language in which the interview was conducted. This information may influence major decisions such as whether questionnaires should be produced in more than one language, whether fully-worded verbatim questionnaires are suitable or essential in the particular situation, and

whether interviewer training in more than one language would be required if the survey were to be repeated, and so on.

Similarly, short series of questions may be added to determine the general reaction of the respondents to the interview, particular items that they found difficult or were reluctant to answer, and any special difficulties experienced by the interviewers in obtaining the information. Records may be kept of the conditions under which the interviews were conducted, for example whether persons other than the interviewers and the respondents were present at various points during the interviews.

(2) Analysis of item non-response or other problems with specific questions

Most important in relation to questionnaire design is to identify problems with specific questions. Survey results may be analysed to identify questions which resulted in above-average item non-response, i.e. in incomplete or unusable information. Very high level of item non-response would indicate the inappropriateness of including the question in the survey. High item non-response would indicate that the question concerned was inherently too complex for the average respondents, or that it was ill-formed or worded. Frequent misrecording of answers, wrong skips, or recording of answers in an open-ended form when precodes had been specified, etc. may also suggest problems in design and layout of particular questions.

(3) Analysis of edit reports, coding and data entry operations, and computer edit and consistency

Quality control systems require the recording of errors found in various operations to determine corrective action, such as the rejection of a particular batch of work or increasing the inspection levels. Analysis of these records can at the same time be used to identify sources of error and possible means of improving the design of future operations.

It should be emphasized that evaluation of a questionnaire will largely achieve its aims through detecting deficiencies in operations which might contribute to errors in survey data. As noted above these deficiencies will manifest themselves in high refusal rates, incomplete responses, inconsistency in responses, lack of responses, long interviews and high costs. Complex experimental designs may not be needed to detect such deficiencies. Rather, a comparison with appropriate data from other surveys or a regularly repeated review of these data in a continuing survey would indicate whether results are worse than usual.

Many non-sampling errors such as response rates, blank and partially completed questions may also be detected from the survey itself. Careful analysis of such errors over time is invaluable for monitoring data quality. Criteria for tolerance limits of certain errors will be governed by the type of survey, the particular type of error and the cost involved in eliminating or reducing them to acceptable levels.

An equally important source of analysis of errors is at the processing stage. For example, problems with format or sequence, or the use of open questions may contribute to a majority of the errors arising at the processing stage. Analysis of errors is particularly of value in a continuous programme.

Many aspects of a questionnaire may also be evaluated by a study of edits and imputations, whether made or by computer. If this is done question by question, it can be useful in determining the extent to which errors are related to the difficulty of the questions, the complexity, length, flow, order or sensitivity. This method of evaluation can be integrated with processing operations. Automation, where feasible, would make the procedure relatively inexpensive even with a large volume of questionnaires.

To record and analyse survey errors systematically, special forms with headings for particular errors should be designed. This would assist in accumulating the data in a uniform manner and facilitate processing and analysis. The analysis will be most effective (i) if editors and other reviewers have been given clear instructions on what items to check and what kinds of errors to look for; (ii) if the

results of the reviews have been recorded on a structured form; and (iii) if the detailed information collected is appropriately summarised. Preparation of separate summaries of error rates for each interviewer and office worker can be helpful in improving operational control and identifying possible sources of errors.

Associated with an analysis of errors is a data quality report which should be produced at regular intervals by type of survey. For example, in Canada a quarterly quality report is produced for the Canadian Labour Force Survey. The report provides a review of sampling and non-sampling errors. The sources of these errors are carefully monitored and an immediate feed-back is provided to specific operations to control quality on a month-to-month basis. The report examines sampling errors and non-sampling errors (non-interview rates by type, non-response rates by type of question, coverage rates, data entry errors). Similarly, the "Error Profile" publication of the U.S. Bureau of the Census provides a sound basis for error collection and analysis.

(4) Other sources of qualitative information

A number of techniques for obtaining qualitative information about nature and sources of errors have already been mentioned, for example: inclusion of a few items in the questionnaire for the interviewers to record particular problems, reports by interviewers and supervisors with special emphasis on identifying questionnaire items which had frequent problems; and debriefing sessions for field and office staff at various stages of field-work.

In addition, valuable information can also be obtained by directly observing the interviews as a dynamic process of communication. Two such techniques are: tape recording of a set of interviews; and the use of experienced observers to observe the interview as it proceeds.

It is necessary to encourage a wider use of these techniques. The use of tape recordings in particular has not been as common as it should be, given that this technique can yield extremely valuable information on the actual course of the interview and on problems of wording and communication of questions at a relatively low cost.

While the tape recordings should be well distributed over the interviewers, the sample and the survey period, their number does not have to be large. The real cost of tape recording a small sample of interviews is not much once the equipment is procured; the general co-operation of the respondents to tape recording has also been demonstrated in many developing country surveys. The more significant cost of the technique is in the time and technical resources required in transcribing and analysing the recorded information. Ultimately, however, it is a matter of priorities. If survey organizations appreciate the potential usefulness of the technique, they would generally be able to find the necessary time and resources.

Another technique is to institute a programme of observation of a sample of interviews during field-work. The cost and practical difficulties of such a programme can be substantial, but it can still be worthwhile in certain circumstances. The objective of observation is to study closely problems related to both the interviewers and the respondents.

Several problems need to be considered in instituting an interview observation programme. One problem can be that survey conditions where interviews are observed may be unrepresentative of the situation. Observation programmes must therefore be properly designed and well understood by the observers. Observation does not consist of merely being present and "looking on" during the interview. Observers must keep themselves in the background of the interview situation in order not to bias the responses. Thus, they should be trained in observation programmes and operate with a well planned check-list of things to watch for as well as with appropriate procedures and forms. This applies whether the observations are used for qualitative purposes based on general impressions, or for quantitative assessment of certain interview situations. Another problem is that an observer has to travel to different areas to cover a sample of respondents from each interviewer's assignment. For this reason the sample size in an observation programme is usually small. Consequently, quantitative data on evaluation must be accumulated over time. Qualitative evaluation data however, can be gathered and assessed at any time since they are less dependent on the sample size. Observation programmes are most useful for continuous or repeated surveys, provided the duration of the survey is long and the observation programme is undertaken near the beginning of the survey.

As noted above, to ensure an efficient application of an observation programme, observers should be provided with instructions of the procedures for observation. The instructions should stress issues such as:

- how interviewers should introduce observers to respondents and how observers should introduce themselves;

- observers' behaviour during the interview;

- how the interviewers introduce the survey(s) to respondents, his interviewing technique and respondents reaction to it.

- length of the interview, complexity of the information sought, implied respondents' burden.

- observation of any other important aspects of questionnaire and the interview.

All the information obtained from observation should be documented and analysed thoroughly.

6.4.2 Built-in experiments and use of inter-penetrating samples

Additional information on the sources of non-sampling errors generally and on performance of the questionnaire in particular can be obtained by suitably designing the survey operations to yield quantitative information on comparison of procedures and magnitude of errors from various sources. A distinction needs to be made between two options which may differ considerably in terms of their implications on the cost and management of survey operations:

(1) One may apply uniform procedures throughout the survey, but appropriately randomise the work-load of interviewers and coders, etc. to obtain estimates of "correlated response variances" arising from various sources, for example, errors due to the particular effect each interviewer has on the results obtained by him.

(2) Alternatively, or in addition to the above, one may apply different procedures to suitably designed sub-samples with a view to separating out the effects of different procedures. In principle such experiments may be built into almost any phase of the survey operation. For example, they may concern alternative methods of training interviewers, alternative versions of the questionnaire, alternative respondent rules, or alternative procedures for data preparation and processing. Experiments which specifically concern alternative questionnaires or interviewing procedures are often called 'split-panel experiments'.

These two techniques are of course designed to answer somewhat different questions, and are not alternatives in that sense. Nevertheless, as discussed below, the first of the two options is generally more feasible and manageable. But let us first consider the possibility of the second option i.e. building-in alternative procedures into the survey. Reference has already been made to this technique in relation to the pre-testing phase of questionnaire development (Section 6.3.2). Even more so than the small-scale pre-test, building-in alternative procedures into the main survey can be expensive, inconvenient and disruptive and may not be feasible in many circumstances.

Furthermore, this technique requires training and experience in both experimental design and survey methodology. The design will vary considerably according to the purpose of the experiment and there may be pitfalls and traps which, if not avoided, can fail to provide conclusive evidence relevant to choosing between alternatives. There can also be other statistical difficulties. In social surveys it is not always possible to control adequately all the important factors in a design. Moreover, purely statistical tests and experiments based on sampling are seldom conclusive due to the relatively small sample sizes usually feasible. Sampling errors may tend to dominate the non-sampling errors which are the main concern in improving and evaluating questionnaire design. Also, it is frequently impossible to select random samples of respondents, again due to sample size, cost, time and logistic constraints. Different sample sizes may be required for testing different elements, and this may create additional practical and theoretical problems both in the field and in interpreting the results.

These difficulties generally apply whether experimental tests are carried out as separate studies or are built into ongoing survey operations. In the latter case, larger sample sizes are more feasible and the additional costs substantially smaller. However, the disruptive effect of applying alternative procedures within the same survey can be serious. On balance, it is perhaps best to conduct experimental studies as special operations organised separately from the main survey.

The above remarks do not imply that formal experiments have no place in the evaluation of questionnaires. But it is necessary to appreciate the considerable constraints and that experiments need to be carefully designed, executed and analysed if they are to yield useful information. In designing experimental studies, a complete plan should be prepared to specify the objectives of the experiment and describe the various aspects of the design such as the definition of the study population and the "treatments" to be compared, sample design and allocation of treatments, evaluation and decision criteria to be used in identifying significant differences, operational details and methods of analysis and interpretation. For further discussion of related issues see Jabine (1982; pp.42-43) and United Nations (1982; pp.241-242).

As noted above, it is often more manageable to obtain some quantitative estimates of variable components of non-sampling errors by comparing the results from two or more 'interpenetrating' sub-samples, while using the same procedures for the whole sample. The idea is to select the sample in the form of two or more representative sub-samples according to a specified plan in such a way that each sub-sample provides an independent estimation of the characteristics under consideration. The data collection and processing procedures for the sub-samples can be designed to different degrees of symmetry and completeness to isolate the various sources of error. The usefulness of the technique lies in the fact that in many circumstances, even a reasonable - but far from complete - degree of randomisation in allocation can provide valuable quantitative information on variable components and sources of error, many of which may have direct relevance in improving the content and design of the survey questionnaire. (For further discussion, see United Nations 1982, pp.155-165 and 239-241.)

6.5 POST-SURVEY EVALUATION STUDIES

6.5.1 Reinterview Studies

Like other evaluation studies, reinterview studies serve both to inform users of some of the limitations of the survey results and to provide useful data for the design of future surveys. A reinterview programme is a major technique for questionnaire evaluation. Basically, this technique involves reinterviewing once or more a sample of households that have been interviewed in the main survey. The differences observed between the reinterview and original interview results can then be utilised to estimate errors arising from different sources.

A reinterview programme can serve several purposes, each of which would examine some aspects of questionnaire design and field interview. As noted earlier, reinterviewing as a part of the pre-test may be useful to identify questions to which responses tend to be particularly variable or unreliable. Following the main field-work, the reinterview survey needs to be organised as a separate but closely linked and co-ordinated operation. The cost and possible respondent burden restricts this method of evaluation to a relatively small sample. A reinterview study designed to produce overall estimates of response variance or bias (see below) should probably have a minimum sample size of 300-400 households. Where reinterviews are also conducted for quality control purposes, the sample size may have to be larger since some of the work of each interviewer must be included.

Apart from quality control purposes, the usefulness of a reinterview programme for a one time survey is fairly limited; the cost is also relatively high. For a survey repeated continuously or periodically, however, reinterviewing can be a powerful tool both for control and for evaluation of survey procedures and data. The same advantages exist for a continuing survey programme where, even if the survey focus is different from year to year (or round to round), the various surveys have many elements in common, both substantively and operationally. Furthermore, where permanent arrangements have been established for survey taking, the additional cost of reinterview studies can be smaller, while more substantial benefits than in isolated, ad hoc surveys.

Description of the technique

A discussion of the reinterviewing techniques is available for example in Platek and Timmons (1975), Jabine (1982) and United Nations (1982). The following is taken from the two last mentioned sources.

In reinterview studies, a sub-sample of households or individuals included in the survey are interviewed for a second (or subsequent) time, by a different interviewer, shortly after the initial interview. There are two basic types of reinterview. The first type, whose primary object is to measure response variance, is a replication of the initial interview, using the same questions although usually only for selected items. The second type, which attempts to measure response bias, depends on the use of specially trained or qualified interviewers and a series of special probes for the items included.

For the replication approach, the reinterviews should be conducted independently of the initial interviews, that is the reinterviewers should not have access to the original answers before or during their reinterviews. The pairs of answers for individuals and households may then be treated as "independent" observations of the same variables, obtained under the same set of general survey conditions, and hence can be used to estimate response variance for these items. Actually, of course, they are not completely independent observations, because reinterview respondents may remember what they told the initial interviewer. In general, lack of independence should lead to underestimation of response variance.

Frequently, when the replication approach to reinterviews is used, the original interview and reinterview responses are reconciled, that is, they are compared; and where there are differences a determination is made, by asking additional questions as needed, as to which response is correct. The response obtained from the reconciliation process will sometimes differ from both the initial interview and reinterview responses.

Reconciliation can be done by the reinterviewer immediately on completion of the reinterview, while still in the sample household; however, the reinterviewer must be under strict instructions:

(i) not to look at the responses from the initial interview until the reinterview is complete, and

(ii) not to change the initial interview or reinterview entries as a result of the reconciliation.

Results of reconciliation should be recorded in a separate section of the reinterview form. Even with these precautions, experience has shown that estimates of response variance and related statistics such as the index of inconsistency, are usually lower when reconciliation of the differences is undertaken at the same time as the interview, than when it is not.

Turning now to the probing type reinterview, the objective here is to obtain the most accurate information possible for each of the variables selected for investigation. The differences between the reinterview and initial interview responses then provide a basis for estimating response bias. The variety of probing questions that can be used for this purpose is limited only by the ingenuity of the investigators. Where the information to be checked deals with time spent on various productive activities, one method of probing might be to ask for a day-by-day accounting of activities during the reference period. Similarly, if the initial survey asked for total amount spent on food during the past week, the reinterviewer might obtain disaggregated information by asking about each commodity purchased. Another possibility would be for the reinterviewer to ask permission to inspect the foods currently stored in the dwelling unit, to determine if any that might have been purchased during the reference period were overlooked.

Like replication reinterviews, probing reinterviews should be conducted independently of the initial interviews. There should <u>always</u> be a reconciliation of the initial interview and the probing reinterview responses; the use of intensive probing techniques is no guarantee that the reinterview responses will always be more accurate than the initial ones. The reconciliation process will improve the accuracy of the estimates of response bias, and will also provide an indication of the effectiveness of the particular probing approaches used in the reinterviews.

6.5.2 Record-check studies

For certain items it may be possible to obtain the same information for a sample of respondents from some other more reliable source. In so far as the information in the survey can be linked and compared with the more reliable alternative source at the level of individual units (persons or households), a direct indication of the bias in the survey can be obtained. Such comparison may suggest ways to improve question formulation (sometimes it may show up questions where the survey results are so unreliable that there is little point in including the questions in the survey). At least, such comparisons can provide useful information for proper analysis and interpretation of the survey results.

The following brief description of the technique is taken from United Nations (1982):

> The key requirement in the design of record check studies is to locate record systems that (1) contain information for some of the key variables included in the survey (2) contain information believed to be accurate and (3) cover a substantial proportion of the households in the survey target population, or some important sub-group of that population. Some types of record systems that might be relevant to household survey topics include:
>
> (i) Records of public utilities, such as telephone or electric companies, or customer billings and payments.
>
> (ii) Records kept by employers of hours worked and wages or salaries paid.
>
> (iii) Records of government transfer payments, such as pension and welfare benefits.
>
> (iv) Income tax records.
>
> (v) Registers of persons' licenses to practice certain professions or occupations.

Other important requirements for the conduct of record-check evaluation studies are:

(i) Gaining access to the individual records. Permission to use the records will have to be obtained from the custodians of each record system. Some custodians may require that waivers be obtained from survey respondents, giving their permission for the survey organization to seek access to their records in the system.

(ii) Locating the records of specific survey responses. This will require a matching operation. The matching will be greatly facilitated if the characteristics of the record system are known in advance of the survey, so that the identifiers needed for matching purposes can be obtained in the survey. In addition to names and addresses, identification or account numbers, if they are used, will be especially helpful.

Normally, the information from records in the system is obtained following the survey, when the identification of the sample households and individuals is known. A different technique, which is especially useful in connection with pre-tests, is the reverse record-check. In a reverse record-check, a sample of households or persons is selected from the record system, and included in the interviewer assignments. This approach has two important advantages:

(i) The sample can be designed to include households or persons with particular characteristics that are relevant to the survey topics.

(ii) The records needed for the study can be pulled out or copied at the time the sample is selected so that there is no need for a difficult matching operation. Matching is guaranteed, except when the interviewers cannot locate the selected households or persons.

A problem in doing a reverse record-check in an actual survey is that the coverage of the record system used will probably not be identical to the survey target population, so that a more complex sample design would be needed to insure survey coverage of households or persons not included in the record system.

The major advantages of record-checks in general are accuracy and relatively low cost. It is not safe to assume that data in record-systems are completely accurate, but

accuracy is an important requirement for most record systems. Transactions are frequently recorded at the time they occur, in contrast to a retrospective survey or re-interview in which the degree of ability to recall past events is an important determinant of accuracy. The cost of obtaining the record-check information tends to be low compared to, say, reinterviews, since the information is obtained from a single location or at most from a small number of locations where the files are kept.

Record-check studies have certain disadvantages, some of which have already been mentioned:

(i) They do not provide any information about bias for those members of the survey target population who are not covered by the record system.

(ii) There may be conceptual or definitional differences between the survey and record system data, making direct comparisons difficult or impossible for some variables.

(iii) They depend on the willingness of respondents and record-system custodians to grant access to the records.

(iv) Except for reverse record-checks, the matching operation would be difficult and may partially offset the savings from not having to conduct reinterviews.

6.6 CONCLUDING REMARK: THE BENEFITS FROM EVALUATION

A variety of techniques of testing and evaluation in the course of questionnaire development have been discussed in this chapter. In conclusion, it should be emphasised that, clearly, it is not intended that all the techniques described here be used for each and every survey in the programme. It is generally neither possible nor desirable to do so. Nevertheless, many statistical organizations do not do as much methodological work as they are capable of

doing, and as much as they need to do to improve the quality and cost-efficiency of their survey operations. Developing good questionnaires (and other survey procedures) is a difficult task and cannot be accomplished simply by unthinking imitation of what others have done, or what the organization may itself have been doing in the past.

The development of an appropriate programme of testing and evaluation of questionnaires is particularly important in the context of a continuing programme of household surveys. Indeed, the possibility of feed-back and corrective action for all aspects of survey operations is immensely enhanced with continuity. With ongoing survey operations on the basis of permanent facilities, it is possible, as an integral part of the survey operations, to institute regular and repeated discussions with interviewers and regular field visits by survey planners to hear for themselves how respondents react to the questionnaire.

An evaluation system is particularly important in a continuous programme of surveys which involves the repetition of the same survey from round to round. Evaluation of questionnaires, of the operations involved in data collection, of data processing stages, and of the results of the previous cycle of data collection, all become inputs towards modifications of both the questionnaire and operational procedures for the next cycle. However, in order to avoid interruption of a time series which has been developed on the basis of a continuous survey, substantive modifications of the questionnaire should better not be introduced too frequently although some improvements in operational procedures can be. Experience gained from evaluation should preferably be accumulated over a number of cycles, and then used to revise the questionnaire. In order, to smooth out the impact of the changes in the questionnaire on the time series and to provide adequate data for linkage between different versions, a parallel run of the old and revised versions may at least be undertaken over one complete cycle.

References

At various places in this Study, reference has been made to reports, questionnaires and other documents used in household surveys in various countries. Not all, or perhaps only a minority, of this material is available in the published or easily accessible form. Nevertheless, they are listed below to provide a convenient reference and indicate the extent to which country experiences, especially survey experience of developing countries, is reflected in this Study. One of the longer-term aims of the National Household Survey Capability Programme is to help in the systematic compilation of country experiences and promote better exchange and dissemination of this experience in the area of household surveys, covering a wide variety of subject-matter fields.

Apart from survey materials used as illustrations in the Study, the following list covers a few published articles and books to which reference has been made in the text. In addition, a number of articles and books dealing with questionnaire design and related matters have been added to suggest further readings on theories and principles of questionnaire design.

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