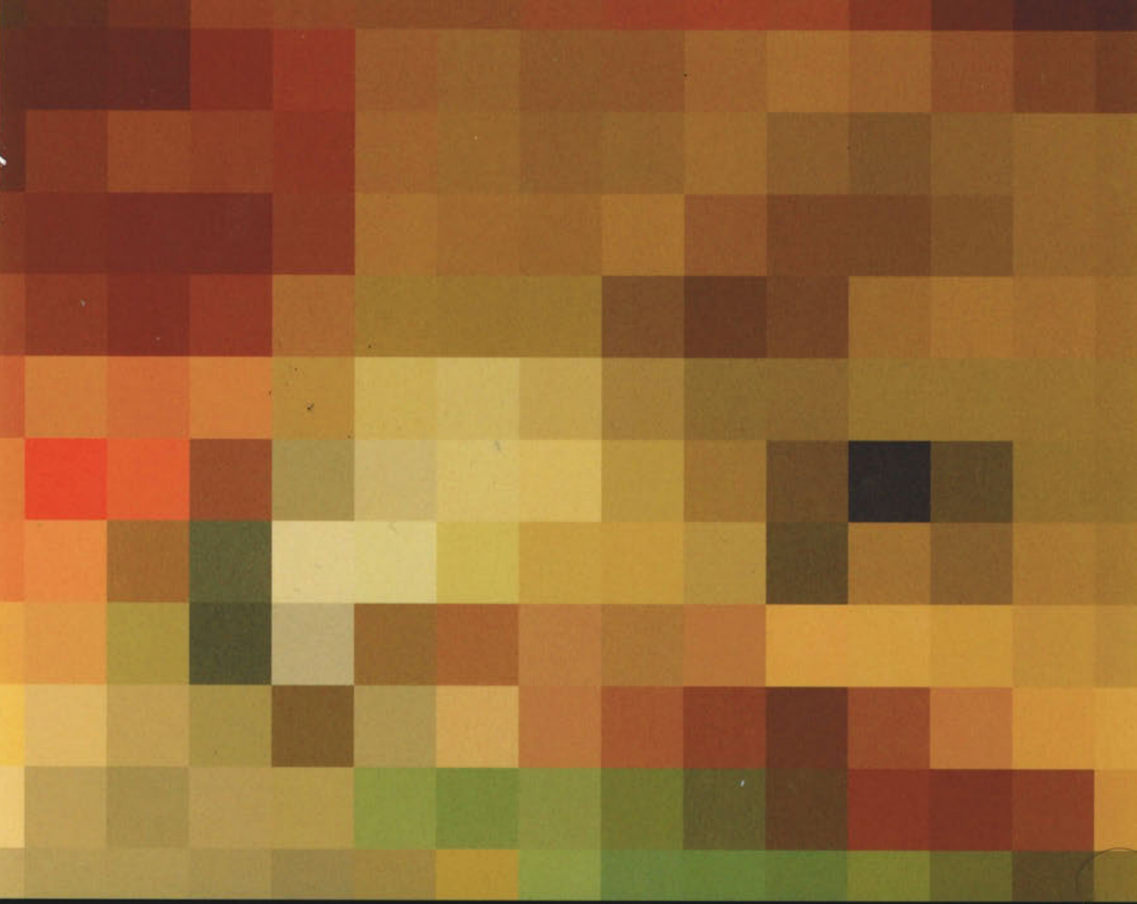

Designing a Research Project

Second edition

Piet Verschuren
Hans Doorewaard

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PREFACE

Many handbooks have been written on the subject of research methods and these are all available to the reader when carrying out a research project. However, there is far less material available concerning the problems a researcher encounters when he or she is engaged in the previous process of *designing* a research project. This book was born from the idea that people are often faced with many problems during this initial stage of a research project. It is our aim to help the reader to design an adequate research project successfully.
The guidelines and methods presented for designing a research project have been developed from a clear vision on research. A current vision on research can be described as being linear-serial. In this vision the various components of a research project are dealt with consecutively in a methodical way. In contrast to this perspective is an iterative-parallel approach. Here a research project is seen more as a process during which various components are carried out simultaneously. The researcher is continuously returning to previous decisions and findings to determine to what extent it is desirable or necessary to adjust them on the basis of later decisions and findings. We wrote this book from an iterative-parallel perspective.
This book largely draws on insights that have been developed over the years within the scope of a course on 'research design' which was attended by students from a wide range of disciplines. This diversity of participants forced us to develop general methodological guidelines which are not restricted to certain disciplines. We would like to thank these students for sharing their experiences with us.

Notes to the second, revised edition
Despite the fact that the first edition of this book was well received and apparently met the demands and wishes of the educational programs, we have decided to introduce in this second edition several important adjustments, moderations and additional sections. Wc have extended the presentation of the intervention cycle, and the elaboration of the set of practice-oriented research types which are based upon the distinct phases of the intervention cycle (see Chapter 2). In addition, we further specified the technique of unravelling key concepts. We updated the numerous examples in our book and added many more examples in order to present the reader with a wide variety

of examples from many different social sciences. We also added an extended series of assignments throughout the book, which offers the readers multiple opportunities to test their knowledge and to practice their skills in designing a research project.

In the Appendix, we added a thorough discussion about designing conceptual (causal) models. We have presented a step-by-step plan with many examples, which will help the reader to master the difficult, but very important, subject of developing and applying these models.

Piet Verschuren
Hans Doorewaard
Nijmegen, April 2010

TABLE OF CONTENTS

PART **II** TECHNICAL RESEARCH DESIGN

INTRODUCTION

The aim of this book

For many researchers, the initial stage of a research project often proves to be the most difficult. This holds true both for those whose job it is to carry out research projects as well as for bachelor and master students who are starting to write their assignments for their finals, and PhD candidates who are embarking on their dissertation projects. Experienced researchers are aware of the problems in formulating an exact definition for the problem that has to be solved, or in dealing with the specific way the commissioning party of the project precisely envisages the assignment. Students or PhD candidates face similar problems and very often they do not have a well-defined idea of what the project entails and what is expected of them. These starting-up problems can cause great uncertainty, both to those carrying out the project and their supervisors. As a consequence, this can be detrimental to the quality of the project. Moreover, such a poor start does not contribute to the pleasure found in carrying out the work. Therefore, it is important to be as well prepared as possible when embarking on a research project.

Apart from this general background, there are two specific reasons for training in designing research. The first reason regards contract researchers who are commissioned by an external principal. We call this practice-oriented research. One of the most recurring shortcomings of these researchers is that they set to work on the research project too hastily The research project is often already underway before all of the parties have obtained a clear idea of which problem is to be tackled and what the problem is exactly. This often causes friction between the client and the researcher and, in hindsight, the results of these research projects will usually prove to be of little value. The second reason applies to students who start on their final research project. As soon as a place has been found to do the practical training and the topic of the research has more or less been established, they tend to plunge headfirst into a literature search. However, as they miss a steering set of well-defined research questions, they start reading everything on the subject matter. Much of this will appear unnecessary or of little relevance once the research questions are formulated. So they lose time compared with those who start by formulating a research design.

The root of the problem is that the bulk of the methodology literature implicitly or explicitly focuses on how to carry out a research project. Much attention is paid to gathering, and particularly analysing research material. Too often one neglects the stage that *precedes* the actual performance. This stage concerns the designing of the research project. The aim of this book is to bridge this gap.

The objective and target group

The objective of this book is to instruct novice researchers, such as undergraduates and PhD candidates, but also the more experienced researchers in contract research, on how to set up an adequate research design in general. We provide them with a method that can be used to design a research project. By following and studying this method, and by carrying out the accompanying assignments, the reader can practice this planned approach. Our method can be applied to any type of research in the social, policy and management sciences, regardless of the precise contents and regardless of the research strategy to be chosen.

This book deals with many different aspects involved in designing a research project, such as: defining the project context, delineating the research project to manageable proportions, defining a realistic research objective, formulating a set of research questions that is sufficiently steering, giving a clear definition of the key concepts and operationalising these concepts in dimensions and aspects, selecting the necessary research material and research strategy, as well as drawing up a project plan. In the Appendix, we pay attention to the design of a conceptual model.

The intended target group for this book includes students and PhD candidates in the arts and humanities: social studies, public administration, human geography and spatial planning, social and political science of the environment, communication studies, organisational studies and business administration, to mention only the most important. The majority of examples in this book are taken from these disciplines.

In addition, we explicitly address the supervisors of students and PhD candidates. Many teachers in academic and vocational education are familiar with the problems associated with monitoring projects. Frequently noted problems are the ongoing preparation time and the duration of the final project. Another problem is the incoherent or poorly grounded statements found in the documents produced. In many cases, students are capable of writing short papers, but as soon as a more extensive document such as a thesis is required, they have trouble sticking to the plan and arriving at an intelligible argument. To a certain degree, this is occasioned by the absence of a detailed research design. Such a design can make clear in advance what the research project is to produce and what is necessary to achieve this. Supervisors of dissertation projects are also familiar with these problems. A dissertation project usually starts with a research proposal on the basis of which research funds have been awarded. In most cases these research proposals cannot be compared with what is defined in this book as a research design. In order to acquire a grant, the proposals often tend to focus on the scientific merits and the complexity of the proposed project. A research design, however, with a set of sufficiently steering research questions, needs to be set up using entirely different elements. What is required here is not so much the scope of the project but how to arrive at the required degree of practicality and delineation. The consequences of not paying enough attention to these issues are an inordinately long preparation time and a literature survey that may take up to eighteen months, including the risk of PhD candidates prematurely abandoning their project. Therefore, in this book the reader will find many guidelines and ways of reasoning that are useful to supervisors and assistant supervisors so that they can help to accelerate the start-up stage and shorten the time span of the total research project, not to mention the improvement in the quality of the research results, because they help to design an effective research before the project begins.

A third target group consists of professionals whose job it is to commission a research project and/or to deal with the results of scientific research, such as the policy advisors in governmental organisations, and the staff managers in profit organisations who want to make use of the results obtained in an adequate manner. An often heard complaint is that the results presented and recommendations made are not specific enough to support the required improvements. A main cause of this problem is the lack of fine-tuning between the actual problems in the commissioning organisation, and the paraphrasing of these problems into the research objective and the set of research questions. In Part I of this book, which deals with the *conceptual design* of a research project, we specifically focus on the fine-tuning between the actual organisational problems and the formulation of the research objective, the set of research questions and the conceptual model. The theoretical insights and the training assignments offered in Part I, will help the professionals in the commissioning organisation to make sure that the results of the proposed research will contribute to the improvement required for the organisational policies to be successful.

Finally, a word of warning is appropriate here. The application of the detailed design methodology offered in this book makes it possible to develop a well-structured and steering research design. One may compare the results of our methodology with the design and the specifications made by an architect. Usually, the architects design and specifications form the start of a successful building process. The same goes for the designer who uses the design methodology offered in this book to make a successful start for the research project. Nevertheless, the reader is advised to delve further into the existing literature on data collection, data analysis and the research strategy that the researcher plans to use, before carrying out these activities. He or she should do this because in Part II of this book, in which we discuss several research strategies and methods of data gathering and data collection, we especially focus on the part of the research methodology that is needed when *designing* a research project, rather than on the execution of the research.

How to read this book

This book does not require specific prior methodological knowledge. The constructive line of reasoning, the many well-elaborated instructions and heuristics on how to obtain results, the abundance of examples and a set of assignments render it suitable for self-study. As a result, the reader is unlikely to run into problems while perusing the text. Designing a research project from the outset is difficult enough. That is why the instructions and the step-by-step plans presented in this book have been kept simple.

Another word of warning also is appropriate here. The straightforwardness of the book may lead to an underestimation of the difficulties encountered when designing a research project. This will change, however, as soon as the reader applies what he or she has learned to the practice of his or her own research. Then it will become clear that the distinct steps of the designing process are more difficult than they first appeared. The process of designing is even more complicated because, apart from the required knowledge and skills, the designer needs creativity and imagination.

The best thing to do is to apply the methodology in this book to an actual research project. Therefore, after finishing each chapter, the reader is encouraged to apply the suggestions and assignments to his or her own research project. We strongly support teamwork in this respect. The process of designing works better with the support of a colleague who is engaged in the same process. Teamwork encourages the use of creativity and imagination. It also offers opportunities for critical reflection and discussions as to weaknesses, inconsistencies, and gaps during the 'work in progress[7].

Besides self-study, the book can primarily be used in training courses in which participants in working groups discuss and practice the various elements of setting up a research project. At present, master students, bachelor students and, increasingly, PhD students are given the opportunity to follow these courses at various universities and research institutes.

In order to facilitate this type of usage, each chapter ends with a step-by-step approach enabling the researcher to carry out the relevant stage of his or her research project. Please note the following. If the researcher simply applies the step-by-step plans presented after each chapter to his or her research project, he or she risks losing the benefits of an *iterative design strategy* suggested in this book (see Chapter 1). In a nutshell, the iterative design strategy suggests that the designer continuously switches from the various parts that make up the designing process. That is why we suggest that the researcher acquires the skills of designing a research project in two separate phases. First, he or she should become acquainted with the different methods and heuristics of each individual stage in the designing process, by studying the contents of each of the following chapters in this book. Once the reader has become acquainted with the several techniques and has acquired the skills needed, he or she can apply the methodology to a real-life project. Only then can the research project benefit best from the iterative design strategy.

In addition, the book can be used as an easy-reference manual for anyone who is about to carry out contract research or who is embarking on an activity comparable to research, such as writing reports and papers, drafting articles and setting up short-term applied research projects. In the past, it has proven to be quite practical when one has the opportunity to reread the basics of research design during a research project.

Again, there is a danger that, as a consequence of the step-by-step plans, the reader slavishly applies these steps, without critical reflection. This will reduce the learning effect, and increase the risk of developing a poor quality research project. Research is often too complex and too multiform to be designed entirely according to a set of previously fixed rules. The step-by-step plans presented in this book are meant to serve as rough guidelines for supporting the designing process. They should be used as initial steps which help the reader to structure his or her ideas. We strongly suggest that the readers maintain a critical attitude during each step of our methodology. You can never design a research project on the autopilot, without critical thinking.

Structure

Chapter 1 explains the logic underlying the project design and the structure of this book as a whole, by illustrating this with an authentic case. Chapters 2 through 8 and the Appendix elucidate and elaborate on the various elements of the design. For each individual chapter the text has been structured as follows. The beginning of each chapter gives an example from an everyday situation demonstrating the point we would like to make that is based on a specific problem. Subsequently, we go into further detail about the methods, procedures, methodologies and guidelines you can use when carrying out this particular stage of the research design. All this leads to a step-by-step approach, At the end of each chapter, the step-by-step approach is applied to the authentic case introduced at the beginning of the chapter.

1 PROJECT DESIGN

Designing can be compared to making a painting. When you are engaged in this activity, you continuously work in all areas of the canvas. The shapes and colours of one section inspire the shapes and colours of another. From time to time you take a step back, your eyes half-closed, to view and ponder the quality and harmony of the whole.

l.i INTRODUCTION

Designing and carrying out a research project is a complex activity. The researcher is bombarded by a host of new impressions. Moreover, the various parties who are involved in the process make different and often contradictory demands on him or her. In such a situation, many readers will find it difficult to develop a goal-oriented mode of action, in which it is clear to yourself and to the other parties what is going to transpire. The following example depicts such a situation.

Example 'A problem with logistics'
A student of organisational studies has been assigned a project for his master's thesis at a department store chain. After a quick tour around one of the company's department stores and after consulting his supervisor, the student immerses himself in literature on logistics and compiles a list of possible problems concerning the logistics. He presents this list to a number of employees within the company. It soon appears, however, that the problems with the logistics are not the real issue. What is more important are the different views held by the employees of the company regarding what has caused these problems. By now the student has been working on his final project for well over one month. He realises that he had better make haste with the people he still needs to interview concerning their views on this particular problem of the logistics. But who should he approach for these interviews? And what exactly should he ask? Should he delve into the problems revolving around the logistics or not? And what is actually part of the company logistics and what is not? Furthermore, it is now July and many people are on holiday. He feels under pressure and decides to conduct a number of interviews with some executives, but he

> does not obtain very much of information. 'When will you be finished with the report?' his supervisor urges. The student quickly draws up some interview reports, but soon it is quite clear that this is not going to pass as a thesis. What should the thesis contain? How can theoretical depth into the subject be realised? All in all, the project does not look too promising.

The student in this example lacks insight into the various steps involved in the preparation of a research project. For him it is merely a jumble of activities that lack a well thought-out and planned approach.
This first chapter presents an overview of the various aspects involved in research, which will be elaborated on later in this book. Section 1.2 gives a survey of research design and an outline of its various aspects. This section shows how you should structure your designing activities. Section 1.3 sketches the process in which research design can be developed.

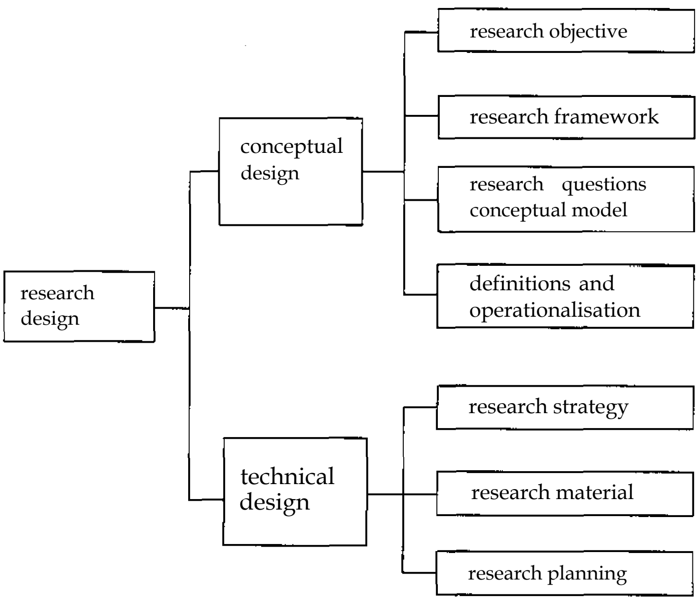
1.2 PROJECT DESIGN - IN A NUTSHELL

Designing research involves two separate sets of activities. The first involves determining everything you wish to achieve through the research project. This has to do with modelling the content of the research; we call this the *conceptual design* of a research project. The second set of activities concerns how to realise all this during the implementation stage of the project. This is called the *technical research design.*
The conceptual design is the subject of Part I of this book. It determines *what, why and how much* we are going to study and it consists of four elements. In the first place, the *objective* of the research project is formulated, i.e. the goal of the research. It concerns the contribution the researcher wishes to make to solve a problem outside the research itself. That is why the research objective is also called the external aim of the research, the goal of the project. The research objective, in other words, concerns the *use* of the knowledge the research produces, *not* the knowledge itself. Secondly, this research objective must be derived from and embedded in what we will be referring to as the *project context.* The draft of the research structure is then developed into a *research framework.* A research framework consists of a schematic representation of the most important research phases. Subsequently, the researcher must determine which information can contribute towards achieving the selected research objective. We are now at the stage of formulating the set of *research questions.* This set consists of a number of core questions and sub-questions that need to be answered during the different phases of the research project. The answers to the research questions provide the exact knowledge required

in order to achieve the research objective. This concerns the so-called **internal** aim of the research, the goal **within** the research project. An important part of formulating the research questions is determining which theoretical framework will be used to study the research object. In this book we call this theoretical framework the *research perspective*'. Sometimes the theoretical framework consists of a ready-made theory that the researcher has found while studying the relevant literature. But more often than not, the researcher will have to derive a theoretical framework from different theories that need to be adjusted in order to fit the research project. Such a theoretical framework often takes the form of a so-called *conceptual model.* The conceptual model is the theoretical framework of the research project, and it consists of a set of assumed relationships between the core concepts of this project. In the Appendix of this book we present detailed instructions on how to develop such a conceptual model.
The final part of the conceptual design concerns a set of activities in which the core concepts of the research objective, the research questions and the conceptual model are defined, refined and made concrete. It is particularly important that abstractly defined core concepts are translated into observable phenomena, i.e. indicators. This process is called *defining and operationalising* the key concepts. This process helps the researcher to demarcate his or her research object.
The second set of core activities in designing a research project concerns the *technical research design*, or simply *technical design.* The technical design is the subject of Part II of this book. Roughly speaking, the technical design consists of the decisions concerning *how, where and when* we are going to do our research in order to answer the research questions. A first step to be taken is the selection of the *research strategy.* Core questions to be answered are: Is the researcher looking for breadth or depth, will he or she follow a quantitative or qualitative approach, first-hand observation or an analysis of information or data produced by others? Once the researcher has decided on a research strategy, he or she needs to choose a set of activities which establish the kind of research material needed to answer the research questions: where is this research material to be found, or how can it be produced? We call this carefully deliberated set of decisions the plan of *research material* generation, in quantitative research also known as the process of data gathering. The third and final category of activities and decisions that are needed within the framework of making a technical design concerns a clear and consistent *research plan.* Figure 1.1 summarises this.

The components listed to the right in Figure 1.1 represent the next seven chapters. Here, we will briefly explain each of these components while referring to the project 'A problem with logistics' that we discussed above.

Figure 1.1 Overall picture of the research design



Research objective

At the start of a research project there is a set of problems, the *project context.* As a rule, this context is far too extensive and too complex to be dealt with comprehensively in one single research project. Therefore, the first step in developing a conceptual design is *demarcation.* The research designer needs to isolate an area of the project context that is manageable for the purposes of a research project. The result is a well-defined and not overly extensive part of a problem, to which the research can conceivably make a significant contribution. When this part of the project context is formulated as an external goal, the solution of a practical problem, i.e. an organisational problem or a policy problem, we call the result of this delineation the *research objective.*

Example 'A problem with logistics'

Project context or background

A department store chain is having problems with its supply of goods. This problem is multifaceted: logistic management, transport management, arrangements with suppliers, customer-friendliness, etc. Despite recent attempts to reorganise the logistical system, no improvement has been made. It is not quite clear where the logistical problems stem from. Some people in the organisation blame the organisational structure. Others point at the lack of commercial orientation of the organisational culture. Some people claim that the core problem has to do with the employees' resistance to change their way of working. The Head of the Department Logistics and Distribution commissions a consultancy agency to carry out a research project which should provide clear insight into the background of the logistical problems.

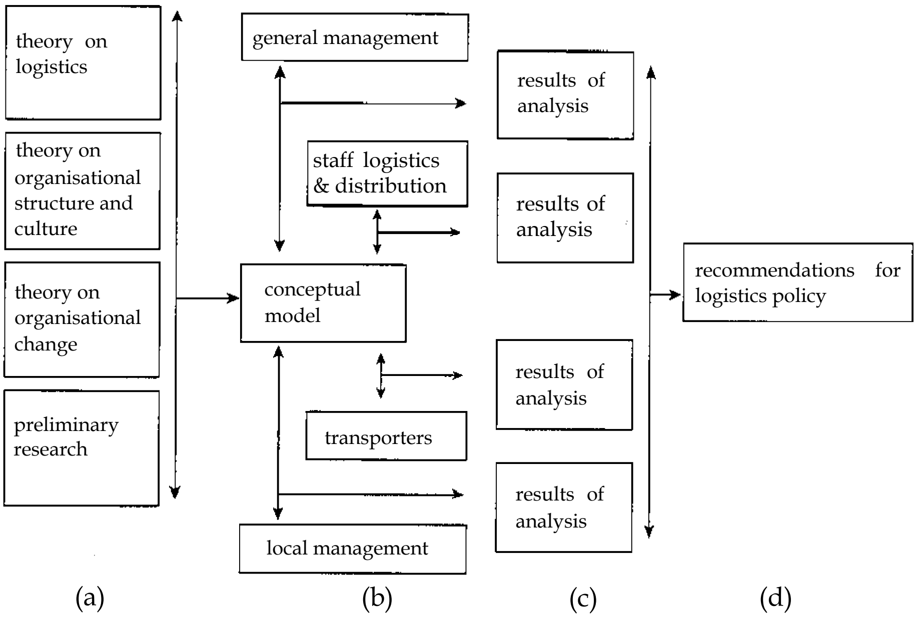
Research objective
The research objective is to offer the Head of the Department Logistics and Distribution recommendations concerning how to improve the logistics policy, by making an inventory of the views held within the organisation (general management, staff Logistics and Distribution, transporters, management local offices) about the background of the problems with the logistics and the suggested solutions to these problems.

In our experience, this process of demarcating and defining a feasible and realistic research objective is an extremely difficult hurdle for most beginner researchers. Nevertheless, the formulation of such a research objective is a very important condition for designing a successful research project. In Chapter 2 we will elaborate more on how to formulate a research objective.

Research framework
Before formulating the research questions, you should start by sketching in broad lines how you intend to achieve this research objective. Drafting a neatly arranged research framework will prove helpful. The research framework is a *schematic* and *highly visualised* representation of the steps that need to be taken in order to achieve one's research objective. Such a representation will prove to be an extremely useful tool for getting a grip on the project. Chapter 3 will elaborate on the research framework.

Example 'A problem with logistics'
The reasoning by which you hope to realise your objective in this project is as follows. An analysis of the organisational literature on logistics, as well as the literature on organisational structure, organisational culture, organisational change, plus preliminary research, will give you a theoretical framework. In this and many other cases, this framework takes the form of a conceptual model, consisting of a set of factors that influence the effectiveness of the logistics. With the help of this conceptual model, you can map out and compare the opinions held by the various parties in the organisation on logistic problems and solutions. Figure 1.2 provides a visual representation of the above.

Figure 1.2 Research framework for researching the problem with the logistics



Research questions and theoretical framework

Next, the designer will need to formulate the *research questions* that must be answered during the course of the research project. These questions have been selected and formulated in such a way that the answers will yield information that is useful or necessary for accomplishing the research objective. Chapter 4 elaborates in greater detail on the method of how to compose this set of research questions. In the process, he or she subsequently will develop the theoretical framework for the research, mainly by studying relevant scientific literature. An example of this theoretical framework, in the form of a conceptual model, can be found in the Appendix. As soon as the reader has been able to develop a set of research questions and has come up with a theoretical framework which meets the requirements, further elaboration of the concrete research steps, that is, the technical design, should not pose a problem. The research designer may even consider using the following as a final criterion for the quality of the set of research questions. If the researcher experiences any problem when designing the technical part of the research or has to reconsider the choices that are made regarding the technical design, then it is likely that the cause of these problems has to do with having an inadequate set of research questions. In that case, the designer should consult again the instructions we have presented in this book for formulating an adequate research objective and a steering set of research questions. The reader will probably notice that the research objective and the research questions have to be adjusted.

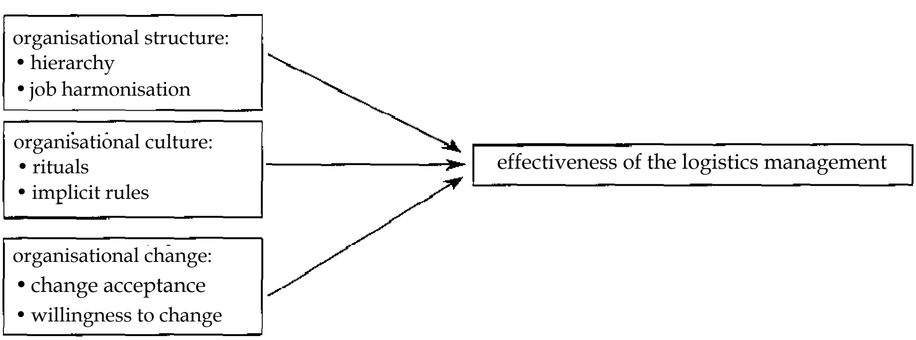
Example "A problem with logistics'

The core questions of this research are:

1. Which conceptual model (consisting of key concepts and assumed relationships between these concepts), derived from literature and preliminary research, will be relevant when listing the opinions held by the stakeholders in the organisation on the problems with logistics and on the solutions to these problems? (= the theoretical perspective)
2. What are the opinions of the different parties on the core concepts and the assumed relationships between these concepts, when applied to their own organisation?
3 What are the main similarities and differences of opinion held by the various parties in the department store chain concerning the various problems with the flows of goods and the way in which these problems can best be solved?

Figure 1.3 represents the theoretical framework of this research project. In this case as in many other cases, the theoretical framework consists of a conceptual model, that is to say, the key concepts and the assumed relationships between these concepts.

Figure 1.3 Conceptual framework 'A problem with logistics'



The conceptual model reads as follows: based upon a literature search and preliminary research, the researcher has chosen to study the influences of the organisational structure (hierarchy and job harmonisation), the organisational culture (rituals and implicit rules) and organisational change (change acceptance and willingness to change) on the effectiveness of the logistics management.

Definition and operationalisation

In defining the research objective and the set of research questions of a project, one or more concepts emerge which then take central stage in the research. The way you define these concepts determines what will be done in the remainder of the project. So we need to describe the content of the key concepts in an *exact* definition. This means not only presenting an exact description of these concepts, but also providing a clear demarcation of which components and dimensions are included in this definition and which components and dimensions are left out. The researcher decisions are part of the process of operationalisation. In brief, by defining and operationalising the key concepts we can delineate the research project further and in this way more clarity can be given on where to look in the library and in the empirical field. These issues are elaborated on in Chapter 5.

Example 'A problem with logistics'
A key concept in this project is 'logistic management'.

Definition
For the purposes of this project, we will refer to logistic management' as the set of decisions with regard to the processes, products, partners and costs which influence both the flows of goods between the suppliers and the individual department stores of the company on the one hand, and. the way in which these flows affect each other. This ignores the flows of goods between department stores. It will be clear that the researcher implies an important delineation of the project. This is precisely what is needed at this stage of the designing process.

Now that the conceptual design of the research project has been completed, we can start concentrating on the technical part of the design. As we mentioned earlier, the technical design consists of the decisions to be taken with regard to the research *strategy,* the research *material (data),* and the research *planning.* More about this is presented below-

Research strategy
A subsequent decision concerns the way we plan to approach the research object. We can opt for a strategy that enables us to make valid observations. In this case it stands to reason that we should opt for an extensive research in which we strive for breadth rather than depth. The large quantity of data this necessitates usually requires quantitative data processing. We call this type of research a quantitative survey. It is also possible that we are more interested in making a thorough examination of a complex case. Then one may opt for a strategy known as case study. Here the research is generally approached along various paths and in a qualitative way.

Example 'A problem with logistics'
You opt for a case study, partly because you prefer qualitative research and partly because you would like to carry out an in-depth study. The price you pay for profoundness is that it is impossible to generalise the results. By means of various methods such as interviews and observations of production processes, as well as the study of documents, you can try to gain as deep an insight as possible into the problem at hand, taking into consideration all its aspects.

Research material
A next phase in the design process is the plan for gathering the research material. A first step of this plan is to define the research population. The research population is the actual segment of reality the researcher would like to study. Once he or she has defined the research population, the researcher is able to select the resources that will give information about this population. Research resources can be people, objects, situations, media and documents. The last step is to decide how to obtain the required information from these resources. Some of the best known gathering techniques are questionnaires, interviews, observation and content analysis of written and audio-visual documents and media contents. More information on research material can be found in Chapter 7.

Example 'A problem with logistics'
As part of the 'logistics' research project, you have decided to gather the opinions of the four groups of stakeholders through a combination of a half-structured questionnaire and in-depth interviews. You decide to approach five members of each group of stakeholders for information.

Research planning
One of the remaining design activities to carry out is to draw up a plan. This refers both to processing the research project and writing the research report. As for the process of carrying out the research project, it is not only advisable to draw up a time schedule with deadlines for various 'products' It is also important to specify beforehand what activities should lead to these 'products'. In order to analyse the data and report the results, it is highly valuable to have a mental image of the final report in the form of a table of contents. More details about this follow in Chapter 8, which deals with research planning.

Example "A problem with logistics'
The project assignment will take some six months or twenty-five working weeks. Three of these weeks have already been spent on developing a conceptual design. The activities you are going to carry out within the framework of the assignment consist of conducting interviews and making observations. You decide on a total of twenty interviews and allocate three weeks of your time to this. This decision has been based upon the golden rule that it takes 8 hours to deal with each individual interview, in total. This includes formulating the interview questions, making appointments with the respondents, travel time, the actual interview, the interview analysis, and the selection of the information needed to answer the research questions. You have calculated that these activities will take a month and a half in total to complete, Moreover, you intend to spend five full days on making observations. You allocate another fourteen days for systematising and recording the impressions you have obtained. To optimise the link between interviews and observations, you plan these days in the same six-week term as the interview sessions. You further allocate five weeks for analysing all the material and writing the draft. Finally you have another six weeks to relate your findings to the theoretical framework and to process all of this into a final report in the form of a thesis.

1.3 DESIGNING ITERATIVELY

The reader has just been given a brief outline of what the result of your design activities should roughly look like according to our perspective. This result can be viewed as the *product* of the research design. The next question is how to achieve this design product. Here we focus on the research design as a *process*. This is the topic of Section 1.3.

We may have provided the reader with the impression that designing a research project is a linear and consecutive process. It may appear as if the project context, from which a research objective has been derived and a research framework has been created, should be mapped out first. Only then is the research objective to be translated into a set of research questions and, if appropriate, into a conceptual model. Subsequently, in this linear approach the necessary material and a research strategy are selected. In this erroneous conception of the process, all decisions are subjected to a meticulous plan.

When viewing design as a *product,* the steps outlined above can indeed be logically derived from one another. For instance, in the final design the research questions should be logically derived from the research objective, because the answers to these questions should provide sufficient information in order to achieve the research objective. Likewise, the technical design should furnish a logical translation of the problem into a number of research steps, because carrying out the planned research project should provide the answers to the research questions. However, although this linearity is inevitably part of the design as a *product*, this is not the way the design will be established. Designing is a *process*. In other words: what has been presented is a *logical* sequence, not a *time* sequence. The process of designing a research project is far more disorderly than the reader may think. For example, in the beginning of designing the research project the researcher may have planned to conduct interviews. In the past, the researcher has been trained to do this and it seemed interesting to try this technique out for him.

The design approach we support is an iterative process. The notion of iteration stems from mathematics, in which iteration means that the result of a calculation is taken as the input for a second set of calculations. This process is to be continued until the final calculation no longer leads to recognisable changes in the calculation results. In that case the calculations converge. In everyday language we would say that the design has been fully crystallised out. In terms of the design, iteration means that the designer must constantly switch from the one part of the design to the other. Each time, he or she reconsiders the consequences that the provisional decision concerning the one part will have on each of the other parts of the design to be. That is, both the parts that are still to follow, and the parts that have already been designed must be adapted if necessary. This process stops as soon as an adjustment does not have recognisable consequences for any of the other parts of the design.

Such an iterative design approach has a number of consequences for the design of a research project. The reader should comprehend that making a final decision in the area of the technical design depends on a number of other decisions that have been made in the area of the conceptual design. For example, the decision to opt for interviews as a method of data gathering may be a suitable starting point for the design process. If the researcher is attracted to this method of data collection, it will motivate him or her to undertake the heavy workload that a research project inevitably entails. Of course, the decision to opt for interviews has consequences for the subsequent decisions to be made with regard to the other parts of the conceptual and technical design. For example, the researcher may have to reconsider the various insights and knowledge about companies that your interviews have produced or will produce (the set of research questions). Or you may even decide to return to an earlier stage and to give consideration to other types of management problems that organisations are faced with nowadays (the project context). Then, it is usually not so hard to develop both a conceptual and a technical research design, in which interviews have a meaningful place in the whole. In short, in this conception of designing a research there are continual movements back and forwards between the various stages of the design to be.

Not only will you need this oscillating motion if you wish to fit in your own preferences and interests; it will also be needed because designing is a very complex activity. The possibilities from which a designer can choose regarding each part of the design, and the consequences of each decision that is made for the rest of the process, are numerous and complex. No one can realise this all at the very start of the process.

A third reason for opting for an iterative design approach is the fact that the design needs imagination and creativity. Usually, when reflecting on a certain aspect of the design, the designer is inspired by many new ideas concerning earlier and perhaps also later stages. For example, in the course of drafting a technical design, it may appear important to learn how the respondents *appraise* a certain phenomenon, whereas the research objective and the set of research questions thus far only allowed for their perception. In the former case the researcher is looking at values, in the latter case at facts. To include this new perspective, he or she will have to adapt the set of research questions that were formulated earlier. The new set of research questions will include a question or a number of questions regarding the respondents' appraisal or evaluation of certain issues. This modification is likely to trigger off adjustments to other design elements, and so forth.

This iterative approach also supports the efficiency of the design. As the reader has learned by now, the technical design serves to answer the set of research questions. These answers in turn serve to support the achievement of the research objective. In other words, there is an instrumental chain at work that is as strong as the weakest link. At each stage of the design various pragmatic decisions need to be taken. The initially adequate set of research questions may call for data that first appears difficult to gather. It may take too long before the researcher will have them at her or his disposal, it may not be possible to get hold of the right data, or maybe there are those who do not wish to be interviewed. Sometimes, the research designer can avoid such problems by making small adjustments to the set of research questions. But once he or she has done that, it may be necessary to return to the research objective. If necessary, the designer can change the objective in such a way that the 'new' set of research questions can be logically derived.

This exposition concerning the iterative character of the designing operation has led us to an important conclusion. We have seen that constructing a research design by nature involves trial and error, deciding and reflecting, drafting and revising. It can therefore be concluded that designing iteratively is only possible on paper. Limiting himself to *thinking* things over makes it hard for the researcher to juxtapose matters and methodically adjust them. In doing so, he will soon find himself in an almost inextricable knot of thoughts. In short, designing iteratively means that while writing, you are continuously aware that whatever you are writing at this stage, will need revision at a later time. Drafting and visualising, e.g. drawing diagrams, are not the products of but vehicles for implementing a creative thought process. This, too, can be an important, but very difficult learning moment for the beginner researcher.

Many of them are inclined to think about readjustment and reformulation as indications of incapacity and failure. However, one needs to develop an attitude in which such a process is considered as a fully normal procedure. Such an attitude may even lead to the decision to include the process of designing research in a final research report. The reader may be surprised to learn that some of the crucial decisions made during a research project have resulted from an iterative design approach. Particularly in cases where the researcher had to change his or her original design for practical reasons, without this information the reader may disagree with the designer. This may be the case, for example, when the reader disagrees with the decisions the designer took with regard to the demarcation of the research subject. In these instances, a deeper insight into the iterative approach of the research design may help convince the reader about the appropriateness of the research design.

A step-by-step approach

This book provides the reader with instructions on how to design a research project with the help of the generic step-by-step approach below. We call this plan 'generic' because each of the seven steps will be worked out in the following chapters. Each step of the generic plan consists of a set of smaller in-between steps. Please notice that the sequential elaboration presented in this book is not an adequate reflection of the design process. We can only show this sequentially, but in practice designing is an iterative-parallel process.

Research design

1. Explore the project context of the research project at hand and decide on a single and a feasible research objective.
2. Construct a research framework that gives a general indication of the steps that you plan to take to achieve the research objective,
3. Examine, partly on the basis of the research framework, which information will be useful or necessary in order to achieve the research objective. Then formulate this information into a set of research questions and - if appropriate - into a conceptual model.
4. Determine the core concepts of the project and tailor the definitions and operationalisations of the concepts to the research objective and set of research questions.
5. Determine what research strategy you are going to follow when gathering and processing the material into answers to the questions.
6. For each research question, examine what type of research material you need in order to arrive at sound answers.
7. Draw up a research plan that indicates the activities you are going to carry out, *when* this will take place, and *which products* will result during the separate phases of research.

PART I

CONCEPTUAL DESIGN

We are at the beginning of a research project. In most cases this means that the researcher has roughly determined the subject of the project. In some cases, this subject will be purely theoretical; it may have been decided to unravel a theoretical problem by studying the existing literature in the field and by reflecting on this topic. Or the research project may be carried out in an existing profit or non-profit private organisation or a public-sector organisation. In this case, the research will focus on a practical problem concerning this organisation, in which the project is supposed to contribute to solving that problem. The researcher may have generally made up her or his mind about the set of research questions, but may be unsure how exactly to contribute to the theoretical or practical problem at hand. These matters need to be placed into the conceptual design. Part I deals with the development of such a conceptual design.

The conceptual design serves various purposes within a research project. However, you need to bear in mind when developing a conceptual design that the design flows out of these purposes. By far, the most important purpose of the conceptual design is *steering*. Not only does this mean steering in the creation of the technical design, but also in the actual implementation of the research project later on. If the conceptual design meets all the requirements as described in this first part, the researcher will be able to infer correctly which specific research activities need to be carried out during the implementation stage. For example, the conceptual design helps to deduce what research material must be gathered, where this information can be found (sources), how the information can be derived from these sources (methods of data collection), and what needs to be done next with the material (data analysis). If these matters are unclear after having formulated the set of research questions, then the conceptual design must almost certainly be incomplete and/or methodologically incorrect.

The steering purpose of the conceptual design can be compared to the architectural design of a building. The design (the drawings) and the detailed descriptions (the specifications) of a house are presented in such a way that others can build the house exactly in the way the architect has meant for it to be built. The same is true of the conceptual design of a research project. If someone else were to carry out the project according to what was originally anticipated, then the collected data would have to be in accordance with what was originally anticipated. In Part I, we will show that this is a feasible criterion, although it makes many and high demands on the quality of the conceptual design. A great number of methods, procedures and heuristics will be offered to support this steering purpose.

Two additional purposes of a conceptual design are the *motivational* and the *evaluative purpose*. These are primarily relevant to the researcher and, occasionally, a supervisor. When designing the research project the researcher should select a research objective and a set of research questions that are of interest to her or him. Motivation is something the researcher will need when performing time-consuming activities, which research projects tend to be. Finally, the evaluative purpose is generally realised by the conceptual design serving as a product specification. This design indicates the type of information the research is going to produce and, in turn, how this information can contribute to solving a theoretical or practical problem. This research objective and the set of research questions are suitable as a standard for assessment after the research project has been finalised: Has the project really produced what the researcher, the supervisor or the client had intended at the start and does it comply with the view that they presented to third parties, i.e. stakeholders?

2 RESEARCH OBJECTIVE

Don't bite off more than you can chew.

2.1 INTRODUCTION

We start from the moment that the researcher has formed a general idea of what the subject of the research project will be. At this stage it is important to realise that a subject is always part of a wider context. In the case of a theoretical subject, the context will include literature relevant to a specific field, research group's research programme or an ongoing large-scale scientific research project. If he or she decides to opt for a practice-oriented approach, the context will often be placed within an organisation in which the research is to take place. It is important not to wait too long before becoming acquainted with the wider context. For example, the researcher can search on the Internet in order to find relevant information about the research subject or the organisation that is enabling her or him to carry out the research project. In addition, a search at the library will reveal what has been published on the subject, and the researcher may consider approaching an expert who is familiar with the subject. In the case of practice-oriented research, it would be a good idea to visit the organisation where the researcher expects to carry out the research project as early as possible.

As soon as the researcher has become acquainted with the wider theoretical or practical context, he or she will find it necessary to deal with many impressions. Most subjects are covered by vast amounts of literature, and the organisation where the research is to be located can be large, complex and prone to rapid change. It is also possible that a contact person in the commissioning organisation is someone who is not familiar with scientific research. He or she may be unaware of the complexity of scientific research, or he or she may have unrealistically high expectations regarding the results of a research project. In such a situation it is difficult not to be overwhelmed by the multitude of impressions and to still be able to get an idea of the role of the researcher within this complex arrangement. As an example, imagine the following situation.

Example 'Providence & Prudence'

You are studying business administration and you are looking for a suitable subject for your master's thesis. That is why you have asked the consultancy firm Mulder if it is possible to carry out your final project within the firm. You are lucky because the company would like to involve you in a current project at the insurance company *Providence & Prudence.* The insurance company has asked for assistance from the consultancy firm in order to implement a complex organisational and technological change project. Apparently, there is a lot of resistance towards the changes that have been planned. Everyone can still remember how the previous IT project failed. The system was continually down, the work suddenly changed completely and staff had been promised all kinds of training programmes that were never offered. Hence, it was only to be expected that a storm of protest broke out after a new reorganisation plan was announced. After having consulted the management team, the General Manager of *Providence & Prudence* decided to call in the consultancy firm Mulder. A senior consultant subsequently visited the company and discussed the proposed plans with several staff members. This resulted in a project proposal stating that the consultancy firm would carry out the following assignments:

- draw up a list of major problems concerning the reorganisation;
- draw up a plan for comprehensive redesigning of the organisation;
- draw up a plan for introduction and implementation of the newly designed organisation;
- carry out an ex-post evaluation of the reorganisation.

Suddenly you find yourself in the senior consultant's office and the question is: How does your master's thesis fit in with this? How may your project contribute towards these plans?

The student finds herself involved in a complex situation that has historical roots and in which all sorts of interests and issues are involved. It is no simple matter for an uninitiated researcher or student to define their contribution to the project. It is clear that the researcher is not just another junior employee of the consultancy firm. The thesis project consists of a research project that will be set up and carried out independently. Of course, it seems natural that in some way or other the student will take on part of the consultancy project. However, the project has many different aspects, so it is not feasible for the researcher to be involved in all these aspects within the context of the graduation. Therefore, a choice must be made. Moreover, the consultancy project will require more time than the student has at her disposal. That is why she must formulate a project that can be carried out within the time available. Nevertheless, it is evident that the result of the final project should seriously contribute to the consultancy project. In addition, the project must meet the requirements set by her institute. One of these requirements, for example, may be that a connection should be made with the existing body of scientific knowledge in this particular field. And finally, she will want to choose a subject that corresponds with her competences and interests. In view of the many requirements a research project must meet, it is important that the subject of the research project is carefully defined and embedded in the wider context of the consultancy project We call this wider context the *project context* of a research projcct. The result of defining and embedding is ultimately reflected in the formulation of the *research objective* of this project.

The aim of this chapter is to provide the tools that are needed when considering the many possibilities that the researcher will be confronted with during the initial stage of the research project. For this purpose we will show how to recognise and explore a project context and how to isolate from this context a research objective that is attainable and at the same time is acceptable to the client, to the researcher, as well as to her or his supervisor. We will first formulate the general guidelines that should be taken into account when defining a project context and a research objective (Section 2.2). Afterwards, these guidelines are further refined and made concrete for various kinds of research projects, i.e. theory-oriented research (Section 2.3) and various types of practice-oriented research (Section 2.4). Finally, we will develop a step-by-step approach so that the reader can formulate an effective research objective for a research project, and we can then apply this plan to the example project 'Providence & Prudence' introduced at the beginning of this chapter.

2.2 THE project context and the research objective

Each research project aims to provide knowledge, insight and information that can *contribute* towards solving a problem. For example, a research project could contribute towards the development of theories in the field of sustainable agriculture, or it may aim at a contribution to solving a policy problem. The first case concerns a theoretical problem, the second a practical problem. Consequently, we will respectively refer to a theory-oriented or a practice-oriented research project. In a theory-oriented research project, the project context is made up of the process and product of knowledge formation within the field in which the research project is to be carried out. We not only refer to libraries in which this knowledge is stored in the form of books and articles (product), but also to people and institutes involved in this knowledge formation as part of the project context (process). In practice-oriented research, the project context is a practical problem in a public or private organisation. In addition, we emphasise that each research project, intentionally or unintentionally, mostly serves both a theoretical and a practical goal. Therefore a research project, which was initially designed as a practice-oriented project, could directly or indirectly contribute to the development of a theoretical body of knowledge in this field. This has been referred to as the *theoretical relevance* of a research project. Conversely, a theory-oriented research which originally did not intend to be of any practical use, often may, one way or the other appear to provide information that can be very useful in practice. This is called the *practical relevance* of the project.

It is not difficult to understand that within a project context people pursue collective or individual, and sometimes conflicting, targets. Within a theoretical framework this aim usually means developing new theories and views. Within a practical framework, this usually involves solving a particular problem, creating a new situation or instigating new developments.

The problems involved in the project context are usually so extensive and/or complex that a research project can only partially or indirectly contribute towards a solution. Therefore, we have purposely used the term *contribute.* For this reason the designer of a research project must isolate a part or an aspect of a target in order to formulate this as the objective of the research project at hand. In sum, the first step in setting up a research design is to map the project context, the problems relating to this framework and the target within this problem context to which the researcher wishes to be linked. The second step is to isolate a part or an aspect of a target as the objective of the project. These two steps are further explained below.

Exploration of the project context

The example 'Providence & Prudence' which we presented at the beginning of this chapter, indicates that further investigation of the problems at hand is necessary in order to clarify what the research project must include, and how it can contribute towards solving the problems at 'Providence & Prudence'. This requires an exploration of the project context. One possible way to accomplish this is to ask questions such as:

- What problems are involved within the project context?
- What is the background to these problems?
- What solutions are the stakeholders considering?

We will first give an example of an exploration of the project context of a theory-oriented research project.

Example 'The quality of the environment'

You intend to carry out a theory-oriented research project on the concept 'the quality of the environment'. There is extensive literature on this subject providing a diversity of definitions in which various aspects of the subject matter are discussed. This situation makes up the project context of your project. In order to define your project's research objective, you have to explore this project context. What are the most important theoretical schools? What are the most important subjects of discussion in this domain? In what direction can we look for solutions that are considered useful by people active in this field? Further exploration will sketch a broad outline of the general framework within which the research project will be carried out.

In the case of practice-oriented research, the context will often consist of a problematic situation or a particular request to initiate a new policy. Other examples are the set of different opinions in an organisation regarding organisational problems, the various elements of these problems, the actors involved, and the interests and wishes of these actors. At the start of a research project, the researcher should make a brief description of the project context, including all the elements mentioned above.

Example 'Communication problems'
You are carrying out a research project for municipality A, where there is tension between the municipal organisation on the one hand, and the members of the municipal council on the other. You have been asked to examine these problems. The project context is the existing situation within the municipality. From an initial interview with your contact person at the municipality it emerges that the members of the municipal council feel that they are being insufficiently and inadequately informed by the town clerk's office. And vice versa, the town clerk's office staff believes that the members of the municipal council are not capable of indicating what kind of information they do or do not need. These communication problems cause irritation, but they have never been explicitly discussed. The general view is that something must be done quickly or else there will be trouble. The research project takes place within this project context and should contribute towards solving the communication problem.

Formulating the research objective
The second step in the initial stage of the research project is to demarcate an effective research objective within the project context. We have already emphasised the importance of defining the research project within the wider project context. In the case of a theory-oriented research, the project context is in fact always too broad, because our craving for knowledge and the accumulation of aspects we would like to acquire knowledge about is almost inexhaustible. In the case of a practice-oriented research, the project context is often extremely extensive because we are usually confronted with a set of interconnected problems that has developed historically and is embedded in a cultural, social

and/or political context. At this early stage the researcher must therefore position her or his research - both in time and space - within the project context. This can be done by formulating an effective research objective. An effective research objective is understood to be *useful*, *realistic,* and *feasible* within the time scheduled. It must also be *clear* and *informative.* We explain these quality criteria briefly.

It is a prerequisite for an effective research objective that it be *useful.* In the case of theory-oriented research, the researcher must therefore make clear how the project will contribute to a solution of the theoretical problems that are envisaged. In the case of practice-oriented research, the researcher must formulate the relevance of the research project for the benefit of the organisation or institute that is enabling the research to be carried out. Make sure that the usefulness is clear to the other parties involved. As a rule the researcher must accept that if explaining the usefulness of the research project requires a lot of effort then its usefulness is not convincing enough. If this is the case, then the researcher needs to reconsider the research objective and the way it is conceptualised.

A second prerequisite for realising a successful project is to formulate a research objective that is *realistic* and *feasible* within the time scheduled. By 'realistic' we mean that is must be plausible that the research indeed will contribute to the solution of the problem. Keep in mind that it is better to formulate a concrete goal to which you can contribute actively, than to bite off more than you can chew. Most of the problems that need to be studied are very complex. For example, you cannot promise that your research will solve the early morning traffic-jam because it is definitely unrealistic. It is more realistic to promise that your research project will contribute to solving the early morning traffic-jam by providing detailed and accurate information about the size and causes of the early morning traffic-jam in a particular region. Of course, the problem will not be solved entirely, but the information that the research will provide could definitely help to find a solution in the long term.

The 'feasibility' of a research objective has two aspects. The first question is whether the person who is going to carry out this research has the necessary knowledge and resources and whether he or she can get access to the necessary material. Earlier we called this the technical relevance or feasibility of the project. However, the most critical feasibility criterion is time. It is of particular importance that the research objective can be realised *within the time scheduled.* For example, the project mentioned above, which aims to provide accurate information regarding the early morning traffic-jam within a particular region, can easily be done within the confines of two months' time. Almost any research project, whether it is a master's thesis, a PhD project or a contract research, has to meet time constraints.

This implies that most of the time the designer of a research project is caught between the criteria of usefulness and feasibility. One may be tempted to think that usefulness requires a large research objective. Novice researchers in particular hesitate to demarcate their research objective. Implicitly they think that the more they demarcate, the less useful the research project will be. However, they have not yet realised how complex and demanding it is to carry out an empirical research project. The usefulness of a research project does not depend on the scale of a research objective. On the contrary, it depends on the plausibility of achieving the research objective. Therefore, an insufficiently demarcated project context and research objective will result in an unfeasible research project or invalid and unreliable results. The researcher who started with too broad a research objective will end up reducing his or her research activities during the course of the project, due to time constraints. And that, in turn, will harm the quality and usefulness of the project as well.

There is another reason why inexperienced researchers tend to start with a too broad and too complex research objective. During their study many of them are trained to write theoretical and reflective essays. Compared to empirical research, in these assignments demarcation plays a less important role. In theoretical and reflective essays authors do not have to build their line of reasoning on personal observations. Researchers/ however, need to be very reserved when using broad and complex core concepts such as 'structure' or 'culture'. These concepts consist of so many phenomena that an empirical study of these concepts cannot be made. All the researcher can do is focus on a small part. Moreover, he or she should avoid including concepts that are too broad when formulating the final research objective. A concept that is too broad consists of a great number of empirical phenomena. Whereas these concepts are often very welcome in theoretical reflections due to their abstract and general character, in empirical research they should be avoided as much as possible. In this respect, a new way of thinking is needed for starting researchers when designing a research objective. Bear in mind, an ounce of prevention is worth a pound of cure. In Chapter 5 we present the reader with an orderly method which helps to demarcate the smaller parts from the whole.

By a *dear* research objective we mean that the designer of research clearly formulates the objective of the research project by precisely indicating what the project's contribution to the solution of the theoretical or practical problem will be. This contribution can vary widely, depending on the nature of the project. For example, in the case of theory-oriented research the researcher may contribute towards developing a part of a new theory or towards improving a theoretical view. Which theory is he or she referring to? Which shortcomings and flaws arc being highlighted? What exactly will her or his contribution be, and for which particular part of that theory? All these questions concern the theoretical relevance of this research. It is important to be precise, so the reader is well advised to indicate the names of the authors and the articles and books when he or she refers to them.

When tackling a practice-oriented research project the research designer may clarify a policy problem, identify bottlenecks in situations of change, make recommendations for improving an existing situation or evaluate a specific policy or intervention. In particular, it is important that the designer briefly, but nevertheless precisely, indicate the problematic situation and the contribution that the planned research project will offer towards a solution. In addition, the researcher should point out *how* to make this contribution. Again, the golden rule is that the more explaining is needed, the more likely it is that the research objective has not been correctly formulated. It is then either too vague or too complex, or both.
Finally, an *informative* research objective gives a rough idea of the knowledge that the research project will generate in order to contribute towards a solution. We emphasise the word rough, because a more exact definition of the knowledge required will be discussed when the set of research questions has been formulated (see Chapter 4). An informative research objective makes two things clear: (a) what one can and cannot expect from the results of the project, and (b) a general idea of the research activities involved. In keeping with these two aspects, the sentence in which the researcher formulates her or his research objective consists of two parts, an (a)-part and a (b)-part.

> There is a very helpful formula that can be used to verbalise a useful, feasible and clear research objective. This formula is: The research objective is ... (a)... ty...(b)....

In the (a)-part, the unmistakable *contribution* of the research project to the solution of the problem is comprehensively described. We previously called this the *external goal* of the research project, in other words, the aim *of* the research. The (b)-part of this formula entails a clear description of the way the contribution will be provided. This is the *internal goal* of the research project, in other words the aim *within* the project. Part (b) of the research objective provides an indication of the kind of knowledge, information and/or insight that is needed in order to achieve the intentions that are declared in part (a).
Now that the basic structure of an adequate research objective has been presented, we can offer a number of examples to show how to use the structure of the research objective. The (a)-part of the research objective provides the supervisor of a theory-oriented project or the commissioning organisation of a practice-oriented project with the information that will tell him or her what results can be expected. Therefore, as a designer of a research objective you should ask yourself: 'Will the client or the supervisor understand the contribution that my research will make to solving the problem?' and 'Will he or she be satisfied with this contribution?'' If both questions can wholeheartedly be

answered with 'yes', then the (a)-part of the research objective is correct.
To indicate the (a)-part of a research objective, phrases should be used like:
The objective of the research project is:
... to further develop theory X of author Y, dealing with the issue Z;
... to fill the void in theory X, dealing with the issue Z;
... to test theory X based on a domain in reality (empirical findings) 2;
... to help improve the existing policy X dealing with issue Z;
... to contribute to the development of a new policy X dealing with issue Z;
... to make recommendations to the commissioning organisation Y to solve problem Z.

The first three formulations are examples of the external goal of a theory-oriented research project; the last three formulations refer to a practice-oriented research.
After having formulated the (a)-part of the research objective, you should add the connecting word '*...by ...*'. This introduces the (b)-part in which you indicate roughly the knowledge, information and insight that will be needed in order to meet the expectations you formulated in part (a).
To describe the (b)-part of the research objective in theory-oriented projects, use phrases like:
... by testing a set of hypotheses, deduced from theory X
... by analysing the conditions for the validation of theory X ...;
... by comparing theory X and theory Y ...;
... by critically reflecting on the core concepts X and Y of theory Z.

In practice-oriented research, you can use phrases like;
... by providing an overview of the stakeholders' opinions of..
... by providing a clear insight into the problems of an organisation ...;
... by making an analysis of the factors which have caused the problem ..
... by making an analysis of the gap between the desired and the current situation ..
... by making a comparison between ..
... by making an assessment of ..., and so on.

Please notice that in the (b)-part we refer to a problem of knowledge and information, and not to a practical problem. This is a fundamental difference; too often one wrongfully expects that the results of a practice-oriented research will solve a practical problem directly. However, research is not an instrument for solving problems. Research creates knowledge, insight and information. This knowledge does not solve the problem in itself, but it helps the problem solver to make the right decisions. Obviously, it is very important that the researcher makes a sharp distinction between his role as a researcher, as someone who provides information, and the role of the manager or decision

maker, i.e. someone who uses this information to solve the problem. In most cases, both the researcher and the problem solver are different people.
An adequate research objective conveys sufficient information both with regard to the expected contribution that the research will make to the solution of a problem, and with regard to the kind of knowledge, insight and information the researcher is seeking. The reader will easily recognise two of the three purposes of the conceptual design, mentioned in the introduction of Part I, namely the steering function and the evaluative function. That is why at the very start of a project while formulating the research objective, the researcher has already contributed to the realisation of these two functions. It is obvious that a well-formulated research objective can also contribute to the third function, the motivational function.
Below are a few examples of an effectively formulated research objective within a theory-oriented and a practice-oriented research project, respectively.

Example 'The quality of the environment'
You define your theory-oriented research project by confining yourself to the recent theories and related research reports regarding the domains of 'environment and society' and 'environment and nature'.

Your project's research objective is to contribute to the further development of the theories regarding the quality of the environment. In particular, you focus on the following issues: (a) the environmental planning policy of the (local) government, (b) the environmental awareness of the inhabitants, (c) the physical climate, and (d) the social climate. This objective is achieved *by* providing insight, based on a literature study, into the similarities and differences between the ways the theories on environment and society on the one hand, and on environment and nature on the other, conceptualise the following issues: 'environmental planning policy', 'environmental friendliness', 'physical climate', 'social climate'. In addition you provide insight into the results of recent scientific research regarding the relationships between these issues.

The results of this theory-oriented research project will not constitute a new theory, nor will they solve the theoretical problem entirely, but they will contribute towards the theoretical discussion on this subject and, as a consequence, towards the further development of science.

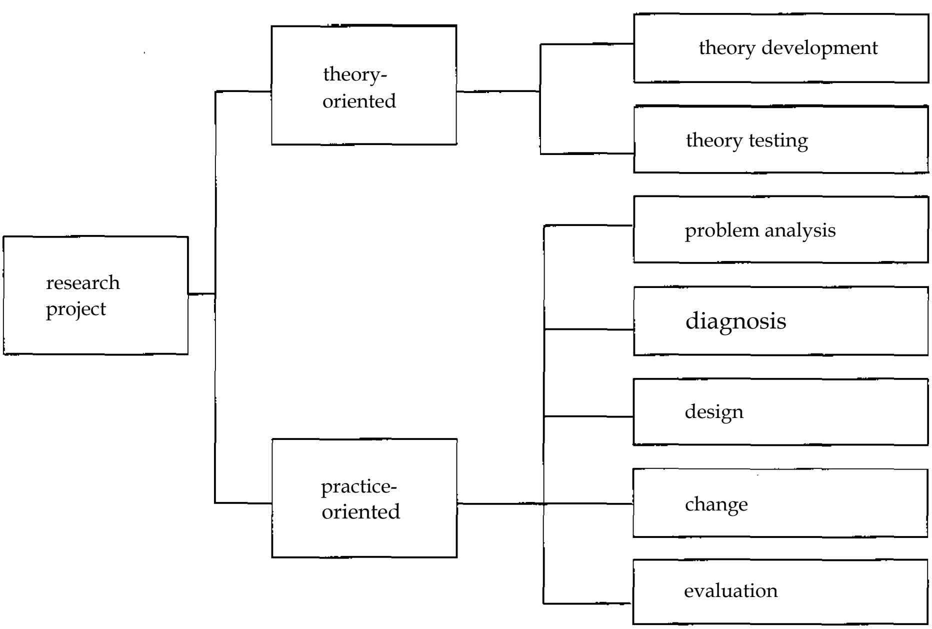
Example 'Communication problems'
You have defined your practice-oriented research project within municipality X by restricting yourself to presenting an overview of the existing views held by the groups within the municipal organisation regarding the communication problems and how solutions for these problems can be found.

Your project's research objective is to make recommendations to the Town Clerk concerning the improvement of the communication policy within municipality X *by* providing an overview of the differences and similarities in the views held by the stakeholders regarding the background of the communication problems and the possible relevant solutions.

Of course your project will not solve the communication problem, but the understanding provided can certainly contribute to the solution.

In the examples shown above we distinguished between theory-oriented and practice-oriented research. We have not yet discussed the fact that, within both categories, a further distinction can be made between various types of research projects, each of which has its own *type* of research objective. The diagram in Figure 2.1 provides an overview. In Section 2.3 the project contexts and research objectives for the various types of theory-oriented research are discussed. Finally, in Section 2.4 the project contexts and research objectives for practice-oriented research are elaborated on.

Figure 2.1 Types of theory-oriented and practice-oriented research



2.3 THEORY-ORIENTED RESEARCH

Theory-oriented research is all about solving a problem encountered in the theory development in a particular scientific area, and within this area, with regard to a specific issue. Obviously, within the framework of this type of research, it is highly unlikely that you will be able to develop or change a complete theory. Therefore, in a theory-oriented research project one aspect, or a specific part pertaining to a theoretical set of problems/ must be selected. This means making a clear distinction between the theoretical problem at hand, i.e. the project context, and the actual research objective that the designer wishes to achieve in her or his capacity as a contract researcher/ a master student, bachelor student or PhD candidate. Next, we will examine the aspects involved in both types of research distinguished in Figure 2.1.

Theory-developing research

There may be several reasons for starting a theory-developing research project. One of these reasons is the existence of *gaps* in *the construction of a theory.* A new theory or a complementary part of the theory needs to be developed. If you are interested in such an approach, and if you are looking for an appropriate subject, a good strategy to follow may be to examine the latest developments or some new phenomena in the area studied within your discipline and which, consequently, has as yet only been researched by very few people. In general, when searching for a research objective for this type of research one could pose questions such as: what are the blind spots in the theory? On which existing or new phenomena or developments in the field of study have there been publications? A few examples of new developments are: tele-working and its consequences for labour relations and for the social aspects of work, the use of genetically modified food in agriculture, including the ethical and marketing implications, and the effects of Internet use on governmental rules and the enforcement of legislation.

Example 'Telematics'

Project context

The development of modern technology within the study of telematics, i.e. a combination of *telecommunication* and *informatics,* opens up new perspectives for the quality of the services offered by the government and by profit and non-profit organisations. Working at home, using the Internet, interactive networking and other kinds of 'working away from the office', can be realised more easily than before. So far, very little research has been done into the effects of telematics on the quality of the services provided by organisations and companies in terms of effectiveness and efficiency.

Research objective
The research objective of a dissertation project is to further develop the theory on organisational technology, particularly with regard to the consequences of telematics on the effectiveness of the service offered *by* comparing the effectiveness of the service provided in the administrative processes of banks and insurance organisations, which have recently introduced telematics on the one hand, with the effectiveness of the service provided in banks and insurance organisations where telematics have not been introduced on the other.

There are other approaches to selecting problems strategically in relation to a theory (Ultee, 1991). The first possibility is that there are existing theories on new or pre-existing phenomena, but it is as yet unclear whether these theories have proved to be tenable after having been tested against new, empirical data. In other words: it remains to be seen whether the existing theories can generally be applied to those areas in which new developments have taken place. A very similar strategy is to look for so-called anomalies, i.e. empirical phenomena that do not behave according to the theory. When choosing an anomaly as a starting point for empirical research, the prospect of making a real contribution towards the scientific *construction of a theory* can be achieved. Below is an example of an anomaly.

Example 'Autonomy and stress'

Project context
Until now, one of the basic principles in the sociology of labour and organisation has been that giving people more control over their own job results in an improvement in the quality of labour. Recent publications, however, have shown that increasing autonomy sometimes creates more stress in the workplace.

Research objective
The research objective is to develop the theory on the quality of working life further, particularly with regard to the relationship between the core concepts 'job autonomy' and 'work stress' *by* providing insights in the relationship between the nature and occurrence of both group autonomy and individual autonomy on the one hand, and the physical and psychological manifestations of stress on the other, in four different cases.

Theory-testing research
In Figure 2.1, a distinction is made between theory-developing and theory-testing research. In theory-testing research existing views are tested, adjusted if necessary and/or refined. In this respect, the following types of questions

can be asked: Is it possible to increase the efficiency of the existing theory, for example by substituting several theories or hypotheses within a theory by one overall theory or hypothesis that explains as much or perhaps more than the existing theory? What additional requirements must be met in the acquisition of knowledge that have not (yet) been met by the existing theory? Will an existing theory hold when tested against the latest developments? Which aspects in existing theories are internally contradictory or inconsistent?

A special case of internal contradiction occurs if one and the same theory contains or results in two internally conflicting hypotheses. Discovering the source of such conflict can be a step towards acquiring more knowledge. Possibly, a third hypothesis can be developed which solves the conflict, or even renders the two conflicting hypotheses superfluous. Or, two different hypotheses on one and the same phenomenon both give equivalent explanations. It is possible that a third hypothesis can be derived from the two conflicting hypotheses that may explain even more than the original hypotheses because it is more general.

Another strategy for improving or developing an existing theory is to link certain phenomena or problems to a general concept. As a consequence, one or more specific problems can be derived from this more general or theoretical problem. This will be studied later on. The following example by Ultee (1991) illustrates the above.

Example "Income distribution"

Project context

The subject of income distribution is an issue that has been studied by sociologists and economists for a long time. It may be considered part of the general problem of the distribution of scarce goods. A second sub-problem or aspect of this general problem would be the distribution of professional status. When, while studying the income problem, the entire scope of the subject is considered as one coherent monolithic whole, more results may be obtained than when the sub-problem is studied separately from the sub-problems surrounding it. This is an example of the construction of a theory by abstraction.

Research objective

The objective of this research project is to improve the theory of unequal income distribution, in particular regarding the relationship between 'income distribution' and 'professional status' *by* testing several hypotheses on the possible connection between the professional status and the unequal distribution of income, to be derived from the theories on professional status and social inequality.

So far several examples of theoretical project contexts have been presented as well as the options for formulating a research objective.

Assignment
Please read the following text carefully.

Social Identification Theory
Social Identification Theory is about the way in which people identify themselves, and how others identity them, regarding their position and status in society. Prior research shows that the events and the relationships, in small groups particularly, influence these processes of identification. Consider for example the influence that relationships and the events in the family, peer groups, with colleagues at work have. Organisation studies stress the importance of the Social Identification Theory. Experts suggest that especially the way team leaders behave - authoritarian or participative leadership - influences how the team members identify with their position in the organisation. Subsequently, the degree to which the team members identify with their work influences how loyal they are towards the organisation they work for.

Assignment
a. Formulate the research objective of a *theory-developing research project* within the project context described above.
b. Formulate the research objective of a *theory-testing research project* within the project context described above.
c. Indicate the major differences between both research objectives.

We will proceed in discussing the project contexts and the research objectives for five types of practice-oriented research (see Figure 2.1).

2.4 Practice-oriented research

As stated before, practice-oriented research is meant to provide knowledge and information that can contribute to a successful *intervention* in order to change an existing situation. An intervention aims at solving a practical problem. Interventions take place when policies are implemented that have been designed by local, regional, national or international governments, or by the management of profit and non-profit organisations.
In the majority of practice-oriented research, the project context consists of a complex problem encountered by a governmental organisation, an environmental organisation, an NGO, a profit organisation and so on. The first important action needed to formulate the research objective of a research project is

to identify the commissioning person or group of persons. This will determine the nature and scope of the recommendations the researcher is going to make, based on the research results. For example, if a municipal council is the commissioning council of an IT related research project the members of this council expect the researcher to make recommendations with regard to the IT policy in general. However, if the commissioning person is the project manager of this IT research project, he or she expects that the researcher to come up with concrete recommendations with regard to the implementation of this IT project. Hence, the first two questions that must be answered when exploring the project context of a practice-oriented research are: who is the commissioning person? What does this person want? That is why we advise the researcher to explicitly include both the commissioning persons and the subject of your recommendations in the research objective of a practice-oriented research project.

Another point of consideration concerns the client's mistaken conviction about the nature and scope of the problem. This conviction is two-faceted. The first aspect concerns their knowledge of the set of problems. They often feel fairly certain what the organisational problem is and what has caused it. However, after further questioning it often turns out that it is not at all clear what the content and cause of this discontent is. What is more, clients frequently present a solution before it is clear what the problem at hand exactly is, and they often even feel that they know what kind of research is needed.

Example 'Problems with the board of directors'

The chairman of the board of directors of an organised interest group in the public health sector contacts you as a researcher with the following message: 'We have noticed a growing dissatisfaction among the organisation members with the activities of the board of directors. Rumour has it that we, the board, do not protect the interests of our members sufficiently, which - of course - is not true. It is a matter of miscommunication. Could you please send a questionnaire concerning the miscommunication between the board and the members of the organisation to everyone?' The chairman's request is clear, but its implications are not! The commissioning organisation requires as a particular technique of data collection to be used: a questionnaire, although the conceptual design of the research project is still unclear. What exactly is the communication problem? Whose problem is it? Which actions are being considered? How could empirical research contribute to the new plan to solve the problem? It is not clear what knowledge is required or useful for carrying out the plan, let alone that a decision can be taken about the appropriate method of generating data, as the client had already done. In short, if the researcher carries out the client's request without further study, the research project will not have a sound basis at all.

Generally speaking, a researcher should always be very reluctant to go along with the commissioning organisation's feelings of conviction. It goes without saying that a beginner researcher can ask for the support of the supervisor or mentor of the project against strong pressure from the client.
A second aspect of the client's misplaced confidence concerns the assumption that you, in your capacity as a researcher, can solve the problem in its entirety. Two comments can be made in this respect. First, as we explained earlier, in general only a small part of the problem at hand can be studied in a research project. For example, it is unlikely that the problem a governmental organisation has with regard to enforcing recent traffic safety regulations can be completely solved in one single research project. Therefore, the researcher must make a clear distinction between the aims of the client on the one hand, and the objective of the research project on the other.
A second and more fundamental explanation for the client's exaggerated expectations is the already mentioned erroneous notion that research is an instrument for problem solving. Research is a tool for creating valid knowledge. At best, this knowledge will be used by practitioners - and in most cases *not* by the researchers - in order to start an intervention, i.e. a certain policy or strategy which focuses on the solution or reduction of the problem at hand. In this respect you should be aware of your role as a researcher and avoid a role as policy maker or manager. It is also very important that the client is aware of the distinction between the two roles.
The above leads to the conclusion that we need to explore the project context before starting the research project. During the project the *researcher* will examine the situation in detail in order to define the client's problem and to decide which part of the problem we are going to study as the external goal of the research.
To explore the project context could be difficult, and the use of an instrument or heuristics may be useful. This support can be provided by using the model of the so-called *intervention cycle.* The intervention cycle is a predefined set of steps to reach a solution relating to operational problems. Please note that the intervention cycle is not a model to carry out empirical research, but to solve a practical problem. In practice-oriented research the intervention cycle offers the researcher a helpful instrument for formulating the research objective. All in all, we can distinguish five steps or stages:

1. *Problem analysis*
   At the beginning of an intervention it is often necessary to bring the problem to the attention of the stakeholders. This is called 'agenda setting'. Initially, only a few people are aware that something is going wrong. The initial stage of the intervention cycle usually entails ensuring that the problem as such is brought into the open so that it becomes transparent and can be discussed by all stakeholders. At this stage, it should to be made clear *what* the exact problem is, *why* it is a problem and *whose* problem it is.

The question 'why is it a problem' can be answered either by pointing out the gap between the existing situation and the general norms, values and ideals of a desired situation, and/or at the probably unintended and negative consequences of the situation.

2. *Diagnosis*
   After the problem has been identified and acknowledged by all stakeholders, in the diagnostic stage the background and the causes of the identified problem can be examined. If the reason for the problem is understood, then a course of action that needs to be taken in order to find a solution can often be determined.
3. *Design*
   After the problem analysis and diagnosis have been made, an intervention plan can be developed in order to find a solution for the problem. For example, a design for a local government information campaign or a new production structure can be set up.
4. *Intervention/change*
   The problem cannot be solved by setting up a plan or design for intervention as this will have to be carried out first. In other words, a course of intervention or change needs to be set in motion.
5. *Evaluation*
   Finally, it is useful to verify whether the implemented changes have actually solved the problem. The problem will often prove to have been only partially solved or new problems may have emerged. The steps described above will then have to be repeated from the beginning. That is why we call this process an intervention *cycle*.

A practice-oriented research can contribute to each of these five steps. Therefore, there are five types of practice-oriented research that run parallel to the stages of the intervention cycle. The most important question, but not necessarily the easiest one, that you will need to answer when exploring a practice-oriented project context is as follows: In which of the five steps of the intervention can the problem be found? The answer to this question determines which of these research types you will opt for. While answering this question, you must be very critical, because stakeholders often tend to skip the first phases of the intervention cycle, as stated earlier.

The reader is well advised to pay attention to the following reflection. The most important element of the intervention is to solve the problem. From this point of view, Phase 3 - the making of a design of the intervention - is by far the most important one. However, this should not be a reason for automatically choosing to develop a design-oriented research project, although many beginner researchers tend to do this. It is important not to follow such an impulse. First, it is possible that the decision to develop a design-oriented research is premature. In many cases it is important to analyse and describe the problem first - Phase 1. Only when it has become perfectly clear what the problem is, why it is a problem and for whom it is a problem, can one successfully start a diagnostic project - Phase 2, in which the researcher analyses the possible antecedents, backgrounds and causes of the problem. This information is essential for starting the design of the solution - Phase 3. As we know, a sustainable solution to a problem often consists of a well-thought-out intervention pertaining to the causes of this problem. It is also possible that the research project will contribute to a situation in which the design of the solution has already been decided on. The research supports the policy which aims at implementing the chosen redesign. It helps the implementation to go in the right direction. Research may also, if necessary, adjust the course of the implementation within a public or private organisation. We call this *monitoring* - Phase 4. By continuously collecting and analysing a stream of data and information, the researcher can contribute to the implementation of the project as planned. Finally, if a policy or strategy has been implemented before, a researcher can contribute to its success by carrying out an ex-post evaluation of the implementation - Phase 5. By pointing out the weak aspects of this implementation, one can make recommendations for improving future policies or strategies.

Next, we will deal with the five types of practice-oriented research separately. For each individual type, the project context and its subsequent research objective are discussed and illustrated by an example.

Problem-analysing research

In most cases a policy problem or an organisational problem can be defined as the tension between the *current* and a *desired* situation. The phase of the problem analysis aims at creating a consensus between all of the stakeholders with regard to the exact description of the situation which they explicitly or implicitly desire. A desired situation can be formulated in terms of standards and criteria that have to be met, or the tasks to be performed within a total framework. As stated before, from these implicitly or explicitly existing norms, criteria and functional requirements, it should become clear *why* something is a problem. In the problem-analysing stage the researcher should focus on both the current and the desirable side: What are the facts and why are they problematic? Summarising: problem-analysing research serves to indicate that a certain factor is a problem, what the problem exactly entails, why it is a problem and what the exact nature of the problem is. The goal is to create consciousness to set the agenda or to reach a consensus.

Example "Multifunctional complex'

Project context
The local authorities and several multinationals in a certain region have designed a plan to build a large, multifunctional complex. The complex will accommodate soccer games and other sports events, art events and concerts. However, 'Green is Ours', an alliance consisting of several environmental organisations in the region, believes that not enough attention is being paid to environmental issues such as noise nuisance, air and soil pollution as well as damage to the biosphere. 'Green is Ours' intends to make sure that these environmental issues will be pushed to the foreground in the coming decision-making process. The chairman of the alliance 'Green is Ours' commissions a research project with the following objective.

Research objective
The research objective is to make recommendations to the chairman of 'Green is Ours' in order to develop a communication policy which can help to put the environmental issues on the agenda during the political decision-making process concerning the multifunctional complex *by* mapping out the views held by the groups in the region concerned with the environmental aspects of the multifunctional complex.

It is often attractive, particularly for students preparing their master or PhD thesis, to opt for problem-analysing research, as this entails roughly describing the true nature of the problem. As we emphasised earlier, the first phase of an intervention usually contains the most decisive, but also the most neglected part. Moreover, problem-analysing research offers a good opportunity for a relatively small research project such as a master's thesis, to make a realistic and useful contribution to solving a particular problem. However, for most people, such as the problem owner and the commissioning organisation, this option implies having to set aside their natural preference for immediately solving a problem. As the French say 'reculer pour mieux sauter' (take a step back in order to build up your speed before jumping).

In addition to this fundamental argument, there are other more pragmatic considerations that can be put forward in favour of choosing a problem-analysing research project. The plan to find a solution, i.e. the design of an intervention, and the implementation of this plan, the intervention itself, often involves political and emotional problems. In the case of design-oriented research, the student stands the risk of being involved in interplay of opposing forces, which could delay the research project. By placing the research project in the stage of problem analysis, one can avoid many problems. We do realise,

though, that this argument is more important to a master or PhD student than to a contract researcher.
There are also several practical arguments in favour of opting for a problem-analysing type of research. Firstly, organisations often have difficulty in answering the question 'What is the actual problem?' We cannot emphasise enough that by answering this question, the contribution of the researcher to solving the problem can be of overriding importance. Secondly, you will usually have no problem in obtaining the correct data for this type of research project. People most often are willing to contribute to the solution of a problem and at this stage there is no need for people to determine their positions yet. Thirdly, these research projects can usually be kept within attainable boundaries, as the researcher does not even propose an intervention. To the stakeholders, this means that there is no time or money involved yet. However, there is one obvious hurdle ahead: you have to convince the client, who owns the problem, that a problem-analysing project is very important. After all, the clients tend to immediately situate the problem in the problem-solving stage (design).

Assignment

Please read the following text carefully.

'*Problems with the Board of Directors*'

An organised interest group in the public health sector contacts you with the following problem. The members complain that the board of directors does not protect their interests sufficiently, and as a result there is a growing dissatisfaction among the organisation members. In order to verify these statements, and in order to specify the nature of these complaints/ the board of directors asks you to carry out a research project. In particular, they ask you to pay attention to the internal communication between the board and the members of the organisation.
The assignment is clear, but you must convince the chairman of the need to check whether there may be problems other than communication problems causing dissatisfaction among the members. Maybe the members are not happy with the board's lack of alertness with regard to societal developments in healthcare. Maybe the members have the impression that the board's policy focuses too much on internal matters and too little on what goes on outside the organisation. Perhaps only a few members have expressed these complaints whereas the silent majority of the members support the board's policy. All in all, it is necessary to explore the problem itself more thoroughly.

Assignment

Formulate the research objective of a *problem-analysing research project* within the project context described above.

Diagnostic research
Only when the problem has been properly identified and the operational problem has been clearly formulated and accepted by the stakeholders, can you commence with the diagnostic stage. However, please be aware of the consequences if this is not the case. In such a situation there is a fair chance that you will start to analyse the background and the reasons for the wrong problem. During each of the following phases of the research project, the researcher will notice that it is still unclear what the problem is exac tly, why it is a problem, and for whom it is a problem. This will lead to confusion, irritation and a waste of time. Therefore, one should always consider the need to set up a problem-analysing research project before starting a diagnostic project.
If you plan to carry out a diagnostic research project, you should first try to gain insight into the background and relevant relationships of the problem in question.

Diagnostic research is often applied in practice-oriented research. There are many different types of diagnostic research. In this book we will elaborate on the most common types. First of all we will introduce *background analysis.* Sometimes the researcher needs to study a problem that is relatively new or fairly complex. The existing theories and the clients' knowledge cannot adequately indicate which of the many possible factors have influenced this problem. Sometimes the researcher does not know whether particular factors have caused the entire problem or only a specific part of it. Or the researcher does not know which reasons for the problem are the most relevant or important ones. In each of these cases research is useful to clarify the relevant background and the reasons for the problem.

Background analysis "Election disaster'

Project context
Political party A was defeated on Election Day and the loss was much bigger than expected. The party management had no idea which of the many factors possible may have caused this defeat. Was it the party leader's lack of charisma, an unappealing election campaign, or the strong appeal that the competing parties' programmes had? Or were the results influenced by trivial factors, such as the weather conditions on Election Day, and the premier league football competition. The party management wants to know more about what may have contributed to the election defeat.

Research objective
The research objective is to make recommendations to the party management to improve the party's image in future campaigns *by* giving an overview of the factors which account for the electoral losses.

Another type of diagnostic research we often encounter is *opinion research,* Sometimes it is less important to indicate the exact causes of a problem than to learn more about the opinions shared by the different stakeholders with regard to the background and the causes of the problem. In these cases, insights into the opinions and perceptions are more important than objective knowledge of a problem. Take for example a research project that aims to gain better insight into the backgrounds of the frequently occurring conflicts between ethnic subgroups in European cities. In order to arrive at a solution for this problem, it is important to learn about the stakeholders' perceptions of the reasons for these conflicts, justified or not, in addition to a neutral and unbiased analysis of these causes.

Opinion Research "Information and Communication Technology (ICT) in Relationship to Human Resources Management (HRM)'

Project context
These are *turbulent* times for ICT companies. Customers are adopting an increasingly critical attitude. They are demanding proper support from ICT experts in developing and implementing new ICT systems. As a result, great demands are being made on the skills and flexibility of ICT experts, and consequently, on the HRM of these companies, particularly in the training, coaching and supervision of ICT experts. The Head of the HRM Department of one of the leading ICT companies in the USA plans to improve the HRM policy, based on an inventory of the skills needed.

Research objective
The objective of the *research* project is to make recommendations to the Head of the Department HRM to improve HRM policy with regard to the training, coaching and supervision of the ICT experts *by* providing *insight* into the opinions of the stakeholders (management of client organisations, ICT experts, and HRM staff) with regard to the effectiveness of tailor-made training programmes to improve the service skills of ICT employees.

A third frequently applied type of diagnostic research is *gap analysis.* Assume that a local broadcasting company wants to increase the number of people who will decide to tune into its programmes. Take into account the assumption that communication theory indicates that the most important condition for such an increase is to identify a well-defined and clearly demarcated target group of viewers. However, the broadcasting company does not focus on localising a target group. Instead it concentrates on the purchase of a very expensive TV series. In this case, there are two gaps between the desired situation and the current state of affairs. First, there is a gap between the desired and current situation regarding the organisational problem: the existing relatively small group of viewers versus the desired increase of the number of viewers. Secondly there is a gap between the desired and current situation with regard to the assumed cause of this problem, and subsequently to the solution of this problem. Communication theory suggests that the decrease of viewers results from a lack of focus on the target group, whereas the broadcasting company has tried to increase the number of viewers by offering a more expensive TV series. Below is another example of a diagnostic gap analysis.

Gap analysis 'Merger and market orientation'

Project context
Organisations A and B both offer specialised psychiatric treatment. They decide to merge and become organisation C in order to improve their position on the market for psychiatric treatment. In order to be successful on the competitive market, the newly created organisation C has to develop a so-called active market-oriented strategy. Previous research indicates that organisations characterised by a non-hierarchical organisational structure and a cooperative organisational culture are more likely to implement an active market-oriented strategy than other organisations.

Research objective
The research *objective* is to make recommendations to the management of organisation C on how to improve organisation policy with regard to organisational structure, culture and strategy *by* making a *diagnostic* gap analysis in which the characteristics of the current organisational structures, as well as the organisational cultures and strategies of both A and B will be compared to the structural, cultural and strategic characteristics required for the successful implementation of a market-oriented strategy.

Assignment
Please read the following text carefully.

Company medical officers
In organisation B, HRM manager A has encountered considerable problems with regard to the role the company medical officers play in work-related conflicts. Employees often consult the company medical officers when suffering from illnesses which are obviously related to conflicts between the employees and their superiors. The company medical officers find that their loyalty towards the organisation conflicts with their care for the patients. Which would be the best role for the company medical officers to take when trying to help solve these conflicts?

Assignment

a. Formulate the research objective of a *diagnostic research project* - type *background analysis* - within the project context described above. Assume that there is only *little* prior knowledge about the relationship between work-related conflicts, illness and the role that company medical officers play when trying to help solve these conflicts.
b. Formulate the research objective of a *diagnostic research project* - type *opinion research* - within the project context described above. Assume that there is prior knowledge about the relationship between work-related conflicts, illness and the role that company medical officers play when trying to help solve these conflicts.
c. Formulate the research objective of a *diagnostic research project* - type *gap analysis* - within the project context described above. Assume that there is prior knowledge about the relationship between work-related conflicts, illness, and the role that company medical officers play when trying to help solve these conflicts.
d. Indicate the major differences between these three research objectives.

Design-oriented research

Another possibility is to carry out a design project. In order to carry out this type of research successfully, the following conditions have to be met: the problem needs to be properly identified and defined, and it must be diagnosed beforehand. This data has either emerged from previous research or you can establish it at 'face value' during the further exploration of the project context. In particular, possessing the knowledge related to the historical roots of how a problem developed is often an important link in the search for a solution. The conditions mentioned above indicate that this type of research project requires caution. One can easily bite off more than one can chew. The safest way is to formulate recommendations for a design, based on a problem-analysis, a diagnosis, and an assessment of a first prototype of the design.

Example 'Flexitas'

Project context

Flexitas is a medium-sized furniture manufacturer that produces tables and chairs in various designs for the middle-class market segment. Until now, the production of the furniture has been organised in a specialist functional way: one department produces the legs, another tabletops, another seats and so on. Finally the various parts are assembled in the assembling hall. Previous research showed that this production method was unsatisfactory. Mistakes were made in the sequencing of the orders, there was little co-ordination between the production activities of the various departments, and there was no room for improvement in the quality of the products. The goal is to design a new production structure in which one particular department takes care of all the necessary operations, from partial production to assembly and shipping. This means that all specialised departments will have to be closed and experts will have to work together in so-called integrated teams. The organisation commissions a consultancy firm A. This firm draws up a full-scale reorganisation plan, including the design of a new production structure. As a researcher you have been asked to back up this design with relevant knowledge.

Research objective
The objective of the research project is to make recommendations to consultancy firm A about the design of a new production structure *by* comparing a draft *version* of the new production design and the conditions of a successful implementation of this design with existing work flows,, expected order flows and employee skills.

When the researcher decides to develop a design-oriented research project, he or she needs to distinguish between four different types of requirements: functional requirements, contextual requirements, user requirements and structural requirements. *Functional* requirements are the functions the intervention, or the artefact that must be produced, should fulfil. In the case of problem solving interventions, these requirements for the most part consist of the conditions that the stakeholders think will be necessary for the successful implementation of the design. For example, in the case of an object such as a computer software program, a new type of grass, a new type of air pollution sensor, the functional requirements determine the performance of this object. These requirements can be formulated in detail having resulted from an empirical research project.
As can be derived from the word itself, *contextual* requirements are the requirements that stem from the environment where the object is to be installed and to be used. We can distinguish between the requirements from the political, economic, social and transactional context. *User requirements* refer to the wishes and demands of the people who are going to use the object in the future. Finally, there are also structural requirements. These are the material and intangible characteristics of the intended policy, strategy or object, which are necessary in order to meet the functional, contextual and user requirements. Hence, the structural requirements can be deduced from the other three sets of requirements.
Therefore, a design-oriented research project implies both the collection and analysis of empirical data with regard to the functional, contextual and user

requirements, as well as the structural requirements which can be deduced from the other requirements.

Assignment
Please read the following text carefully.

The 'Green Heart'
A central committee consisting of high-ranking officials, responsible for the spatial planning of three connecting counties, is commissioned to design a 'Green Heart' for the region. The Green Heart is the name given to a vast area that covers parts of all three counties, and that will have a rural and recreational designation. All committee members support the creation of such an area. Nevertheless, the three county governments have different opinions regarding the development of this area. Do we need more recreation in this area? Will we accept highways and railway tracks in the 'Green Heart'? Under which conditions will we allow large-scale agriculture and livestock activities?
The differences between the opinions are huge. The county governments have different opinions about the general policy, and the officials differ in their opinions about the best way to implement the 'Green Heart'. In addition, there are several environmental organisations that have their own ideas about these matters. Due to the major implications of the implementation of the different proposals, the three counties recently carried out a large-scale survey research in order to gather the opinions of all of the stakeholders involved. Subsequently, the central committee commissioned a consultancy firm specialising in environmental issues, to design a spatial planning plan regarding the implementation of the 'Green Heart'. The goal is to develop a plan that is likely to be accepted by all three counties.

Assignment
Formulate the research objective of a *design-oriented research project* within the project context described above.

Intervention-oriented research
The initial project context may encompass an existing plan for solving the problem that has not yet been implemented in the organisation. It is also possible that the implementation has just started. In that case you may consider carrying out an intervention-oriented research project with the objective of providing data that the company can use for successfully implementing an intervention plan. This type of research is known as a *change-oriented* or *monitoring project.* The person carrying out the project gathers a constant flow of

data regarding the execution of the intervention plan. Based on this data, the person or the department that has to solve the problem can determine whether everything is progressing according to plan. He or she must monitor the bottlenecks which may occur, and the parts of the plan that may need to be corrected. After all, however well formulated the problem analysis, the diagnosis and the design plan may be, the implementation stage could still involve innumerable factors that may hinder finding a satisfactory solution to the problem.

Intervention-oriented research "Hostel Korteweg'

Project context
Hostel Korteweg is an insurance broker who acts as an intermediary for the insurance of exceptionally large projects such as drilling platforms, a visit by the Pope or an exhibition. The organisation wishes to improve the relationship with its customers and has set up a 'Relationship Management' project. The project entails training the staff to address clients in a more customer-friendly manner and informing clients about the new, customer-oriented policy. The project manager is concerned about the success of the project and has deployed a support team to channel the changes. An organisational research project is intended to contribute to this support.

Research objective
The objective of the research is to make recommendations to the project manager of the project 'Relationship Management' about improving the implementation of the project *by* closely following and describing the implementation of the various steps of the project, resulting in an up-to-date overview of possible implementation problems (monitoring).

Assignment
Please read the following text carefully.

The 'sound-proof barrier'
Because many citizens complained, the city government developed a policy regarding sound-proof barriers. The policy consists of a set of regulations which allow citizens in certain clearly demarcated zones in the city to apply for a subsidy in order to install sound-proof material outside their houses. The municipal department of environmental planning, however, has foreseen problems concerning the implementation of this policy.

Assignment
Formulate the research objective of an *implementation-oriented research project* within the project context described above. Present a comprehensive (b)-part, in which you indicate the information, knowledge and insights the research project will produce.

Evaluation research
After implementing an intervention, the next and final question for now is: To what extent has the intervention been successful? This involves ex-post evaluation research. In general, one can distinguish between three types of ex-post evaluation, depending on the research objective: plan, process and product evaluation. Has the plan proved feasible and expedient (plan evaluation), has it been well-implemented (process evaluation) and are the results satisfactory (product evaluation)?
Evaluation research often resembles problem-analysing research. In both cases, one compares a current situation with a desired situation. The difference is that in the case of problem-analysis the research takes place before the intervention and in the second case after the intervention. In both types of research the designer of the project selects or designs a set of criteria, norms and standards that he or she compares to the current situation.
It is evident that the results of evaluation research can contribute to solving problems. This contribution can be made in the form of suggestions for improving the existing policy, strategic management and interventions in the future.

Example 'Project management systems'

Project context
For several years the Ministry of the Interior in the Netherlands has had difficulties in supporting municipalities when implementing the computerised MPA system (MPA stands for 'Municipal Population Administration'). Two years ago the project manager, whose job it was to implement the governmental policy plan improvement MPA',implemented a new project management method Y in order to support the implementation of MPA in a number of large municipalities. The question, however, is whether this project management method Y has been successful. This is the subject of a public management evaluation research project.

Research objective
The research objective is to make recommendations to the project manager of Improvement MPA' with regard to improving the management of MPA-projects *by* making an assessment of assessing the effectiveness of 'Improvement MPA', based upon an evaluation of the cost control, time management and internal communication regarding the MPA projects in four large municipalities when adopting project management method Y.

In policy studies, evaluation research is by far the most common type of practice-oriented research. In the case of ex-post evaluation the intervention has already taken place, which means that the controversial issues have been solved. However, the stakeholders do have expectations concerning the results, The evaluation researcher can assess whether these expectations have been met and whether or not the cause of the mistakes has been determined. He or she can also suggest how the situation can be improved in the future. This type of evaluation research is ideal for a master's thesis or a PhD project because it is not very likely that the researcher has a stake in the outcome. This allows the researcher to stay independent and to concentrate fully on his or her task of producing relevant knowledge, insight and information.

Assignment
Please read the following text carefully.

'*Traffic and transport policy*'
A few years ago the Provincial Executive developed a new plan concerning traffic and transport. This plan consists of the provincial policy regarding traffic and transport within the province. The plan was intended to reduce traffic jams by stimulating public transport. The plan was extensive and consisted of both the details of the target figures and the implementation strategy and project organisation. The question to be answered is whether the plan has been successful. The Provincial Executive commissions you to carry out an all-inclusive ex-post evaluation research project, focusing on product, plan and process evaluation.

Assignment
Formulate the research objective of:
a. an *ex-post evaluation research* within the project context described above, focusing on *product* evaluation;
b. an *ex-post evaluation research* within the project context described above, focusing on *plan* evaluation;
c. an *ex-post evaluation research project* within the project context described above, focusing on *process* evaluation.

At the end of this chapter, we present a step-by-step approach that will be useful for a researcher who wants to design an adequate research objective for his or her research project.

A step-by-step approach based on an example

By following the six steps below the reader can make an effective formulation of the project context and the objective of a research project.

Research objective

1. Determine whether you will opt for a theory-oriented or a practice-oriented research project.
2. Explore the project context on the basis of the questions on page 34. Determine who will be the commissioning person.
3. Determine which of the two types of theory-oriented, or which of the five types of practice-oriented research you will opt for, based on the exploration of the project context.
4. Formulate the research objective of the research.
5. Check the research objective on its form and content. The form should be: The objective of the research project is to ... (a) . by realising ... (b) ... (see page 38), The content must meet the criteria of usefulness, feasibility and clarity and it should be informative. Wherever appropriate, adjust your research objective.
6. Examine whether the research objective calls for reorientation. If so, carry out the reorientation and see if the research objective needs to be adjusted (iteration).

Using this step-by-step approach in the case of 'Providence & Prudence", as described in the introduction of this chapter, gives the following result.

Step 1: Project type

In view of the nature of the problem and the expectations people have, you opt for a *practice-oriented* project.

Step 2: Project context

- *What are the problems within the project context?*
- *How do people perceive these problems?*

The management team of 'Providence & Prudence' anticipates problems when setting up and implementing the reorganisation and computerisation plan. Some animosity can be felt towards making these changes. Some employees fear that their work will change dramatically.

What is the background to these problems?

The management team of 'Providence & Prudence' thinks the problems originate from the various negative experiences the staff members have encountered during the previous reorganisation process. In general, they expect things to go wrong again. People in the organisation have different views about why the previous project failed. Some blame the computer department for not taking enough notice of the users' interests. Others blame the management for having a passive attitude. Others distrust the project and regard it as a veiled way of reducing manpower.

- *Where are people looking for possible solutions?*

The management has chosen to call in an independent consultancy firm to support the project. This firm has presented a proposal consisting of different stages. The reader will recognise four stages of the intervention cycle:

- Stage 1: draw up a list of major problems concerning the reorganisation (problem analysis and diagnosis);
- Stage 2: draw up a plan for the comprehensive redesigning of the organisation (design);
- Stage 3: draw up a plan for the introduction and implementation of the reorganisation (implementation);
- Stage 4: carry out an ex-post evaluation of the reorganisation (evaluation).

- *Who is commissioning the project?*

The project will be carried out by a member of the consultancy firm 'Mulder'. Recommendations will be offered to senior consultant A, who has the responsibility for the project as a whole.

Step 3: Research type
Recently, the consultancy firm carried out problem-analysing research that resulted in a clear overview of the anticipated problems. This allows the researcher to design diagnostic research. More specifically he or she decides to design an opinion research project.

Step 4: Research objective
The research objective in the master's thesis is to make recommendations to senior advisor A of the consultancy firm 'Mulder', regarding how to improve the implementation plan of an organisational redesign of 'Providence & Prudence' *by* providing an overview of the views, expectations and evaluations

held by the various groups of employees concerned regarding the bottlenecks they anticipated during the planned reorganisation and with regard to the possible solutions for these bottlenecks.

Step 5: Quality check

Form
When formulating the research objective of Step 4 above, the structure should be:'*reaching (a) by realising (b)*', namely, ... improving the implementation plan (a) ... by providing an overview of ... (b).

Content
The *usefulness* of the research objective can be directly derived from the contribution that the research project has made to Stage 1 of the project.
It is a *feasible* research objective, based on a project that could take up to six months. It is plausible that the opinion overview as well as the corresponding report can be carried out within this time (see also Chapter 8).
This is a clear research objective as the results of the project are predictable. Naturally, there are other possible types of research objectives. In the framework of Stage 1, the research project could for example comprise a study of the weaknesses and strengths found in the organisational structure and corporate culture of 'Providence & Prudence'. This would also form a clear research objective.
The research objective would provide much information as well, and general indications can be given as to which information is useful for achieving the research objective.

Step 6: Iteration
In this example there are no reasons for reorienting the project context.

3 Research framework

Research can be seen as an elaborate argument, culminating in an answer to preliminary questions.

3.1 Introduction

We have now reached the stage in which we are aware of the extent of the project context we will be working in and what our contribution will be towards this context. The next question is how to ensure that the research objective will be achieved. For this we must formulate a set of research questions in which all useful and necessary information can be identified. However, for many researchers it is difficult to extract a set of research questions directly from the research objective. In other words, they find it difficult to decide which bits of information and insight can be used in order to achieve the research objective. A useful step in between formulating the research objective and the set of research questions is to draw up a *research framework*. A research framework is a schematic representation of the research objective and includes the appropriate steps that need to be taken in order to achieve it. Once such a scheme has been drawn up, the structure of the research plan is clear. It shows clearly how the different phases of the reseach are interconnected, and how the one step implies the other. In short, the research framework represents the internal logic of a research project.

Furthermore, a research framework is important for establishing the theoretical background, such as the key concepts, the theoretical framework, and the conceptual model (see the Appendix). Theory plays a crucial role both in a theory-oriented and a practice-oriented research, irrespective of which stage of the intervention cycle the research applies to. For example, you can identify a problem on the basis of a discrepancy between a (prescriptive or normative) theory on the one hand, and a current situation on the other (problem analysing). Explanatory theories will often give a clue about the cause of a problem (diagnosis). Moreover, when posing the question what should be done to organise things, a theory proves to be almost indispensable (design). Finally, it is not uncommon for a situation or development to be assessed by testing the situation or development in relation to a relevant theory (evaluation).

The following is an example of how unclear and unstructured such an initial situation can be, and how difficult it is to get a clear view of the components of a research project.

Example 'ABG/JOVA'
The general management of AGB/JOVA, a major bank, is convinced of the need for the reorganisation of its centralised organisational structure into a structure of decentralised business units in which each unit is responsible for its own performance and budget. The general management puts the staff unit Organisational Change in charge of drawing up a reorganisation plan.
A project such as this is highly complex and the questions the organisation is dealing with are very diverse: How many units and sub-units need to be created? How are they going to interrelate? Who is responsible for what? And so on. Moreover, there is a financial aspect. How to organise the budget responsibility, and how to draw up a management contract? How will you make sure that all managers stick to this contract? And as for the reorganisation itself, how do you go about planning the implementation of such a new organisational structure?
The head of the staff unit starts by making a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis of the organisation. Under what conditions can the business unit concept be implemented successfully and to what extent does the organisation meet these conditions?
Imagine that you are the researcher assigned to carry out this project. You know that at least certain matters have been clearly established by now. The project context is clear, i.e. the reorganisation plan for AGB/JOVA. The research objective has been defined as well, which is to make recommendations to the general management of AGB/JOVA for the setting up of business units successfully by providing an overview of the critical success factors within the organisation. However, the question remains how sound recommendations can be made. This question is not an easy one to answer. What exactly are you going to research? In other words: what is your research object? What sort of information will you need and where do you plan to get it from? Do you need to visit other banks besides AGB/JOVA? What relevant literature is there? There are so many questions which come to mind, and you are not even sure which one to tackle first.

This chapter shows how to construct a clear research framework. First, we will show what a research framework looks like and how it can be put together, based on an example (Section 3.2). Next, we will present the general principles on which a research framework can be constructed, as well as the advantages of its use (Section 3.3). Finally, the chapter is summarised in a step-by-step approach. We will apply this step-by-step approach to *two* examples, including the AGB/JOVA example above.

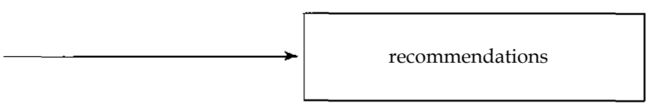
3.2 CONSTRUCTING A RESEARCH FRAMEWORK

During the first step in constructing a research framework we capture the research objective in a brief definition. Depending on the type of research, this may involve establishing hypotheses or a theory, testing an existing theory, making a diagnosis, evaluating an intervention, or formulating recommendations for improvements, and so on.

> Example 'Farming policy'
> Let us assume that the (a)-part of the research objective of your research project consists of making recommendations to the Provincial Executive for improving the effectiveness of the current farming policy for a local authority. In this case, formulating well-founded *recommendations* for policy improvement is the intended result of the research project.

We present this schematically in Figure 3.1.

Figure 3*1 Research objective



Next, it must be decided how to achieve the intended result. It stands to reason that this goal can be reached by studying an object. The research object is the phenomenon in empirical reality that you are going to study and that will lead to statements based on the empirical research to be carried out. Depending on the research objective, research objects can take on widely divergent forms. They may involve people, organisational structures, workflows, laws, policy problems, information campaigns, policy memoranda, and so forth.

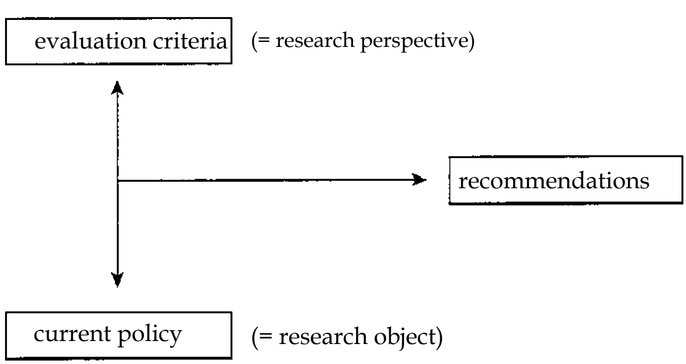
> Example 'Farming policy'
> In this research project you are studying the current local farming policy. This farming policy is the research object.

The next question is which approach will be followed in relation to the research object. In the light of the methodology we have developed, we propose to study this object from an explicit *research perspective,* to be developed by the designer of the research project. This research perspective is called the *theoretical framework* of the research. It is like a pair of glasses that will be used to observe the research object. Naturally, the perspective should contribute towards the insights relating to the research objective. A well-known type of research perspective consists of a set of core concepts, each connected to one another in causal relationships. Such a research perspective can be presented schematically in a so-called *conceptual model.* Due to its importance, we have presented a comprehensive elaboration of the conceptual model/ including many examples, in the Appendix of this book.

Example "Farming policy'
In this example you assume that an evaluation of the farming policy of the past few years will yield sufficient insight to help formulate sound recommendations for improvement. This seems to be a useful option. Moreover, you have chosen to carry out a critical evaluation of the current policy. In so doing, you have opted for an evaluative practice-oriented project, focusing on a *product evaluation.* The object of this research is the current farming policy. As a most important criterion you select the aims of this policy which the government has formulated. In this research you will check to see whether these aims have been met (goal realisation), and whether this effect was the result of the farming policy (effectiveness). Apart from this criterion, you may choose other criteria in order to assess the contribution made to the policy success of the distinct policy components, such as the project organisation, the budget plan, the cooperation between the departments involved, and so on. The latter approach concerns a *plan evaluation* and a *process evaluation.* The complete set of criteria constitutes the research perspective. The intended recommendations are the result of your conclusions based on a confrontation of the implemented policy with the research perspective, in this case the selected criteria.

This is presented schematically below in Figure 3.2.

Figure 3-2 Research perspective and research object



A final but still important question is how to specify the research perspective. Generally, this cannot be found ready-made and the researcher will have to develop an appropriate theoretical framework herself, one which is suited to the analysis of the research object at hand. In a scientific research project a researcher constructs this framework mainly by studying relevant literature and - when appropriate - by conducting preliminary research. Preliminary research may consist for instance of a couple of interviews with experts and people involved in the field. This preliminary research may help the researcher to fine tune the theoretical insights found in literature in order to adapt them to the research at hand. Applied to our example this gives the following result,

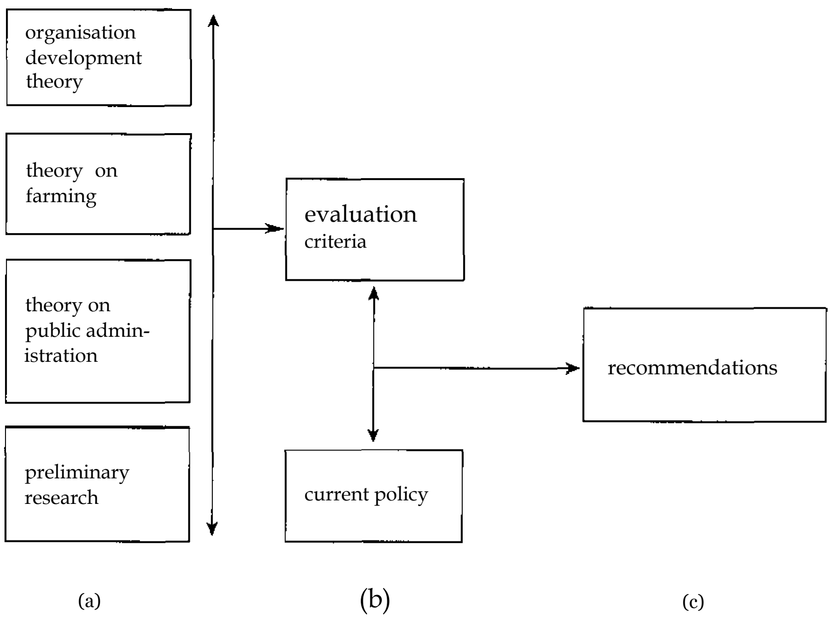
> Example 'Farming policy'
> In this example the research perspective - i.e. the set of evaluation criteria - will result from a study of various theories on the effectiveness of farming policy. In this particular case, organisational development theories, theories on farming and public management theories would appear to be relevant. These theories can be expected to incorporate preconditions and criteria, which in turn can serve as a basis for evaluation of this policy. Eventually this is supplemented by a pilot study consisting of open interviews with experts.

Next, the research perspective is ready to be confronted with the research object. This confrontation can be presented in the usual fashion, which leads to a research framework as illustrated in Figure 3.3. The three columns in this model, (a), (b) and (c), indicate the steps to be taken during the research project.

Finally, the whole research framework is formulated, as pictured from left to right in Figure 3.3. This gives an overview of the consecutive steps to be taken during the research.

> Example 'Farming policy'
> (a) A study of recent theories and research reports in the fields of organisational development, farming and public administration, completed following preliminary research, yields criteria (b) on the basis of which the current local farming policy is evaluated, (c) The results of this assessment are processed into proposals for improving the provincial farming policy at hand.

Figure 3.3 Research framework 'Farming policy'



3-3 SPECIFIC METHODOLOGY

Above we have demonstrated by using an example what a research framework should look like. The following section examines the steps that should be taken and the options for each step from which the researcher can choose. In the example presented above there are five identifiable principles that reoccur when designing a research framework according to our specific methodology. These five basic principles are:

a. working *in reverse;*
b. determining the *research object (or objects);*
c. *confronting* the issues mutually;
d. developing a research *perspective;*
e. *presenting and formulating* the entire research framework schematically.

These five basic principles are explained and elaborated on below.

a. Working in reverse

By working in reverse we mean that when constructing a research framework, we always start with the final anticipated result. After all, at this stage you have already reflected on the research objective, but you have not yet decided on the way in which you intend to achieve that objective. We will then examine which steps, seen as the last intermediate result, lead straight to the final result. Once again, we ask ourselves how can we reach this intermediate result, and so forth.

b. Research object(s)

A research object is the phenomenon under study about which you will be making statements based on the research to be carried out. Some research projects have one object, such as the 'farming policy' project outlined above. Other research projects focus on several objects. In this case the research framework applies to each of these separate objects. Conclusions will be drawn by *confronting* the distinct results of the analysis. It is also possible to develop a research framework for each of the research objects. In that case you will have to demarcate your research objective carefully, because if you do not, then the research project will tend to be too complicated.

> Example "Organisational culture'
> A study is carried out on the differences in organisational culture between two departments in a bank. These are the two research objects. You analyse each of these research objects in the light of the research perspective you have selected and you draw conclusions from a *confrontation* of both analyses.

c. Confrontation

A characteristic of the methodology detailed here is the principle of confrontation, which is fundamental when drawing conclusions. A confrontation can be specified in different ways. The most important specification is to place something, an observation or an object, *in relation to something else.* For example, the researcher relates a theory on farming to a public management theory in order to derive proposals from this for an adequate farming policy. But he or she may also confront two objects (A and B) with one another in order to view their *similarities* and *differences.* The researcher then can try to interpret these similarities and differences or to explain and process them into conclusions. A confrontation can also involve an *assessment* of A based on B. Here, B can represent any standard or criterion, a theory or a societal or scientific practice. Confrontation is especially relevant in problem-analysis, i.e. phase 1 of the intervention cycle and in phase 5, evaluation research. The reader can recognise this principle, i.e. drawing conclusions from a confrontation of empirical observations and theories, in the most diverse research projects. Just compare the following descriptions of a few confrontations as part of a research.

Examples of confrontation

In a research project the decision-making practices of four municipalities are compared with one another by confronting these practices with decision-making theories. It was concluded that in one municipality decision-making is effected through the rational based model, that in two municipalities incremental decision-making was used, and that in the fourth municipality a 'garbage-can' model is dominant.

In another project, definitions on the quality of labour from both the American and European schools were compared by confronting these with the debate in philosophy of science on subjective and objective definitions of quality. It was concluded that the American school predominately starts from a subjective definition of labour quality, i.e. research on worker satisfaction, whereas European research is mainly focused on objective criteria, that is to say, research on labour conditions.

Although the above cases concern totally dissimilar research projects, they have similar structures. They concern a confrontation of observations and/or theories on the basis of which conclusions are drawn. This general structure constitutes the core of the research framework. Most research projects apply the principle of confrontation several times. The first confrontation involves the development of a research perspective (see also below). In this case, the researcher must confront different insights with one another. These insights have either been obtained from theories derived from previous empirical research, or from interviews with experts. From this confrontation the research perspective can be derived, as is visualised in column (a) of the research framework. The second confrontation is between the research objective on the one hand, and the research object on the other, which is represented in column (b) in the research framework. With this confrontation and its conclusions (c), it should be possible to achieve the research objective. If the research project focuses on multiple objects, a third (set of) confrontation^) has to take place, i.e. the mutual confrontation of results emerging from the second confrontation. If this is the case, an additional column (d) is added to the research framework (see further on in this chapter). In theory we could follow through with this line of reasoning by applying the principle of confrontation again and again. However, in most cases such a course of action would result in too extensive, and or, too complex a research project.

d. Creating a research perspective

Creating a research perspective is by far the most difficult part of the research framework. To the researcher it serves as a 'spotlight' that can be used to study the research object more closely. It is just like wearing a pair of glasses while working. The research perspective specifies the angle of approach towards the research object and roughly indicates which aspects will be studied or not. Of course, different perspectives are possible concerning one and the same research object. There are no strict methodological rules which can help to choose a research perspective. You will choose the perspective that fits best with your own expertise and that offers the best prospects for contributing to achieving the research objective, i.e. the external goal, successfully.

Example 'Drugs crime'

The study of 'drugs crime' is an important part of the research programme of the department of sociology at a university. Several young researchers are carrying out a dissertation project as part of this research project. Researcher A is interested in the theory on fighting drugs. The research project involves studying the frequently suggested hypothesis which states that providing compelling information on drugs is more effective in fighting drug dealing than a 'soft' approach. These and other hypotheses will make up the research perspective. Because the researcher is studying the causal relationships between different factors on the one hand, and drug addiction on the other, the research perspective will take the form of a conceptual model (see the Appendix). He chooses two recent information campaigns as research objects: a so-called 'hard' campaign in the French media, and a 'soft' campaign in the Dutch media. By comparing the effects of both campaigns, the researcher hopes to find out whether his theoretical assumption about the effectiveness of the 'hard' versus the 'soft' approach will be confirmed or rejected. This is an example of designing a theory-testing research project.

Researcher B, on the other hand, is particularly interested in the effects of the community project 'Mavericks' that started several years ago. Through this project, community workers have tried to push back the extent of hard drugs use in the community by providing both support and information. B is assessing the effects of this approach by developing criteria for an effective drug prevention policy on the basis of a comprehensive literature survey. These criteria make up the perspective of the research. The effectiveness of the project 'Mavericks' will be tested using these criteria. This means that the researcher is involved in the design of an *evaluation research,* more specifically a product evaluation.

The first case concerns a theory-oriented, and the second one regards a practice-oriented research. In both cases the researcher confronts a particular situation or object, namely interventions, from a perspective which has been derived from theory. The difference between these two cases is that in the first case the researcher is aiming at improving a theory on drug addiction, whereas in the second case the researcher is focusing on improving a practice, i.e. an intervention aiming at drug prevention.

We recommend the following three steps for the development of a research perspective:
1. establish the nature of the research perspective;
2. determine the sources from which the research perspective will be derived;
3. and develop the research perspective itself.

In this chapter we elaborate on the first two steps. Both steps are part of the process of designing the research framework. Developing a research perspective (Step 3) is an important part of the first phase of the actual carrying out of the research project, and does not belong in this book dealing with the *design* of research projects. However, in order to obtain a general understanding of the research project we will conclude the chapter with an example that gives a detailed view of the third step. In the Appendix of this book, in which we elaborate on the conceptual model as a methodological phenomenon, we present several examples of how the research perspective itself is developed. In the following section we will restrict our subject to how to conduct the first two steps.

Step 1: The nature of the research perspective

Depending on the type of research, various research perspectives can be used. As seen in the drugs crime example above, the research perspective used for a theory-testing research is totally different from the one that is used in a practice-oriented, evaluation research, even though both are based upon theories. In the first case the set of hypotheses to be tested constitutes the research perspective, whereas in the second case the research perspective consists of the evaluation criteria on the basis of which the assessment is to take place. Therefore, the various research perspectives below will be discussed with regard to different types of practice-oriented and theory-oriented research. The ideas and examples of possible research perspectives will help the researcher to select her or his own research perspective.

a. Theory-developing research

Assume that a theory on ethnic discrimination is to be improved. This is necessary as in current theories the emphasis lies on explicit discrimination, whereas recent studies have shown that many discriminatory activities take place subconsciously and implicitly The researcher will first consult the relevant literature and then specify the concept of the 'ethnic subtext', i.e. the comprehensive and often subconsciously accepted social practice within a local community that results in ethnic discrimination. The further development of this concept will be the most important activity of the researcher and has a major steering effect on the research project. By elaborating and further conceptualising the empirical phenomenon of ethnic discrimination, which is based on the theoretical perspective of 'ethnic subtext' a useful perspective for this theory-developing research can be obtained.

b. Theory-testing research

In theory-testing research the researcher formulates one or more *hypotheses* that, during the research project, are to be tested for their validity A hypothesis is an unambiguously formulated expectation about the effect of a variable X on another variable Y. An example of such a hypothesis is: knowledge of the environment (X) affects a positive attitude concerning the environment (Y). The researcher investigates the correctness, i.e. the empirical tenability, of a set of mutually related hypotheses. The hypotheses may stem from one and the same theory. The whole set of hypotheses constitutes the research perspective. In theory-testing research the research perspective is always a conceptual model. The researcher uses this model to study the research object(s), not - as in the case of a diagnostic gap analysis - to help solve a problem in practice, but to test the validity of the theory itself. If this theory appears to be valid, then it can be used as a criterion in a diagnostic gap analysis.
Imagine that there is a connection between some characteristics common to restarting companies on the one hand, and job creation in these companies on the other. In theory-testing research the following hypotheses can be studied: (a) female entrepreneurs create fewer jobs than their male counterparts; (b) better-educated entrepreneurs create more jobs than their lesser-educated counterparts. These hypotheses serve as the 'spotlight' to be used in studying the object of a research project, for example, a set of service organisations.

Until now we have described the research perspectives of theory-oriented research. The following examples concern the research perspective of practice-oriented research.

c. Problem-analysing research

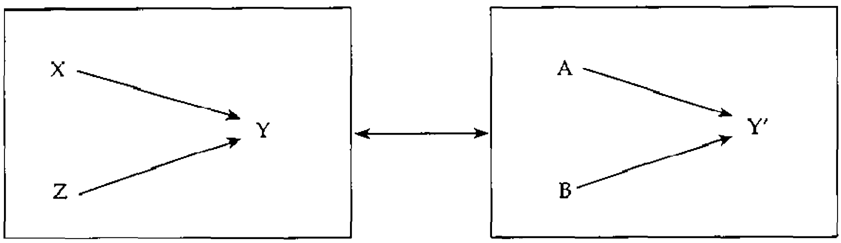
Let us assume that a few environmental organisations would like to know how important environmental issues are during the decision-making process of the construction of a multifunctional complex. In consultation with all of the stakeholders, the researcher determines the subjects or points of interest that are relevant as critical factors of success with regard to the environmental aspect when building the multifunctional complex. The possible impact of these critical factors of success on the environmental aspect constitutes the research perspective. Because in this example the researcher studies the causal relationship between the critical factors of success and the environmental aspect, the research perspective takes the form of a conceptual model. This conceptual model forms the perspective on the basis of which the set of research questions will be answered. It may be that the arrows in the conceptual model form the research questions or hypotheses. This could for instance be the case in theory-testing research (see above), as well as in diagnostic practice-oriented research (see also below).

d. Diagnostic research

Diagnosis always concerns the background and causes of a dysfunctional disorder. In most cases there are several directions in which one can look for causes, and subsequently for improvements. It is the task of the researcher to determine a specific area, and within this area to look for possible causes of the problem at hand, in close consultation with all of the stakeholders. For example, the local government of a city, which is characterised by a high degree of juvenile delinquency, wants to know what has caused this problem. After having discussed these matters with the local government, the researcher determines which of all possible causes the research project will focus on. Should the research concentrate on causes and possible solutions in the field of unemployment, the presence and quality of the local youth facilities, or the subcultures in the suburbs? In diagnostic research, the research perspective is most often presented as a conceptual model, because the researcher looks at the causes of a problem that has to be solved. If, for example, unemployment in particular districts is the subject matter, all sorts of backgrounds can be studied. Social, educational, psychological, legal, economical causes or even causes concerning the infrastructure may be involved. Imagine that the researcher demarcates this research project by focusing on the social and economic aspects. In this case the conceptual model involves of a selection of social aspects, such as social class, living conditions, family conditions, as well as economic aspects, such as income and spending patterns, and the possible influence of these factors on the scale and duration of unemployment.

Occasionally the researcher will find existing analytical instruments which can be used in developing a research perspective for this type of research. A well-known procedure for pinpointing the inadequate workings of an existing situation or process, an intervention or an artefact, for example, is known as a SWOT analysis. There are also many instruments for project diagnosis available that indicate the critical success factors for change projects, such as IT projects. In Chapter 2 we introduced the diagnostic *gap analysis.* A particular research perspective characterises this type of research. Let us assume that we would like to accomplish an intervention goal Y. Imagine also that the intervention theory points out that Y can be realised by the interventions X and Z (procedures, measurements, and so on). Imagine that a diagnostic research project indicates, however, that interventions X and Z are not implemented, but instead interventions A and B are. Assume also that these interventions A and B did not achieve the goal Y entirely, but only to the degree Y'. Figure 3.4 indicates this situation schematically.

Figure 3.4 Diagnostic gap analysis



The symbol between the two boxes indicates a confrontation between both situations. We are dealing with a twofold gap. First there is the gap between Y and Y', which indicates that the intervention goal has not been reached entirely. The second gap concerns the strategy chosen to achieve this goal (A and B versus X and Z). In other words, in the gap analysis we also take into consideration the causes of the problem at hand. This is the reason why we put this analysis under the heading of diagnosis and not under evaluation.

e. Design-oriented research

In policy-induced projects people often use a *design model*, a practical plan to obtain certain structural or policy-induced solutions. For example, in a study on the approach to the problem of noise nuisance the *SPI* model (Strategic Policy Implementation) of spatial planning policy has been used. This model indicates the parameters used for the design of a successful planning project and the conditions, such as time and money, for successfully implementing this project. The SPI model could serve as the research objective of a research project in which the researcher plans to make recommendations for the design and implementation of a successful spatial planning project.

The research perspective can also consist of a list of requests and requirements, formulated by the stakeholders and the future users of a policy plan or an organisational infrastructure. In this rather extraordinary case, the research perspective does not stem mainly from a theoretical analysis, but from a pilot study in which the researcher determines on empirical grounds the design specifications. This accentuates that determining a research perspective is not just part of the design of a research project, but also part of the research itself.

f Intervention-oriented research

Intervention-oriented research aims at analysing the implementation of the proposed design intended to solve the diagnosed problem. The research perspective in this type of research may consist of a substantiated checklist by means of which the policy implementation, or an attempt to obtain a solution, can be monitored. This is done in order to quickly indicate the possible problems which could hinder the success of the implementation. The following questions may be asked: are the plans being carried out according to the original scheme? What are the reasons for postponement? Are all of the parties involved making the necessary effort? Have they been co-operating satisfactorily? What problems have they encountered during the implementation of the policy or with reaching a possible solution? How are they coping with the difficulties and to what extent have they been successful? Occasionally, detailed plans for implementing a policy or attempting to reach a solution are available on the job. If this is the case, then of course plans can be included when formulating the perspective of the research project.

g. Evaluation research

As we have stated before, the use of a criterion is a necessary condition for evaluation. This criterion can be used to evaluate the intervention itself (plan evaluation and process evaluation)/ or the intervention result (product evaluation). An evaluation without assessment criteria does not exist. This usually boils down to formulating a number of assessment criteria, which the intervention has to meet according to the researcher and the commissioning party. These criteria can be based on requirements to be met in practice, on generally accepted standards, targets set for intervention, insights obtained from theories, and so on. An example of such a research perspective is the evaluation of the human resource management of a large company, where an existing model for assessing the efficacy and efficiency of human resource management is used. This model can be used during the evaluation research as a set of criteria to be met.

The researcher has to make sure that the selected criteria are operational or that they can be made operational. This means that in this early phase of an evaluation research, where the conceptual framework is designed, the state in which the research object meets the assessment criteria, is specified precisely. To say that 'decision-making should be democratic' is not an operational criterion. How do we define 'democratic? Is it when all of the stakeholders have the right to veto a decision, or is it when the majority of the stakeholders has this right? Is it when all of the stakeholders have been able to express their opinions individually during a hearing? Or should the chosen solution be supported by the majority of the problem owners? Then how exactly do we define 'problem owner' in this case?

It is a mistake, often made by inexperienced researchers, to think that the development of a conceptual model and the assessment criteria will take place during the research project itself. The researcher has to deal with these issues before the research project commences. They belong to what we call 'desk decisions'.

Step 2: Sources for deriving the research perspective

Several sources of information can be used when constructing a research perspective. Sometimes the research perspective results from a *pilot study* carried out in order to clarify the research objective and the research perspective. Within the scope of this preliminary study the researcher can conduct interviews with experts in the relevant field. In the initial stage of practice-oriented research, the pilot study may also entail studying documents, memoranda and notes that could assist in specifying the research perspective. By far the most important source of information for developing a research perspective is the scientific literature that is available. After all, previous studies carried out in this field may assist the researcher in further specifying the research perspective.

Obviously, the next questions to be asked are what should be observed during this preliminary study, which experts should be consulted and exactly which documents and literature should be studied. Nowadays, there are a great many specialised fields of study, so it is very likely that relevant scientific literature will be available. How to make a useful selection? The most important way to achieve this is by finding the key concepts in the research objective (see also Chapters 4 and 5). These key concepts can be used as references for finding relevant theoretical frameworks and documentation, for selecting current experts and relevant expertise, as well as for choosing an adequate framework for a short pilot study.

Example 'Farming policy'

We can extract the following key concepts and theoretical frameworks:

Key concepts	*Theoretical framework*
• effective policy	• organisational theories
• farming	• theories on farming policies
• public management	• theories on public administration

Based on the above frameworks, it will be easy to specify the sources of the research perspective. The right-hand column shows the theoretical frameworks that have to be studied. You will need to consult experts in the fields of organisational management science, local policy science, business administration and / or experts on farming with knowledge of policy matters. Please note that not all nouns used in the research objective can be labelled as key concepts. For example, the term 'Provincial Executive' used in the example presented earlier in this chapter is not a key concept, but can only be used to specify the research object.

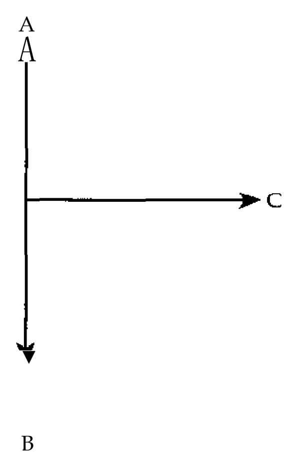
e. Schematic presentation and formulation

A final basic principle concerning the methodology of constructing a research framework as developed in this chapter involves the schematic presentation and formulation of it.

Schematic presentation

By visualising the research project we can gain an understanding and obtain an overview of the activities to be performed in the course of the research project, particularly of the inherent dynamics. The visualisation of a research project is realised in three steps. First, the components of the research framework are represented, using *short labels*, preferably just one or two words or abbreviations per label. Subsequently, these labels are placed in a framework. Finally, all frameworks are interconnected using double-headed arrows, depending on the reciprocal confrontations of issues. In a research framework, the confrontation and the conclusions drawn from this confrontation are represented by the symbol as depicted in Figure 3.5:

Figure 3.5 Schematic presentation of a confrontation of two issues A and B, from which a conclusion C is drawn



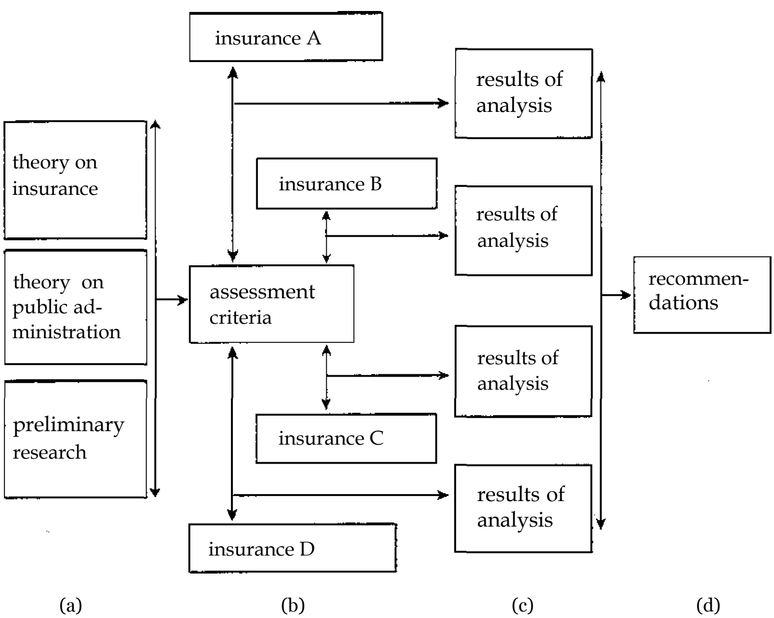
The double-headed vertical arrow stands for the /confrontation' and the horizontal single-headed one for 'from this will be concluded or deduced that'

Formulation

The way in which a research framework is formulated contributes towards gaining a clear picture of the research project. It is recommended that the research framework is formulated according to an established pattern. We suggest the use of separate phrases. The first phrase (a) concerns the formulation of the sources from which the research perspective will be developed. The second phrase (b) indicates to which research object(s) the research perspective will be applied. If there is more than one research object, the following phrase (c) then indicates in what way the analysis of the individual research objects may be interrelated. Finally, in the final phrase (d) you state the research project's objective. We have illustrated this in the example below.

Example 'Catastrophe insurance'
A resea *rchet* intends to make recommendations for insuring national disasters such as floods and earthquakes. To this end, four types of catastrophe insurance (research objects) are assessed using criteria for efficient catastrophe insurance (research perspective). The researcher has designed the research framework as is illustrated in Figure 3.6.

Figure 3.6 Research framework 'Catastrophe insurance'



This framework is formulated as follows:
(a) A study of the underwriting problems in the event of a national disaster, based on talks with experts and on the consultation of relevant scientific literature, yields the assessment criteria (conceptual model), (b) by means of which four types of catastrophe insurance will be evaluated, (c) A confrontation of the results of these four evaluations concludes with (d) recommendations for developing an efficient insurance for national disasters.

Formulating the research framework as indicated above lends structure to the research. After all, the transitions between the various subjects under study can be clearly specified. The components a, b and c are listed in the order in which they must be carried out. You cannot embark on Stage b before you have concluded Stage a. And Stages a and b need to be carried out first before you can start working on Stage c. You can only draw conclusions (d) after finishing Stage c. Moreover, as we see it, a research framework that is formulated according to the above methodology clearly shows the essence of a research project, i.e. an elaborate argument, culminating in an answer to previously formulated research questions. Chapter 4 elaborates on the formulation of these research questions.

Advantages

Constructing a research framework has several advantages. In the *first* place, before the research project has even started, the research framework presents all parties involved (client, researcher, student and supervisor) with a compact and clear picture of the nature of the research project and the anticipated results. This substantially reduces the risk of misunderstandings and ambiguous agreements occurring.

In the *second* place, the schematic presentation of the research framework has a very important *communicative purpose.* That is to say, all parties involved will be looking at the same representation of the research project. Its various components can be identified and discussed, and the research framework encourages the researcher to focus on the main issues. Blank spots or interrelations that have been overlooked will be noticed and elements can be added to the model.

In the *third* place, the construction of a research framework prompts the researcher to select the relevant literature and explains how and from which perspective this literature should be studied. If this aspect has been insufficiently specified, the researcher stands the risk of having to browse through all of the existing literature in the relevant field of study. Some researchers and students enjoy gaining a general picture of all the literature ever published on the subject, which is why they cannot see the forest for the trees. Others start making summaries of various books and journals without having a clear view of which components of the theory are relevant to the research project. Needless to say, these activities will most probably result in a significant loss of time.

In the *fourth* place, the research framework helps to formulate a set of research questions. The construction of the research framework provides the researcher with a clear understanding of how to achieve the research objective. In general, it includes the thematic context within which the central questions and sub-questions can be formulated (see Chapter 4).

In the *fifth* and final place, the research framework is very useful for reporting purposes. Even now, in the design stage of the research project, it is obvious that the final report on the example project on farming policy will consist of at least five chapters.

Example 'Farming policy'

- An introduction chapter that describes and substantiates the conceptual design (project context, research objective, research framework, research questions).
- A theoretical chapter that includes the results of the literature survey and or, interviews with experts; this chapter concludes with the research perspective, which in this example takes the form of a set of assessment criteria.
- A chapter on research methodology, including the justification of the chosen methods and techniques of data collection and data analysis.
- An empirical chapter that describes the results of the research (an assessment of the current farming policy in view of the assessment criteria set).
- A final chapter that translates the results of the research project into conclusions and recommendations for improvement.

As the reader can see from the above set-up, the chapters follow the research framework. He or she will recognise in these chapters the formulation of the research framework presented earlier in this book. The division in chapters will serve as an excellent guide in the complex and time-consuming activity of a research project. We will elaborate on the planning of a research project in Chapter 8.

A step-by-step approach based on examples

Based on the above, we have finally arrived at the following *step-by-step approach* for constructing the research framework.

Research framework

1. Characterise briefly the *objective* of the research project.
2. Determine the *object* or objects of the research project, in other words determine which part of reality that you are going to study.
3. Establish the *nature* of the research perspective (see pages 74-78).
4. Determine the *sources* of the research perspective (see page 79). Choose the relevant literature by making a first selection of scientific articles and reports, and/or outline the preliminary research, noting which experts will be consulted. Base these choices on the key concepts extracted from the research objective.
5. Make a *schematic presentation* of the research framework by using the principle of confrontation.

6. *Formulate* the research framework in the form of an elaborate argument according to the pattern (a, b, c and d) on pages 80-81.
7. Check whether the model developed necessitates any changes to the research objective. If so, change the research objective and subsequently determine if this means that the research framework needs changing, and so on (*iteration*).

To familiarise the reader with the methodology of constructing a research framework, we will give two examples of constructing a research framework according to the step-by-step approach presented above. The first example concerns the project 'Project Management System' that was introduced in Chapter 2 (see p. 59.), and the second one concerns the project 'AGB/JOVA' found in the introduction to this Chapter.

Example 'Project management system'

Project context
For several years the Ministry of the Interior of the Netherlands has had difficulties in supporting municipalities implementing the computerised MPA system (MPA stands for 'municipal population administration'). Two years ago, the project manager, whose job it was to implement the governmental policy plan 'Improvement MPA', implemented a new project management method Y in order to support the implementation of MPA in a number of large municipalities. The question, however, is whether this project management method Y has been successful. This is the subject of a public management evaluation research project.

Research objective
The research objective is to make recommendations to the project manager of 'Improvement MPA' with regard to improving the management of MPA-projects *by* making an assessment of the effectiveness of 'Improvement MPA', based upon an evaluation of the cost control, time management and internal communication regarding the MPA projects in four large municipalities when adopting project management method Y.

We will apply the seven steps for constructing a research framework to this project.

Step 1
The aim of the research is to formulate *recommendations* to the project manager of 'Improvement MPA' with regard to improving the management of MPA-projects.

Step 2
The four *research objects* in this research are the implementations of the MPA project in four large municipalities.

Step 3
We are dealing with an evaluation research, thus the research perspective consists of a set of *assessment criteria* in the fields of cost control, time management and internal communication, all of which will affect the success (= effectiveness) of the implementation of the project management method Y. We observe that our research concerns the causal relationships between several factors on the one hand, which affect the success of the implementation on the other. Hence, the research perspective will take the form of a causal conceptual model. We then evaluate the MPA projects in four large municipalities by-using this conceptual model.

Step 4
The conceptual model is developed by studying scientific literature.

Key concepts	*Theories*
• the effectiveness of project management project management	• organisational theory of
• ICT	• ICT theory
• public management (local/central) administration	* theory on public

The first two intermediate steps to be taken in order to find a research perspective, in this case developing a conceptual model, have now been taken. As mentioned before, even though the elaboration of the research perspective would normally only take place during the carrying out of the research, we will show such a specification in its rudimentary form in order to obtain a complete overview of this example. The student involved has studied the relevant literature, which has revealed the following:
First, in governmental project management of the implementation of ICT projects the emphasis lies on the following project management risks:

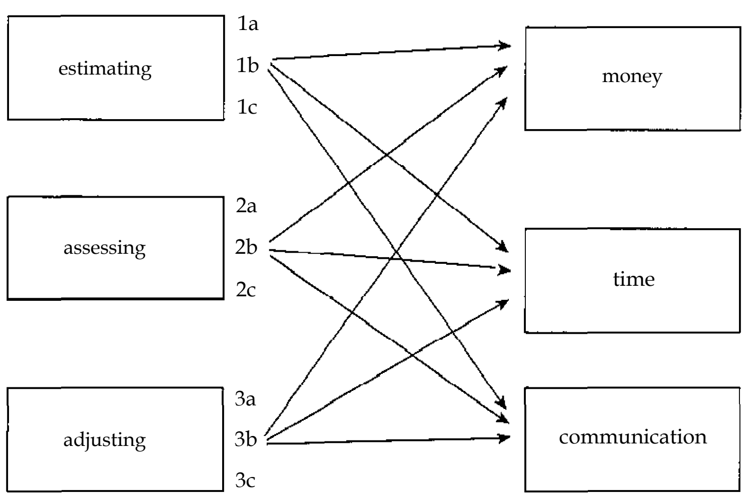
- *Money:* Can expenditure be controlled?
- *Time:* Can production and implementation time be controlled?
- *Communication:* Have all of the parties involved been informed in time, correctly and sufficiently?

Furthermore, the relevant literature indicates that it is important to study three sets of activities concerning project management:

- *Estimating:* to be able to accurately calculate the project management risks of the above aspects in time and
- *Assessing:* to be able to monitor and assess the actual risks adequately during the implementation.
- *Making adjustments:* to be able to make effective adjustments in time, in order to solve problems during the implementation.

The researcher has placed these aspects in a conceptual model (see Figure 3.7). Each arrow in this model stands for an anticipated effect derived from a particular activity in relationship to a specific risk. For example, Arrow lb stands for the expectation that an insufficient estimation of the risks will lead to an increase in production and implementation time.

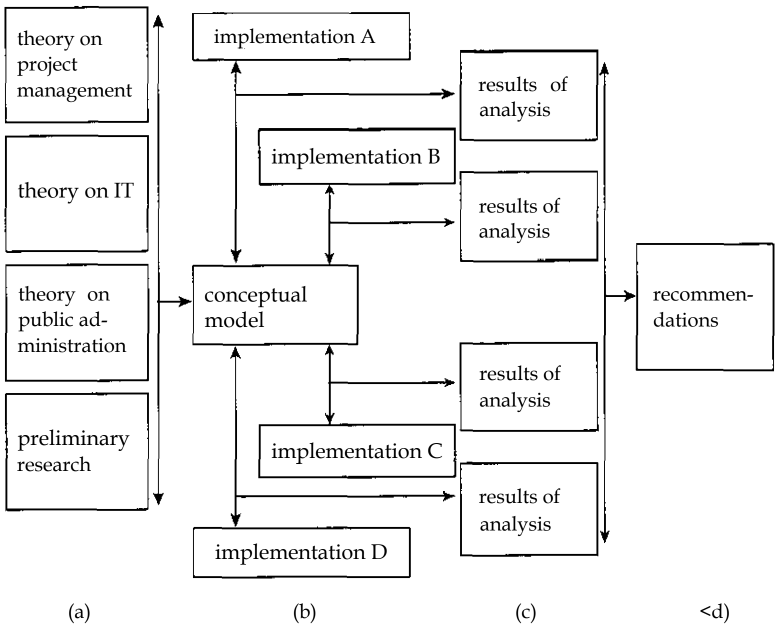
Figure 3.7 Conceptual model project management systems



Step 5
The above has resulted in the following *research framework-.*

Step 6
The steps to be taken in the course of the research project are *formulated* as follows: (a) a study of the theories of project management, ICT and public administration, and preliminary research results in a conceptual model (b), to be used in evaluating the implementation of project management method Y in four large municipalities, (c) A confrontation of these evaluations results in (d) recommendations for the improvement of the project management of MPA projects.

Figure 3.8 Research framework 'Project management systems'



Step 7
After some iteration there is no indication that any changes need to be made.

Example AGB/JOVA'

Step 1
Research objective: to make recommendations for business units.

Step 2
Research object(s):
The company AGB/JOVA is too large to be the object of a research project. Therefore you choose to confine your research objects to four regional offices that are comparable in the number of staff members, turnover and activities. These are your research objects.

Step 3
Nature of the research perspective:
As this concerns a diagnostic practice-oriented research, you aim at collecting a number of points of interest to use in diagnosing the organisation. Because you aim at confronting the current situation in the four selected offices with the desired situation, leading to a successful implementation of business units, you have chosen to carry out a diagnostic gap analysis.

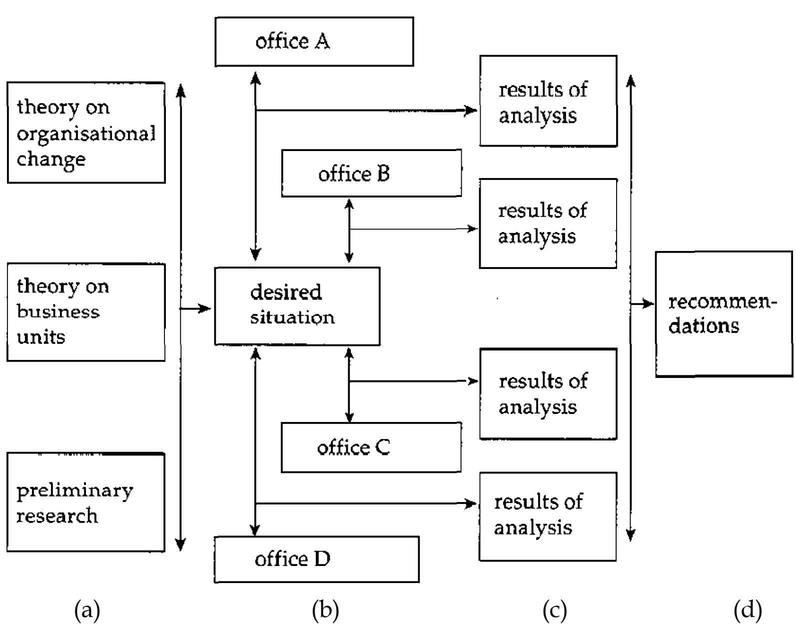
Step 4
Sources:
For this research project you will mainly use scientific literature when developing your conceptual model. The following key concepts are determined within their theoretical frameworks.

Key concepts	*Theoretical frameworks*
• Business units	* Theory on business units
• Organisational change	• Theory on organisational change

In the initial stage of the research project these two theoretical frameworks are studied and confronted with one another. From this confrontation you will derive a collection of specified and substantiated points of interests, which are important for the successful implementations of business units. These points of interest constitute the research perspective.

Step 5
Schematic representation:

Figure 3.9 Research framework AGB/JOVA



Step 6

Formulation:

(a) An analysis of the business unit concept, in terms of critical success factors for implementing the concept into the organisation, provides a number of subjects for analysis, (b) by means of which the current situation within the four regional AGB/JOVA offices will be analysed with regard to the desired situation for implementing business units, (c) A comparison between the results of these four analyses provides (d): an insight into the conditions that must be met by the organisation in order to be able to successfully implement the business unit concept.

Step 7

Iteration:

In this example there is no reason for changing the research objective of the research project,

Assignments

Make a research framework for each of the following research projects.

A. University

Project context

HFT is a university that has 18,000 students. One of the supporting units is the unit Facility Services. Lately, this unit has been reorganised. In the past, all activities were planned and carried out locally Now, management has chosen a centralised approach and a uniform and standardised service. Confronted with this new infrastructure, the employees are showing a growing discontent, which affects the team performance negatively. There are tensions, both between the management and the employees, and among the employees themselves. There is, so to say, a low level of proper 'organisational citizenship behaviour'.

Research objective (diagnostic)

The research objective is to make recommendations to the management team of Facility Services with regard to improving the team performance policy of HFT *by* making an inventory of the views held by the management, the employees and the clients inside the university, about both the effects of the current management's and the employees' 'organisational citizenship behaviour[7] on the team performance, and the options to improve the 'organisational citizenship behaviour' in such a way that the team performance will improve.

B. Organisational energy

Project context
'Organisational energy' is an important aspect of the social climate in organisations. Recent research of Z with regard to charismatic leadership indicates that organisational energy is important for organisational performance, for the morale of employees, for innovation, and for organisational learning. Z suggests that often rather simple adjustments in the management style can create an increase in organisational energy. The question is whether the management of the organisation is aware of the effects of their behaviour on organisational energy.

Research objective (theory-developing)
The research objective is to make recommendations for further developing the theory of charismatic leadership, more specifically with regard to the influence of managerial behaviour on organisational energy *by* presenting an overview of the managers[7] and employees' opinions regarding the effect of managerial behaviour on organisational energy in organisation Y.

C. Human talent

Project context
The management team of a consultancy organisation X wants to develop their HRM policy which will help ensure that they select talented people and train them in such a way that everyone is capable of performing the assigned job in the best way: the right person in the right place. They also want to improve their retention strategy, because too many talented people are leaving the company. At the moment they have their doubts about how successful the current HRM policy in this respect is.

Research objective (diagnostic)
The research objective is to make recommendations to the management team of X with regard to improving the HRM policy when selecting, training and retaining talented employees *by* giving insight into the gap between the current HRM policy regarding human talent on the one hand, and a desired HRM policy on the other.

4 RESEARCH QUESTIONS

A fool may ask more questions in an hour
than a wise man can answer in seven days.

4.1 INTRODUCTION

By now the first steps in the design process have been completed. The researcher has formed a picture of the project context and of the actual contribution he or she will be making. These activities have resulted in an effectively chosen and well-formulated research objective. By constructing a clear research framework the researcher has also formed a general idea of the steps that must be taken in the course of the research project, in order to realise the research objective. The next question that needs to be answered at this stage goes one step further and concerns the knowledge that is useful or necessary to achieve the research objective. The most efficient way to answer this question is by formulating a set of research questions, which consists of at least one central question. Each central question may or may not be unravelled in sub-questions. If so, at least two sub-questions per centra] question must be formulated. To formulate only one sub-question is always inadequate. Either this sub-question is the same as or synonymous with the central question, or it extends or narrows down the central question from which it is derived.

The researcher will be answering the set of questions during the research. It is important to realise that these questions are not of the same sort as those that are asked in interviews. The interview questions are presented to third parties, so-called respondents. In our case, the researcher will have to know first which questions the respondents need to answer themselves, before deciding which questions the researcher should ask others. These questions, which have been divided into central or main questions and sub-questions, are called *research questions.* We will use the 'AGB/JOVA' example to illustrate this (see Chapter 3).

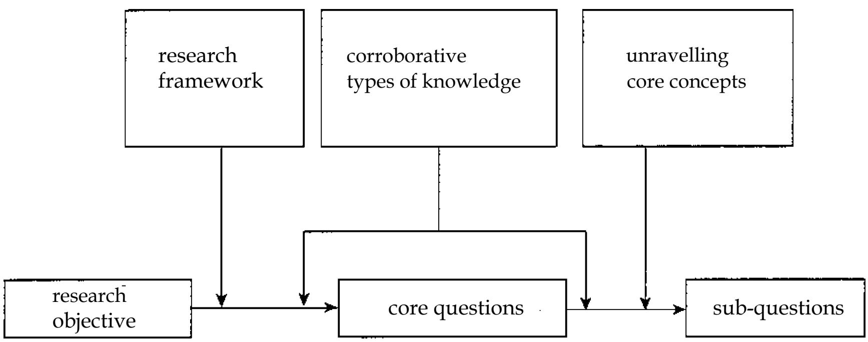
Example 'AGB/JOVA'
The project concerning the introduction of business units at the AGB/JOVA bank is well under way. You have decided on a diagnostic practice-oriented research project and by using the research framework you have arranged the project as follows: (a) a further analysis of the business unit concept, in terms of critical

success factors for implementing the concept into the organisation, provides a number of subjects for analysis, (b) by means of which the current situation within the four regional AGB/JOVA offices can be analysed with regard to the implementation of business units, (c) A confrontation of these four analyses provides (d) insight into the conditions that have to be met by the organisation in order to be able to successfully implement the business unit concept. On the basis of these future results you are going to formulate sound recommendations, which is the objective of the research project.
Although a fairly good picture of the project is acquired by now, it still is not clear what information is required in order to be able to make these recommendations. What information is needed concerning the situation of the entire organisation of AGB/JOVA? What knowledge is required about the business culture and the structure within the four major regional offices? Does the research objective require descriptive knowledge of the conditions that have to be met in order to realise a successful introduction of the business units concept? Or should the research project also provide explanatory knowledge so that an understanding can be obtained of the backgrounds and causes of the AGB/JOVA problems? If so, where can information on the backgrounds and causes of these problems be found? Questions such as these still need to be answered, so obviously at this stage you cannot possibly know what kind of material needs to be gathered.

Without exaggerating, we can state that formulating a steering set of research questions belongs to the most difficult, but also the most important part of the research design. The difficulty mainly results from the fact that we cannot just rely on the existing literature and theoretical insights while formulating this part of the conceptual design. Researchers have to make these decisions themselves while following a precisely formulated research objective. At the same time, this part is the most critical factor for a successful research project. Since the research results (should) consist of the empirically based answers to the research questions, the quality of the set of research questions has a major influence on the quality of the research results. It also has a powerful impact on the degree of decisiveness with which the research project can be carried out. The reason for this is that the research questions which have been formulated according to the procedures and methods presented in this book quite clearly indicate what should be done during the research project. We will explain this criterion of steering capacity later in this chapter.
The purpose of this chapter is to learn more about the way in which research objectives can be translated into an adequate set of research questions. First, in Section 4.2 we will explain in detail what an adequate set of research questions is and what the logical characteristics are regarding their form. The most important and apparent feature is the distinction between the *central questions*

on the one hand, and the *sub-questions* that are derived from these on the other. In this chapter subsequently three practical methods for formulating central questions and sub-questions have been introduced (see Figure 4.1): the method of *subdividing* the research framework into various components (Section 4.3), the method of *corroborative types of knowledge* (Section 4.4), and the method of *unravelling key concepts* (Section 4.5).

Figure 4.1 Three methods for deriving research questions



The methodology of subdividing the research framework into various components is only suitable for formulating the central questions, whereas the methodology of corroborative types of knowledge is both useful in deriving the central questions from the objective and the sub-questions from the central questions. The methodology of unravelling and clarifying key concepts using a grid is especially suitable for deriving sub-questions from the central questions.

This chapter will be concluded by summarising the guidelines that have been developed in a step-by-step approach, applied to the AGB/JOVA example given above.

4.2 Function and form requirements for research questions

Function requirements: efficiency and steering capacity

On the face of it, formulating a set of research questions does not appear to be very difficult. Anyone is capable of asking questions. This may hold true in general, but formulating an adequate set of *research* questions cannot be compared to asking ordinary questions in everyday life. The main requirements, which must be met in a set of research questions, are *efficiency* and a *steering function.* Efficiency refers to both the degree of knowledge that yields the answers to the questions contained in the set of research questions, and the degree this knowledge actually contributes to achieving the research objective. The steering function refers to the extent to which the set of research questions throws light on the activities which need to be performed during the carrying out of the research. Efficiency refers back to the research objective, whereas the steering function refers forward to the research activities, which are still to be conducted.

With regard to the efficiency of a set of research questions, it is necessary to realise that knowledge is always useful at some point. This can be seen as a justification for the pure theorising that is customary in science. Within the specific context of a research project, however, a more goal-oriented approach is favoured. In our view, the researcher is to ask himself or herself whether the set of research questions that is formulated will genuinely contribute towards achieving the research objective. Basically, the contribution of the research questions' answers to the research objective should be clear to any layman who has read the set of research questions. The formerly introduced golden rule, that the more you have to explain the less clear the research design is, holds true in this case too. The designer needs to consider which type of information the person who is planning to solve the problem needs in order to be successful. The efficiency of a set of research questions is mainly a matter of critical self-control and common sense on the side of the researcher, but the steering function is more complex. When using the term steering function of the set of research questions, we refer to the following two criteria:

a. The questions indicate which different types of knowledge are required. For the question 'Which characteristics do families in which children show juvenile criminal behaviour have in common?', *descriptive* knowledge would be required. The question 'What are the causes of the high turnover in personnel among civil servants at the Ministry of Y?' would involve *explanatory* knowledge. Generally speaking, one can say that statements such as 'how reality is', or 'what it looks like' or 'how things work', are *descriptive* statements. Statements about 'why things are the way they are' belong to the *explanatory* statements. The latter statements focus to a large extend on the discovery of the causes of phenomena. However, sometimes it is difficult to draw the exact line between descriptive and explanatory statements.
b. The questions will help us to decide which material (data) needs to be gathered during the research project. A set of research questions that does not meet these requirements for the steering function has substantial drawbacks. If this is the case, then the researcher will not be able to derive from the set of research questions the information that needs to be found in the library (theory) and where and what to look for in empirical reality. The consequence of this is that once the researcher reaches the implementation stage of the research project, he or she will end up wasting a lot of time

browsing in libraries and archives, and trying to select the right research material and data sources (see also Chapter 7).

Most people tend to cram everything into one question while formulating a research question. This will almost invariably lead to a set of research questions that are hardly steering at all. We will clarify this by using an example of a research project that has the external research objective of contributing to solve the noise nuisance problem in a city. It thus concerns a practice-oriented project. Depending on the type of practice-oriented research - the reader is now aware of the five different types - a set of research questions consisting of one sentence may look like this:

1. What exactly is the problem, for who is it a problem in particular, and why is it a problem? (problem-analysis)
2. What are the causes, backgrounds and interrelated aspects of the problem? (diagnosis)
3. How can the problem be tackled? (design)
4. To what extent is the design or the approach being properly carried out? (change)
5. To what extent has the intervention been a success? (evaluation)

On the surface, nothing appears to be wrong with these questions. They have been clearly formulated and each of them is straightforward. However, the question to be answered is to what extent these research questions meet the two criteria of the steering function as formulated earlier. First of all, we will examine whether the questions indicate the actual type of knowledge we are trying to find, which is the first criterion that we just formulated. The first two research questions do indeed steer towards recognisable types of knowledge. Question 1, for example, prompts the use of *descriptive* knowledge of the facts and views concerning the subject of noise nuisance. Question 2 also steers clearly towards knowledge, in particular knowledge of an *explanatory* nature. Sub-questions that may arise here include: What are the sources of the noise? How far away are they? What specific factors determine the level of noise outside and inside the houses?

Question 3, on the other hand, does not clearly indicate what type of knowledge is needed. It offers very few clues as to which real-life aspects we should acquire more knowledge and information on, and it does not reveal the type of knowledge and information that is actually required. In fact, Question 3 does not refer to a question regarding *knowledge,* but rather to a '*how can*' question, a so-called intervention problem. This is a flaw that frequently occurs in research questions. The reason for this is because such 'how can' questions say more about the research objective than about the knowledge to be acquired, i.e. the set of research questions. This is clear from the use of the word 'can' instead of 'know', which is more relevant when we speak of the set of research

questions. This method of asking questions does not in any way add to the research objective. It is merely a research objective in disguise, phrased differently and ending with a question mark. It is as simple as that, and it does not get us any further. In general, we argue that 'how can' questions should be avoided when formulating a set of research questions for a research project.
This analysis shows us that not every question - a sentence ending with a question mark - is a *research* question. A research question concerns a knowledge problem and not an intervention problem. Formulating a 'how can' question equates to having an inaccurate view of research, that is the view that sees research as an instrument for solving an invention problem. However, as stated before, all we can expect from research is that it produces knowledge, insight and information. In other words, research is an instrument used for knowledge production. Naturally, such knowledge needs to be useful in order to solve an intervention problem. The reader will recognise the criterion of efficiency.
Questions 4 and 5, like Question 3, give insufficient information concerning the type of knowledge the researcher is going to provide. They suggest that there is a standard for assessing or evaluating the implementation and the outcome of an intervention. It is not clear in which direction we need to look in order to find the standard, and it is also not clear which criteria should be used for assessing. In short, the way in which these questions have been formulated does not help us to get any further either. We can conclude that only Question 1 and Question 2, as presented above, actually meet the first of the two criteria for a steering set of research questions.
We will now investigate whether the five questions formulated above meet the *second* condition for a steering set of research questions. This mainly concerns the requirement of clarity regarding the material to be gathered. It would seem that Question 1 scores reasonably well in this respect. It is evident that we will have to visit noise nuisance zones to actually carry out observations and talk to people in the neighbourhood. Question 2 meets this requirement to a far lesser extent. It simply suggests that the researcher should become acquainted with the background to the noise nuisance problem. But the way this question has been formulated provides no information on how to find this information, and it certainly is not clear what data needs to be gathered.
There is, for that matter, an obvious reason why Question 2 scores less well than Question 1 on this point. Question 2 refers to explanatory knowledge, which is generally more abstract and more difficult to generate than the descriptive knowledge referred to in Question 1. As will be made clear in Section 4.4, in general we first need descriptive knowledge before we can explain anything. Finally, a brief examination of Questions 3, 4 and 5 makes it clear that they give us no indication where to look and what information to look for in libraries and in real-life. And, even worse, simply burying oneself in a library or making observations does not give any indication either, despite the

fact that many beginner researchers have the vain hope that these activities will be useful. To begin a research project with such a weakly formulated set of research questions will inevitably lead to a loss of time. At this stage, one needs to carefully investigate what knowledge, insight and information could be useful in order to achieve the research objective. The researcher has to trust her or his own common sense, which can be supported by theoretical insights. The following example explains this. Imagine that the external goal of a research project is 'to contribute to the making of an appropriate information documentary that will convince farmers about the importance of sustainable agriculture'. Suppose that the researcher formulates the following research question: 'How can an appropriate information documentary be made?' We recognise a '*how can*' formulation. This question is just a replication of the research objective, and formulating this question does not help us further. Logical thinking and using our common sense may result in the following set of research questions: 'What do farmers actually *know* about sustainable agriculture, which methods exist, what are the conditions of sustainable agriculture, and so on?' 'What do farmers *think* of sustainable agriculture?' 'To what extent are they already using sustainable methods and techniques?' At first sight these questions do not bring us much further towards making the documentary. However, if we take a closer look, it will soon become clear that the answers to these questions offer the movie maker very useful information. In other words, these questions meet the requirement of efficiency. In addition, they are steering. That is, they make it quite obvious that we have to interview farmers who belong to our target group, or that we need to observe them when they are performing their daily tasks. They also offer some clues about what to ask them and/or what to focus on during a systematic observation.
Our conclusion is that, despite the fact that on the surface the questions on page 95 seem reasonable, with the exception of Question 1, they all lack the necessary steering power. These research questions refer mainly to what the researcher wants to achieve (the external goal) and only marginally to the research activities themselves (the internal goal, i.e. the type of knowledge that is to be produced). As a result, these questions do not provide any information on the material to be gathered for the research project either.

Form requirements: central questions and sub-questions
Formulating steering research question can be very difficult, although it may seem easy at first. We recommend taking the following two steps. Firstly, the researcher must find out what type of knowledge could be useful for realising the research objective. This is to be followed by formulating one or more central questions. Next, the researcher asks himself or herself what knowledge is necessary to answer this central question or these central questions. For each central question, two or more sub-questions should be formulated. Please note, as we have already mentioned, formulating only one sub-question is not

enough. Such a question will either encompass the same information request as the central question does, which means that this sub-question is redundant, or this sub-question narrows down the central question, which is obviously not the researcher's intention. The aim in formulating a set of sub-questions is to make sure that the combined answers to these sub-questions will roughly provide the information the researcher needs in order to answer the central question they belong to. The following should be asked by the designer: 'Do the combined answers to the sub-questions give the required information?' If the answer is yes, the set of sub-questions is correct. If the answer is no, either the sub-questions or the central question should be adjusted, or both.
The most important function of the sub-questions is the steering function. As will become clear below, these sub-questions are more steering than the central questions from which they are extracted, provided that they logically follow from the central questions. The central questions, in turn, are more steering in the way described above, than the research objective. A second function of formulating sub-questions is that they serve as a useful tool to *structure* the research activities themselves. In each phase, the researcher is trying to answer one of the sub-questions. However, as stated before, make sure that formulating sub-questions does not change the *content* of the research project.
To sum up, we can say that the formulation of a set of research questions, consisting of central questions and the subsequent sub-questions, must meet two strict requirements:

a. The combined answers to the central questions are sufficient to help to achieve the research objective, no less, no more.
b. The combined answers to the sub-questions provide a satisfactory answer to the central question from which they have been derived.

These two requirements imply that for each question the researcher has formulated, he or she will need to verify if it really has added value and whether it is not merely an extension of the research objective or a central question. In reality, this will appear to be more difficult than one may think. The reader has been forewarned!
In particular, if the researcher decides to extend the research objective or a central question while formulating questions and sub-questions this can seriously affect the efficiency of the research project. Nonetheless, this is an error many researchers make. It is always very tempting to formulate an impressive set of research questions, and it is easy to do so on paper. It is not very easy, however, to provide well-founded answers to the questions.
Of course, this does not alter the fact that when we are formulating central questions and sub-questions, we may be confronted with issues that we have mistakenly overlooked when formulating the research objective or the central questions. If this is the case, then we will stand by our central question or sub-question respectively, and we will adjust the research objective, or the central

question. This is an instance of *iteration.* We will illustrate the process of iteration while formulating a set of research questions based on two examples.

Example 'Organisational culture'
For your research project you intend to identify the differences in the organisational culture between two hospital wards. One of the central questions you formulated is the following: 'In what way do the organisational cultures of hospitals and schools differ?' In this example depicting a central question of the descriptive type, you have extended the original intention to study the differences between the two hospital wards. The rationale for making this decision is your expectation that a comparison between two totally different organisational types will result in more general conclusions. For the time being, you decide to add the element of sector comparison to the research objective. If it turns out that the client - after being informed about the possible advantage of a sector comparison - is in favour of this extension, then this indicates that you have probably found a gap in the initial research objective. If this is indeed the case, you can adjust your research objective in such a way that the central question can be logically extracted from it.

Example 'Policy on manure'
One of your central questions is: 'What kinds of problems will arise when the government's new policy on manure is introduced'? You could formulate one of the sub-questions as follows: 'What are the underlying causes of these problems that we can observe'? In this case, the central question has been extended. This central question is of a descriptive nature whereas the sub-question adds an explanatory element. To find out whether this addition is justified, you must refer to the research objective (iteration). If the addition turns out to be justified, for example because you intend to improve the policy on manure, this sub-question will become a central question, and you will need to come up with appropriate new sub-questions, which you can derive from the newly-formulated explanatory central research question. As indicated below, these sub-questions are usually of a descriptive nature.

Once we have established that formulating central questions and sub-questions is useful with a view to the desired steering function of a set of research questions, we are subsequently faced with a new problem. The question is how we can formulate central questions and sub-questions that meet the stated requirements of efficiency and steering function. We have now arrived at one of the most difficult parts of designing a research project. The reason for this is that once you have arrived at this point, you need to make a U-turn.

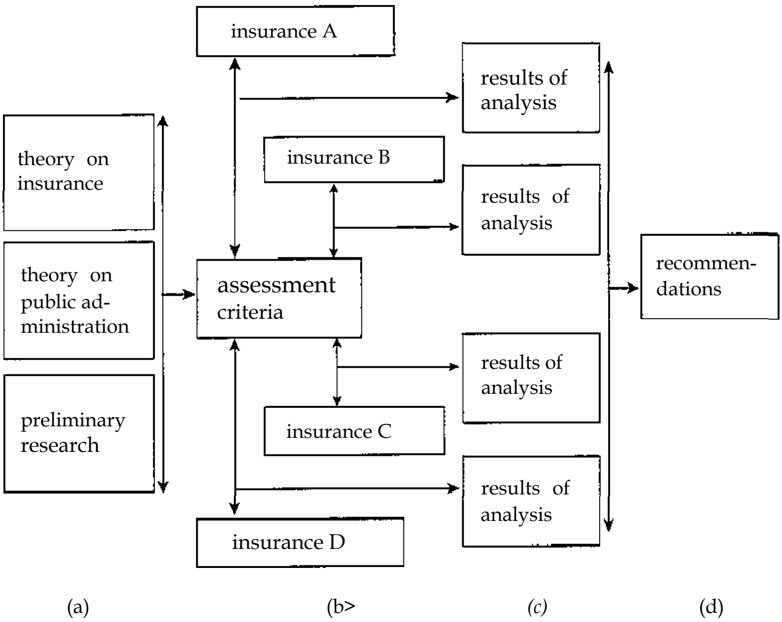
When the project context, the research objective and the research framework were defined, the focus was on the delineation and the structuring stage of the research project. All of these aspects appeal mainly to the common sense of the researcher, and the latter could rely on her or his ability to create order in an ambiguous situation. Until now, no appeal has been made to the researcher's substantive knowledge and views on the subject. This is different once the stage is reached of formulating the central set of research questions and sub-questions of the research project at hand. Now a switch is needed from the structuring stage to substantive reasoning. Formulating the set of research questions implies that the researcher wants to know the answer to the following methodological question: What are the research questions that must be answered in order to meet the objective of the research project? In other words, what substantive knowledge is required and useful for achieving the research objective?
Many students who are in the process of formulating a set of research questions experience this necessary switch from structuring to substantive reasoning as a step that is too large to make in one go. Because of this, we will provide the reader with three methods that can help formulate the central questions and sub-questions: subdividing the research framework, corroborative types of knowledge and unravelling key concepts.

4.3 SUBDIVIDING the research framework

A first method for developing an adequate set of research questions fits in with the research framework as a result of the second step in the design of a research project (see Chapter 3). This method entails subdividing the research framework into identifiable components. For each of these components a central question must be formulated. We will first explain the structure of the method and, subsequently, present examples in order to illustrate how this method works. To this end, we will give a detailed example concerning 'catastrophe insurance' that was presented earlier (see page 81).

Example 'Catastrophe insurance'
Micro-economic research is meant to give recommendations concerning the effectiveness of the insurance for national disasters such as floods and earthquakes. To this end, four types of catastrophe insurance (i.e. the research objects) are being assessed using the criteria for an efficient type of catastrophe insurance. Because we are dealing in this case with a research project that focuses on the causal relationship between influencing factors and the effectiveness, the research perspective takes the form of a conceptual model. The researcher has constructed the research framework as shown in Figure 4.2.

Figure 4.2 Research framework catastrophe insurance



This framework can be described as follows:
(a) A study of the underwriting problems in the event of a national disaster, based on interviews with experts (preliminary research) and after having consulted relevant scientific literature (theory on insurance, theory on public administration), yields the assessment criteria (conceptual model) (b) by means of which the effectiveness of four types of catastrophe insurance (research objects) can be evaluated, (c) A comparison of the results of these four evaluations yields (d) recommendations for developing an efficient insurance scheme for national disasters.

We will use this formulation for developing the central questions.

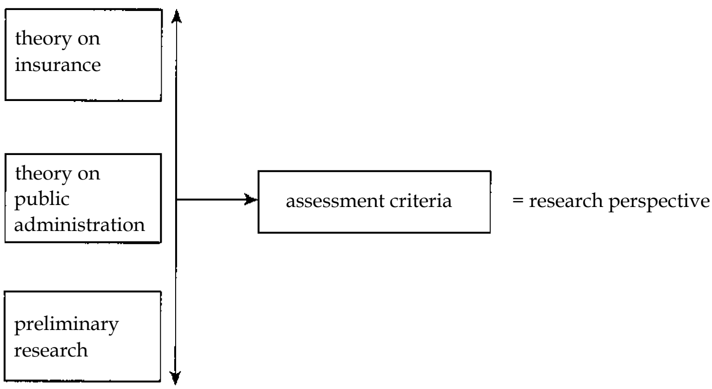
The *first* central question concerns part (a) and focuses on the sources the researcher needs in order to establish the research perspective (see Figure 4.3). The answer to the first question is the detailed research perspective.

This question reads as follows:

I What criteria are relevant for assessing the effectiveness of various types of catastrophe insurance?

This first central question has, in combination with the research framework, an adequate steering function. It makes clear that we have to study theories on insurance and public administration, and consult experts in the field in order to find an answer to the above question. Our efforts will result in a list of assessment criteria.

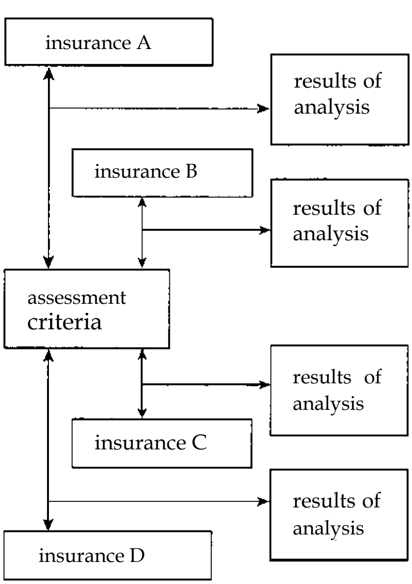
Figure 4.3 Scheme of the first central question



(a)

The *second* central question concerns part (b) of the research framework, which entails an analysis of the data gathered on the object, or objects, of the research project. In the example 'catastrophe insurance', this second central question concerns the following part (see Figure 4.4).

Figure 4.4 Scheme of the second central question



(b)

It reads as follows:

II What is the value or quality of the four different types of catastrophe insurance studied in view of the set of assessment criteria?

It is obvious that we cannot answer the second central question before having answered the first. This second core question is steering too. The answer follows from confronting the object with the research perspective.
A distinction should be made between projects involving a single research object and those involving several objects. In the first case, the second central question is also the final question. For after having studied the single research object on the basis of the research perspective (in this example, the research perspective), the researcher should have gathered sufficient information to achieve the research objective of the project at hand. In the second case, the answer to the second central question provides sufficient information for answering the third central question (see below).

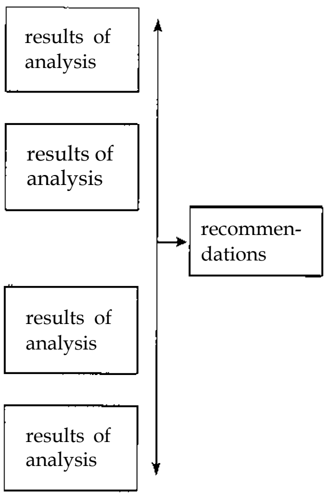
In the example above the four different types of insurance based on the list with assessment criteria should be studied, following from the answer to the first central question. After having studied these, the researcher has obtained four results, one for each type of insurance. These form the input for the third central question. This central question concerns part (c), in which the researcher compares the results of analysis for each of the research objects. The third central question concerns the following part of the research framework (see Figure 4.5).

The third central question is:

III What do we learn by comparing the results from the analyses of the four types of insurance in order to make recommendations on how to develop an efficient insurance scheme for national disasters?

Again, it will be obvious that the third central question cannot be answered before having answered the second. The answer to the third central question can ascertain whether, and if so to what extent, the researcher has achieved the objective of the research project. We explained earlier that the answer to the second central question provides the achievement of the research objective when there is only one research object.

Figure 4.5 A scheme of the third central question



(c)

Assignment Market oriented healthcare'

a. Please study carefully the project context the research objective and the research framework of the research project 'Market oriented healthcare[7].
b. Formulate the central research questions by using the method of sub-dividing the research framework.

Project context

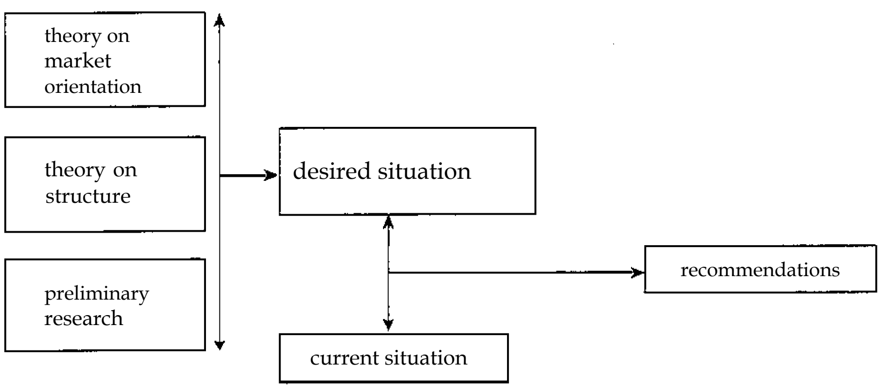
ABC is a healthcare organisation. The core business of ABC is to provide an independent and well-considered advisory report concerning the treatment and support of physical disabilities. Due to the ongoing process of privatisation of former public healthcare organisations, ABC has had to compete with other advisers in order to ensure its long-term viability. The ABC management staff decided to change the former supply oriented strategy into a market oriented strategy by introducing the principle of 'autonomous account management'. In this type of management the ABC consultants are responsible for all formal and informal contacts with their clients. What is lacking, however, is a well-thought-out plan to embed this principle of account management into the existing organisation. The organisation needs to develop a new organisational infrastructure that supports the newly-developed market oriented strategy.

Research objective

The research objective is to make recommendations to the management team of the account managers at ABC regarding how to improve the organisational infrastructure of the account management process *by* giving insight into the gap between the desired and the current organisational infrastructure.

Research framework

Figure 4.6 Research framework ABC



(a)

Assignment 'Phoenix'

a. Please study carefully the project context, the research objective and the research framework of the research project 'Phoenix'.
b. Formulate the central research questions by using the method of subdividing the research framework.

Project context

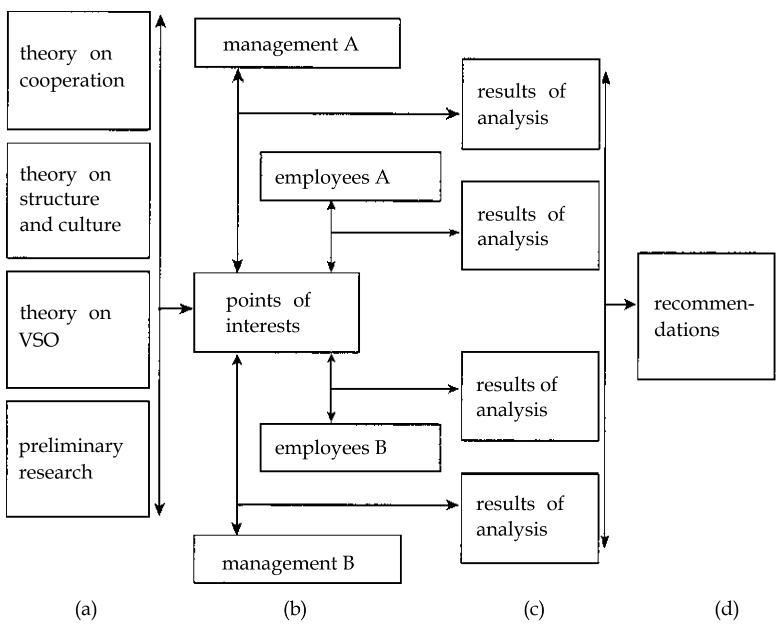
Phoenix is the name of a cooperative body of two VSO (Voluntary Service Overseas) organisations A and B. The purpose of the cooperative is to improve the fund-raising and, in doing so, to increase the effectiveness of the financial support activities of both organisations. A major problem seems to be the differences in the organisational structure and the organisational culture of both partners. These differences may hinder successful cooperation. How can the management team of Phoenix avoid these problems?

Research objective

The research objective is to make recommendations to the management of Phoenix regarding the improvement of their policy to implement the cooperative body *by* presenting an overview of the opinions held by several groups within the organisations such as the management and the employees, concerning (a) these differences and their backgrounds and (b) how to surmount these differences.

Research framework

Figure 4.7 Research framework Phoenix



This section has offered a method on how to formulate central questions. The remaining two sections of this chapter present two other methodologies that will enable the reader to derive central questions efficiently from the research objective, and sub-questions from the central questions.

4.4 Corroborative types of knowledge

In Section 4.2 we distinguished between descriptive and explanatory knowledge. It was mentioned that descriptive knowledge often plays a valuable role in obtaining explanatory insights which help to formulate central questions based on the research objective, as well as sub-questions based on the central

questions. More specifically, it is possible to subdivide a central question of an explanatory nature into sub-questions of a descriptive type.
In order to develop a generally useful method for formulating research questions, we first need to make a distinction between a number of different types of knowledge. On each occasion we will indicate the kind of research in which these types of knowledge may play a dominant role. Subsequently, we will examine how the various types of knowledge can be corroborative. Finally, we will demonstrate how to use these types of knowledge as a basis for developing a set of steering research questions. We start by making a distinction between five types of knowledge:

1. *Descriptive knowledge*

The researcher who wants to produce descriptive knowledge intends to describe a certain object, phenomenon, situation, event or development as accurately and comprehensively as possible. Preferably he or she bases this description on sensory observation. In particular, practice-oriented research projects concerning problem analysis, implementation and evaluation are aimed at producing descriptive knowledge. Description is the most primary and basic activity in scientific research. It is hard to avoid description, although it often involves more than merely describing. It is a mistake often made by both beginner and experienced researchers to think that description is not a scientific activity, and that explanation is much more important.

2. *Explanatory knowledge*

The researcher intends to demonstrate how, or through which process, a phenomenon originates. In contemporary scientific research this usually means that the backgrounds and causes of the phenomenon need to be discovered, and that their effects have to be specified. For example, tensions within an organisation are identified as being the cause of a high level of absenteeism. This is called a *causal* explanation. In particular, theory-oriented and diagnostic research projects are characterised by explanatory knowledge. One difference between both types of research is that in theory-oriented research the researcher seeks generally valid causal explanations of phenomena, ie. causal laws which can be generalised. In diagnostic research, however, one tries to discover what originated or caused this *particular* problem, restricted in time and place. In both cases we can recognise a line of reasoning in terms of causes and effects.

3. *Predictive knowledge*

Based on knowledge of the current or the past situation, the researcher tries to predict future situations or events. This type of knowledge is found both in theory-testing research and in practice-oriented research. In a theory-testing research project, the researchers intend to derive from a theory — that is, to predict - what one is supposed to find in reality for the theory to be valid. In particular, in economics and related disciplines, the researcher would like to predict future events based on knowledge of the past. This means that one tries to extrapolate the current trends to the future.

4. *Evaluative knowledge*
To evaluate is to assess a situation or event, expressed in terms that are either favourable or unfavourable. As we have stated before, such an assessment presupposes the availability of a set of criteria on which the evaluation can be based. Naturally, one would like to obtain evaluative knowledge when conducting evaluation research projects. This type of research takes place during the fifth and final stage of the intervention cycle. But problem-analysing research projects, too, are aimed at creating evaluative knowledge. In these cases the purpose is to compare a current situation with a desired situation. The latter can be reformulated by creating a set of criteria that the current situation should meet.

5. *Prescriptive knowledge*
Prescriptive knowledge provides instructions on how a situation can be changed. If, for example, you wish to reduce absenteeism, you will need to create a good working atmosphere. In particular, design-oriented research, aimed at changing situations, is characterised by the production of prescriptive knowledge. Generally, prescriptive knowledge will be the goal of practice-oriented research which focuses on designing a solution for a problem that has been diagnosed (see Stage 3 of the intervention cycle),

The five types of knowledge mentioned above are closely related and sometimes merge together seamlessly. It is important to see that these types of knowledge form a particular order. Starting from the top, the type of knowledge becomes increasingly complex. This increasing complexity indicates a characteristic which is very promising as the foundation of a method for designing a set of research questions. This characteristic is that a higher-ranked type of knowledge can play a corroborative role with regard to creating a lower-ranked type of knowledge, but *not* vice versa. Descriptive knowledge, for example, can support explanatory knowledge, but not the other way around. The following example illustrates this. Suppose that we would like to know why some children do better at school than others. This is an explanatory research question. In order to understand how descriptive knowledge can help in finding an explanation for the differences in school performance, one should know how scientific research tries to find the causes and effects of a particular phenomenon. This is done by *comparison*, a very fundamental principle in methodology. We compare a group of school children with outstanding school results with another group of pupils who perform very weakly, and we analyse whether these two groups differ in other respects as well, besides their school performance. We will naturally focus on issues we expect to be responsible for the difference in school performance. We may compare both groups with regard to their family situation, character, motivation, and suchlike. These comparisons will probably bring about important clues to explain the differences in school results. We can use this so-called method of *comparison* in order to formulate sub-questions which belong to the following central question: 'Why do some pupils perform much better at school than others?' We can formulate the following sub-questions, all questions of the descriptive type: 'What kind of family situation do both types of students have?' 'What is typical of these pupils?' 'What are their motivations, what do they think is important in life, and how do they spend their time?'

From the analysis above, we can distil the first general rule for the method of corroborative types of knowledge: when there is a central question of the explanatory type, we should formulate sub-questions of the descriptive type.

Let us now take a look at the type of knowledge which appears next, the predictive knowledge. It is true that prediction can be made on the basis of preceding types of knowledge, namely descriptive and explanatory insights. An important way of making a prediction, for example, is extrapolation. A specific regularity, also known as a *trend,* is extrapolated to the future. The reader should take note that, in this case, the prediction is based on descriptive knowledge, particularly knowledge of the past. Another way to make a prediction is to make use of causal laws. A well-known law in physics is the following: if gas is heated, it will expand. The explanation for this law is that the heat will make the molecules move faster, causing more frequent and heavier collisions, which in turn will result in an increase of the intermolecular space between the gas molecules, which finally increases the gas volume. On the basis of this knowledge, we can predict what will happen if the air in a balloon is heated. Then the prediction has been based on explanatory knowledge, namely the knowledge of a causal process.

We saw that descriptive knowledge can contribute to prediction through the principle of extrapolation. However, we also know now that explanation enables prediction, and that an explanation can be made based upon description. Therefore, we have reason to believe that descriptive knowledge can also contribute to prediction indirectly. This leads to the second rule for the method of corroborative types of knowledge: a central question of a predictive nature can be unfolded in a series of sub-questions of explanatory and/or descriptive nature.

Let us focus on evaluative knowledge. An evaluation is made up of opinions expressed in terms that are either favourable or unfavourable. According to the list above, this type of knowledge should be based on knowledge of a descriptive, explanatory and/or predictive nature. A simple observation is that the minimum requirement for evaluation is a description, namely a description of the phenomena (facts) that are to be assessed, as well as of the assessment criteria (wishes). The reader will recognise this definition as the basic structure of an evaluative research project (see Chapter 2). Explanatory knowledge is especially required if the evaluation is focused on establishing the degree of effectiveness of an intervention. The reason is that it is then necessary to demonstrate a causal link between the intervention and the intended change. In addition, we would like to know what the long-term effects are going to be, so predictive knowledge may also be involved.

By far the most complex type of knowledge is prescriptive knowledge as this is basically the result of the four other types of knowledge. It is common knowledge that knowing the causes of a problem (explanation) is often an important precondition for dealing with it. The prescription entails the elimination, reduction or alteration of the cause. Moreover, the evaluation of an existing intervention, situation or development may be one of the major principles of prescription. It is a general truth that we can learn from mistakes made in the past. Thus, someone who wants to solve an intervention problem, and therefore tries to find prescriptive knowledge, can learn much from prior attempts to solve similar problems. Finally, it goes without saying that (ex-ante) estimating the effects of an action (prediction) can play a major role in arriving at a prescription.

It is not very difficult to see how the idea of various corroborative types of knowledge can help us formulate our research questions. If the research objective is of a prescriptive nature, for example: to offer advice regarding the design of a new production structure, or the drawing up of a new agricultural policy plan, the researcher should look for research questions of an evaluative, predictive, explanatory and/or descriptive nature. A central question of an explanatory nature formulated in this way, for example, will very likely be efficient. For, as we have seen before, knowledge of causes is generally a powerful instrument for achieving improvements. However, most explanatory questions will inevitably score only a few points on the second criterion for an effective set of research questions, the steering function. For example, the question 'What are the causes of the high absenteeism due to illness in organisation A?' does not give an indication of the necessary activities the researcher should conduct during the research project. However, a descriptive question derived from the first question is much more transparent in this respect: Is the absenteeism due to illness in department X of organisation A - a department known for its non-transparent division of labour - higher than the absenteeism due to illness in department Y - where everyone has a clearly defined job?' This formulation indicates that we should contact the employees of both departments and collect their opinions via an interview or a questionnaire regarding absenteeism, job descriptions and division of labour.

In general, when formulating a set of research questions, it is essential to try to dissect the more complex types of knowledge by unravelling these into less complex types of knowledge, which in this case are the types of knowledge first in line. It is good practice when researchers reduce one or two complex central questions to a series of sub-questions of a preferably descriptive nature because descriptive questions are generally the most steering of all types of knowledge.

The above mentioned also implies that in a research project with a prescriptive research objective, for example to help solve an intervention problem, in principle more sub-questions are required than in research with an explanatory or even a descriptive research objective.

We have already explained and illustrated, by using several examples, that the higher-ranking types of knowledge can be corroborative to the lower-ranking types. This would seem to imply that sub-questions are invariably made up of a type of knowledge that is ranked higher than the type of knowledge they are derived from. However, this is an incomplete representation. The questions and sub-questions can also be of the *same* knowledge level as the questions on the basis of which they have been formulated. Thus, many central questions of a descriptive nature can be based on a research objective at the descriptive level. In the same way, it is possible to extract other evaluative sub-questions from an evaluative central question. In other words, the same types of knowledge can also be corroborative. This will often be the case if one uses one of the other two methods in this chapter for deriving central questions and sub-questions. Regardless of the method used, deriving a sub-question of a lower-ranking type of knowledge from a central question that has a higher-ranking type of knowledge should be avoided. Such sub-questions will always imply that the central question has mistakenly been expanded. Based on the above, we can now finally formulate the following general principle that summarises the method of corroborative types of knowledge:

Based on a research objective or central question of a given type of knowledge, central and/or sub-questions can be formulated that are higher or equally ranked in the list of the five types of knowledge shown on pages 107-108.

Below, we will explain on the basis of a detailed example how the method of corroborative types of knowledge can be used for formulating central questions based on the research objective, and sub-questions based on central questions.

Example "Absenteeism due to illness'
Let us assume that the objective of a research project is to draw up a plan to reduce absenteeism among the civil servants of a municipality by giving insight into the causes of the present absenteeism and the ways in which these causes can be removed.
It is clear that this is the objective of a design-oriented research project and that it requires prescriptive knowledge. If we ask ourselves what knowledge may be useful when making this prescription, it will immediately become clear that in addition to other knowledge, knowledge of the causes and backgrounds of absenteeism will be essential. It is explanatory knowledge that is required here, and the simple central question is: what are the causes of absenteeism?
This question is already far more steering than the question: how can absenteeism be reduced? This is an example of the use of the notorious 'how can' construction. Still, this central question has a relatively limited steering power. It is not immediately clear which information or data must be collected. We must therefore ask ourselves again what types of knowledge and insight are necessary in order to answer this central question. For example, knowledge about issues such as the types of illnesses, the spread of absenteeism across the various departments of the organisation, characteristics of the people who are frequently ill, and so forth. In brief, we need descriptive knowledge elements. On the basis of this notion we can formulate the following sub-questions:

1. To what extent does the absenteeism differ per department?
2. What departments show the highest percentage of absenteeism?
3. What departments show the lowest percentage of absenteeism?
4. What other distinguishable factors can be identified with regard to questions 2 and 3?
5. What illnesses in particular occur?
6. Which people in particular fall ill?
7. How long, on average, are people ill per event?
8. Are the same people frequently ill?
9. What common characteristics do these people show?

In the above example, a central question of an *explanatory* nature is subdivided into a number of sub-questions that are all *descriptive* by nature. As the reader can see, each of the sub-questions is more steering than the central question it is based on. In particular, these sub-questions provide much more insight into what data is needed than the original central question.
The method of corroborative types of knowledge fits in very well with the methodology of creating a research framework. To demonstrate this, we will return to the example of the farming policy in Chapter 3.

Example "Farming policy'
The description of the research framework was as follows:
(a) A study of the recent theories and research reports in the fields of organisational development, farming and public administration, completed through preliminary research, yields criteria (b) by which the current local farming policy has been evaluated, (c) The results of this assessment are processed into proposals for improving the provincial farming policy.

In (c) we recognise the objective of the research project. This research objective has a prescriptive nature, which is often the case. If we are looking for a set of research questions, we know that we will find them in evaluative, predictive, explanatory and or descriptive knowledge. The following central questions appear to be useful:

1. What are the relevant assessment criteria for an effective policy of the provincial authorities? (descriptive knowledge)
2. To what extent does the current policy of the province meet these criteria? (evaluative knowledge)

On the basis of the answers to these two questions, suggestions can be formulated for improving the farming policy. In doing so, the researcher will have achieved the objective of the research project.

The two questions found in the above example already have some steering power in the sense that they provide indications as to what types of knowledge are involved. We also note their corroborative character. The answer to Question 1 is corroborative or even conditional for the answer to Question 2, whereas the researcher intends to base his conclusions on the answer to Question 2. But these questions do not indicate which information to look for in the library (Question 1) and in empirical reality (Question 2). In particular the research framework that has been chosen (see page 70) throws light on this aspect. We see that some theories must be compared with each other. This part of the research framework could produce the following sub-questions, derived from the first central question:

1.1 What criteria can be derived from theories on effective farming policy?
1.2 What criteria can be derived from administrative and policy theories?
1.3 How will these criteria change, or what new criteria can be formulated as a result of a mutual confrontation of the criteria mentioned in 1.1 and 1.2?

By formulating these three sub-questions, we have in fact defined the part of the research project that at a later stage, when the theoretical part of the research is carried out, will result in a well-founded and effective conceptual model.

Central Question 2 does not immediately provide clear information on what material should be gathered. It is therefore useful to formulate sub-questions that may be corroborative to this evaluative Question 2. We already know that we have to look in the direction of descriptive knowledge. Relevant sub-questions may include:

2.1 What are the underlying assumptions of the current provincial agricultural policy? *(descriptive knowledge)*

2.2 What departments or individuals are involved in the policy implementation, and what characterises the current policy, respectively the policy developed by them? *(descriptive knowledge)*

2.3 In what way are the responsibilities and competencies distributed over the various individuals involved? *(descriptive knowledge)*

By adding the six sub-questions laid down in 1.1 to 2.3 to the central questions, the researcher will now have obtained a set of research questions that, as the reader will find, meets both criteria for a steering set of research questions. This means that each sub-question clearly indicates the activities of the research project.

Assignment "Company medical officers'

a. Read carefully the project context, the research objective, the research framework and the central questions of the research project 'Company medical officers'.
b. Use the method of corroborative types of knowledge to formulate sub-questions for central questions 1 and 2 of this research project.

Project context

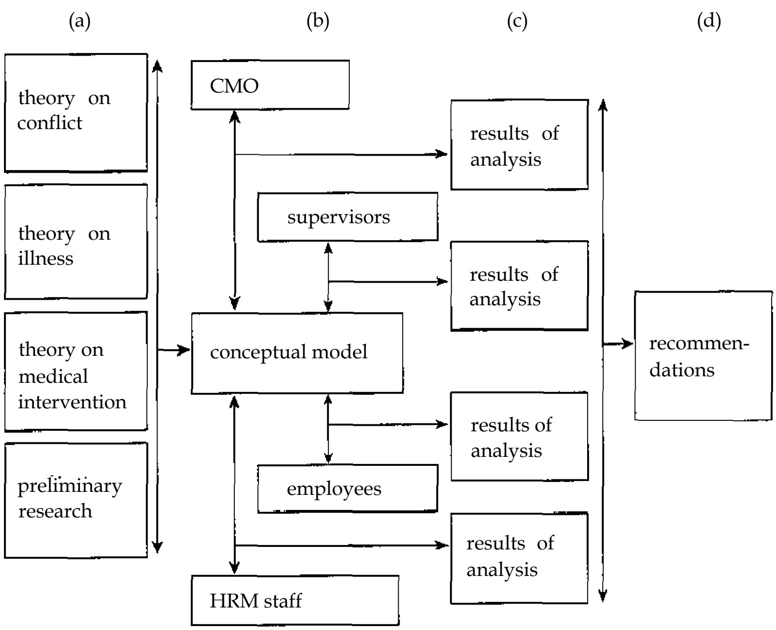
In organisation A, the HRM manager B experiences substantial problems concerning the company medical officers' roles in work-related conflicts. Employees often consult a company medical officer when suffering from illnesses that are evidently related to conflicts between the employees and their superiors. Company medical officers will find themselves placed in a conflicting position between a sense of loyalty towards the organisation on the one hand, and care for the patients on the other. Which would be the best role for the company medical officer to take in helping to solve these conflicts?

Research objective

To make recommendations to B about the organisational policy to improve the company medical officers' role in work related conflicts *by* providing an overview of the opinions held by the four groups involved, i.e. the company medical officers, the employees, their superiors and the HRM staff, regarding (a) the influence of work-related conflicts on the illnesses of the employees, and (b) the role of the company medical officers in solving these conflicts.

Research framework

Figure 4.8 Company medical officers



Central questions

1. What is the relationship between work-related conflicts and illnesses, and what is the company medical officers'' role in this?
2. What are the opinions held by the four groups with regard to the relationship between work-related conflicts and illnesses on the one hand, and the company medical officers' role in this on the other?
3. What are the major similarities and differences between the sets of opinions held by the four groups involved?

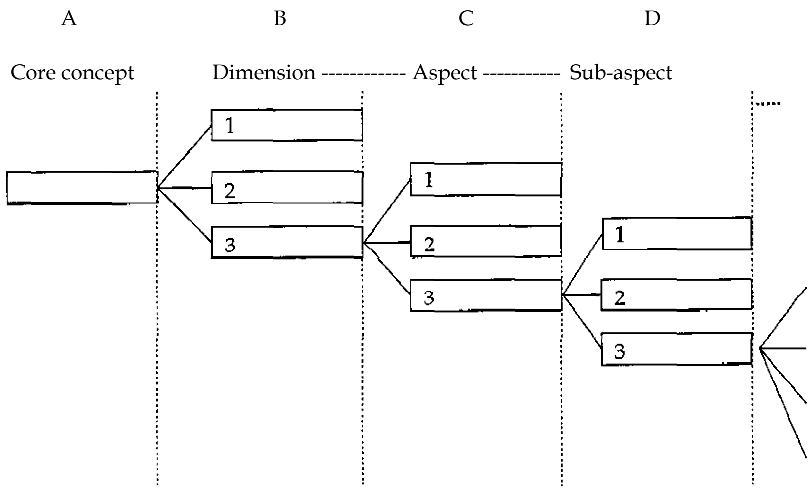
4.5 UNRAVELLING KEY CONCEPTS

A third specific methodology that is particularly suitable for subdividing a central question into sub-questions concerns the unravelling of key concepts. This specific methodology is multifunctional. The researcher will have to use it when demarcating the scope of the research (see Chapter 5), when specifying the conceptual model - which is also a form of demarcation - (see the Appendix), and when operationalising the core concepts.

The method of unravelling boils down to unfolding a particular phenomenon, labelled by a core concept, into either (a) dimensions and aspects, (b) parts and sub-parts or (c) classes and sub-classes, categories and sub-categories or types and sub-types. Unravelling in (a) dimensions and aspects is applicable when we deal with an abstract and theoretical concept, such as intelligence, social and economic environment, social empathy, and so on. To unfold a phenomenon into (b) parts and sub-parts is often possible when we focus on physical objects, such as a building, a vehicle or a logistic system. A division into classes and sub-classes (c) is mainly relevant in concepts which concern phenomena that show substantial variety in reality, such as staff, cars, trees, school types. Applied to the formulation of central questions and the derivation of sub-questions from central questions, the technique of unravelling involves selecting the key concepts in the (b) part of the research objective or in one of the central questions and, subsequently, subdividing this concept into various dimensions or aspects, parts and sub-parts, classes and sub-classes, and so on. This is especially effective when we are dealing with complex key concepts including a great diversity of phenomena from reality. We gave a few examples of these concepts above. Other examples of complex concepts are political commitment', 'secularisation', 'social integration', 'production system', 'workplace', 'electronic highway', 'sustainable farming' et cetera. A practical instrument for unravelling key concepts is the drawing of a *tree diagram*. Such a diagram evolves from the ongoing unravelling of a phenomenon. In this way a structure emerges with many branches, similar to a tree. The elements in the tree diagram, namely dimensions and aspects, parts and sub-parts, classes and sub-classes, are placed in a box. Next these boxes are connected by simple lines (see for example Figure 4.9). This results in a tree diagram, sometimes called taxonomy. As an example we have presented a tree diagram of dimensions and aspects. A similar diagram can be made of parts and sub-parts, classes and sub-classes.

The line which links two boxes is called a *connector.* This connector stands for 'is a dimension of' or 'is an aspect of', or 'is a part or sub-part of', or "is a class or sub-class, a type or sub-type, a category of sub-category of'. One reads a tree diagram from left to right. Therefore, the information in the right hand box is a dimension or aspect, part or sub-part, class or sub-class, type or sub-type, category or sub-category, of the information in the left hand box. Figure 4.9 conveys that in this example Bl, B2 and B3 are dimensions of A, and that Cl, C2, and C3 are aspects of B3.

Figure 4.9 Example of a tree diagram (core concept, dimension, aspect and sub-aspect)



It is very simple to apply the technique of unravelling to derive questions and sub-questions. One has to unfold a core concept in the (b) part of the research objective or in a central question by means of a tree diagram. Subsequently, one formulates questions, respectively sub-questions, regarding the aspects, sub-parts, or sub-classes in the right hand side of the diagram. We illustrate this procedure in the following example.

Example 'Information technology'

Project context
The accounting department of an insurance company processes policy and claim forms. Recently a new information system was developed for processing these documents. In spite of the efforts made by the parties involved, the project was not successful. For technical reasons the system could not be implemented in several departments. In the departments where the system was actually implemented, it did not function well and staff members were very unhappy with the results. The probable cause for this failure was the lack of co-ordination between the parties involved in the development of the system.

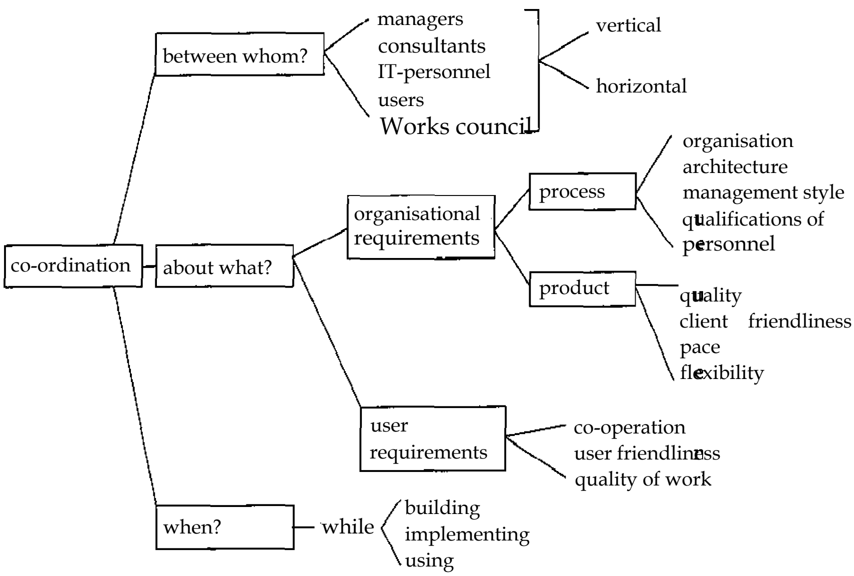
Research objective
To make recommendations to the Head of the IT department for improving the implementation of information systems *by* providing insight into the nature, the extent, and the causes of the co-ordination problems between the parties involved.

First central question
It may be evident that this is a diagnostic research project. The first central question is: which factors influenced the origin and continuation of the co-ordination problems before, during and after the development of an information system?

We recognise 'co-ordination' as the key concept in this central question. Please note that the concept 'co-ordination *problem*' is *not* the core concept in this case. The core is 'co-ordination': we want to know which elements this broad concept contains, and the problem could regard each of these elements. Afterwards, we can identify the problems concerning the distinct aspects and parts of co-ordination. There are usually many ways to unravel such a concept and, obviously, when adopting the desired approach, you are mainly guided by the research objective and the project context. However, there is no single best taxonomy of a concept. Pragmatic considerations too may be important in the unravelling process, such as the researcher's (or supervisor's) preferences and interests, as well as the issue of the research material that the researcher intends to gather (see also Chapter 7). In the current research project the emphasis is placed on the following three parts of co-ordination: (1) 'between whom' (2) 'about what' and (3) 'when' does co-ordination take place? Each of these parts can be broken down into various sub-parts. After a study of the project context and an initial orientation of the literature about organisational issues concerning information technology the concept of 'co-ordination' is subdivided into a tree diagram (see Figure 4.10).

There are many aspects that need to be considered when co-ordinating an information process. In view of the necessary delineation of a thorough research project, we can choose from the many options that usually become apparent after unravelling the key concepts. We do this by pretending to cover the tree diagram with a grid. Based on priorities resulting from the research objective and the central questions, in combination with the researcher's own expertise and interest, the following selection can be made from all the sub-parts that are distinguished. As to the question between whom the co-ordination is to take place, the choice for example can be made of *vertical* co-ordination, i.e. between *all five* parties referred to in the diagram. For the subject of co-ordination, the focus is on user requirements, and within this context on *user friendliness* and on the *quality of work.* Regarding the stage of system construction which co-ordination refers to, we opt for the stage in which the systems are being *built*, based on the set of research questions. This means that several options have been left out, i.e. (a) *horizontal* co-ordination, (b) *organisational requirements,* (c) the *co-operational* aspect in the use of systems and (d) the stages of the *implementation* and *use* of the systems.

Figure 4.10 Tree diagram of 'co-ordination' in connection with the development of a computer system



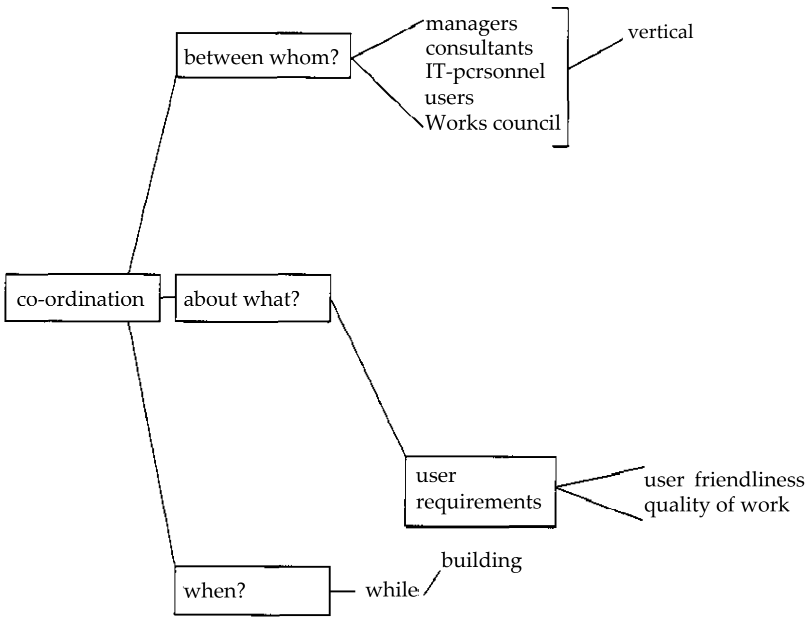
The following diagram (Figure 4.11) shows the selection of sub-aspects to be examined. These choices are important in connection with the feasibility of the research project.

We have now reached the essential part of this section: the formulation of effective steering sub-questions. Based on the subdivision in the above tree diagram and the choices indicated/ we find the following series of sub-questions:

1. What vertical co-ordination is required between managers, consultants, IT specialists, users and the works council?
2. What bottlenecks can be identified in connection with user friendliness?
3. What bottlenecks can be identified in the area of the quality of work?
4. What bottlenecks can be identified when *building* the information system?

The reader should check for himself or herself whether this is a steering set of research questions. Indeed, the sub-questions provide much more information on the data to be gathered than the central question from which they have been derived.

Figure 4.11 Parts and sub-parts of the concept 'co-ordination' that need to be studied in more detail



Assignment "Company medical officers'

Research objective

To make recommendations to B about the organisational policy for improving the company medical officers' role in work-related conflicts *by* providing an overview of the opinions held by the four groups involved (the company medical officers, the employees, their superiors, and the HRM staff) with regard to the influence of work-related conflicts on the illnesses of the employees, and with regard to the company medical officers' role in solving these conflicts.

a. Make a tree diagram of the concepts 'work-related conflict' 'type of illnesses' and 'role of the company medical officer'. In doing so distinguish between - optional - dimensions, aspects and sub-aspects, parts and sub-parts, classes and sub classes, types and sub-types, categories and sub-categories.
b. Select from each of these tree diagrams the aspects and sub-aspects, parts and sub-parts, classes and sub-classes, types and sub-types, and categories and sub-categories that will be part of your research project.
c. Formulate relevant sub-questions for each of the selected elements.

A step-by-step approach based on an example: Set of research questions

After this explanation about the way in which an efficient and steering set of research questions can be developed, we will summarise this in a step-by-step approach.

Set of research questions

Central questions

There are two ways of formulating central questions. Both methods may even complement each other.

Subdividing the research framework

1. Formulate the central questions of the research project by using the method of subdividing the research framework,

Or

Identifying corroborative types of knowledge

la. Decide which *type(s) of knowledge* is/are relevant in view of the research objective. Make use of the research framework,

lb. Formulate one or more *central questions* of this type or these types of knowledge that play an *immediate corroborative role* in realising the research objective. Check whether the answers to these questions provide the knowledge that is necessary or useful for achieving the research objective (efficiency).

Sub-questions

Either the method of corroborative types of knowledge or the method of unravelling key concepts can be used. These methods may even effectively complement each other.

Corroborative types of knowledge

2. For each central question, find the corroborative knowledge and formulate *sub-questions of* this type of knowledge. If you come across a 'higher-ranking' type of knowledge than that of the relevant central question, formulate either a 'higher ranking' central question, or another sub-question, or both.

And/or

Unravelling of key concepts

2a. Select the relevant key concepts in the central question at hand.

2b. Using a tree diagram, unravel each key concept into components. The making of a tree diagram is often based upon relevant literature.

2c. Select the aspects and sub-aspects, parts and sub-parts, classes and sub-classes, types and sub-types, and categories and sub-categories from the tree diagram on the basis of feasibility of the research and formulate a sub-question for each component,

Iteration

While carrying out the steps mentioned above, determine *continually* whether the set of research questions thus obtained induces a change in the research objective or research framework. If so, make these adjustments and repeat the steps of this step-by-step approach.

If one chooses to follow the first alternative of subdividing the research framework during the first two steps, the step-by-step approach consists of three steps, as the reader can see. If one chooses the second alternative, i.e. corroborative types of knowledge, then the procedure consists of seven steps. In short, the step-by-step approach contains at least three steps and at the most seven steps.

Set of research questions 'AGB/JOVA'

Finally, we will apply the plan of action to the AGB/JOVA example mentioned in the introduction to this chapter. In this example we will make use of a diagnostic gap analysis, introduced earlier in this book. In principle, a diagnostic gap analysis requires a causal model, also indicated as conceptual model. The latter phenomenon is elaborated in the Appendix.

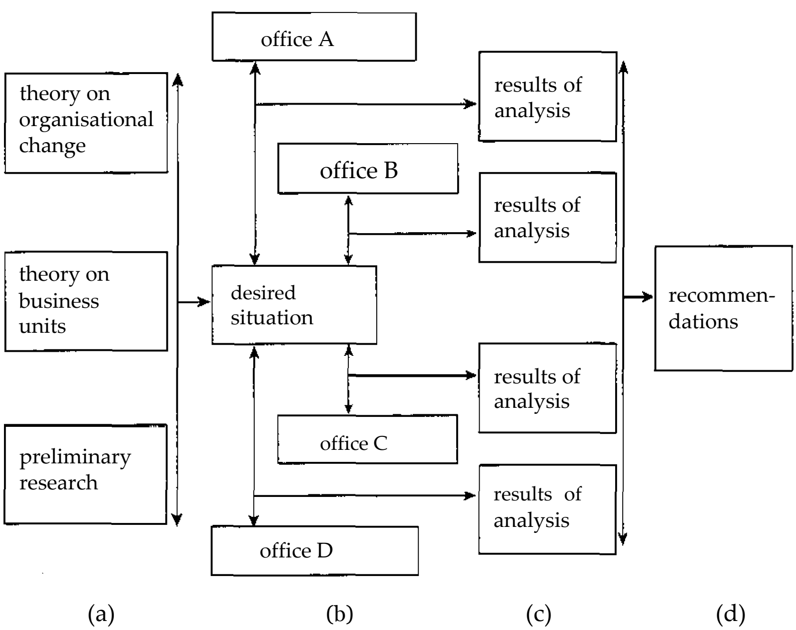
Step 1: Central questions

In order to formulate the central questions in this example, we chose to use the method of subdividing the research framework. Hence, the method of corroborative types of knowledge will not be covered.

We repeat in Figure 4.12 the research framework of the research project 'AGB/JOVA', which we presented earlier (see Chapter 3, Figure 3.9).

The research objective is to make recommendations for the successful implementation of business units in the organisation by assessing the current situation in four regional offices with regard to the critical success factors for the implementation of business units. This means that the researcher will compare the existing practices in the four offices of AGB/JOVA with the situation which is - according to the existing literature - desired in order to successfully implement the business units. We labelled this type of research earlier as a *diagnostic gap analysis* (see Chapter 3). The critical factors of success mentioned above are factors that are of crucial importance to, i.e. have an effect on, something we would like to achieve. In this example the researcher wants to contribute to the implementation of the concept of business units. A diagnostic gap analysis means that we distil from theory how we can implement business units successfully, and subsequently, compare this desired situation with the current situation in AGB/JOVA. The gap between the desired and the current situation directly indicates what needs to be done in order to improve the implementation in the organisation (see Figure 3.4 on page 77).

Figure 4,12 Research **framework AGB/JOVA**



On the basis of the method set out in Section 4.1 for formally deciding on the subjects for the central question, we can now formulate the following questions:

1. What are the relevant critical success factors, i.e. the desired situation, for implementing the business unit concept at AGB/JOVA?

2a. How will the actual situation with regard to these critical success factors be described in the four regional offices?

2b. How will the actual situation be assessed in the light of these critical success factors in the four regional offices?
3. What are the main similarities and differences between the four diagnoses in the regional offices in terms of critical success factors?

Once we have formulated the answers to these questions, we have probably gained the promised insight into the conditions for a successful implementation, so that the research objective can be achieved. Note that these central questions show a similarity to the stages distinguished in the research framework (see Figure 4.12): central question 1 = (a); central question 2a and 2b = (b); central question 3 = (c); research objective = (d).
It appears that we have completed the formulation of the set of research questions. However, the problem is that the core concepts mentioned in the central questions are often complicated or abstract. Therefore most of the time, they do not meet the criterion of steering. That is why we should formulate a set of sub-questions with a more steering nature.

Step 2: Sub-questions
Since each of the central questions in this example is of a descriptive type, the lowest ranked in the series of types of knowledge and, generally, the most steering one, the method of corroborative types of knowledge will not be very helpful for improving the steering function. For this reason we chose to use the alternative, the method of unravelling the core concepts. The reader will notice that this method will help the researcher substantially!

Step 2a: *Core concepts*
The first central question in our example refers to relevant critical factors for a successful implementation of business units. The literature referred to in the research framework suggests that there are two sets of relevant critical factors, i.e. the design of the business units-concept and the management of organisational change. In order to improve the steering function of the central questions it seems to be useful to unravel both core concepts: 'design of business units' and 'management of organisational change'

Step 2b: *Tree diagrams*
For each core concept, the researcher has to determine the relevant dimensions, aspects and - if appropriate - sub-aspects. In order to do so he or she will make use of the technique for making a tree diagram. As stated before, studying the relevant literature may be useful. Hence, the researcher searches for the scientific literature in which definitions and elaborations of the core concepts can be found. In this research project the researcher has to study the relevant literature on business units (for example, Wissema, 1992) and on organisational change (for example, Groote, Sasse, & Slikker, 1990). The unrav-

elling of the concept 'design business units' is presented below in Figure 4.13. The researcher chooses the following unravelling of the concept 'management organisational change' (see Figure 4.14).

Figure 4.13 Tree diagram for the concept of 'design business units'

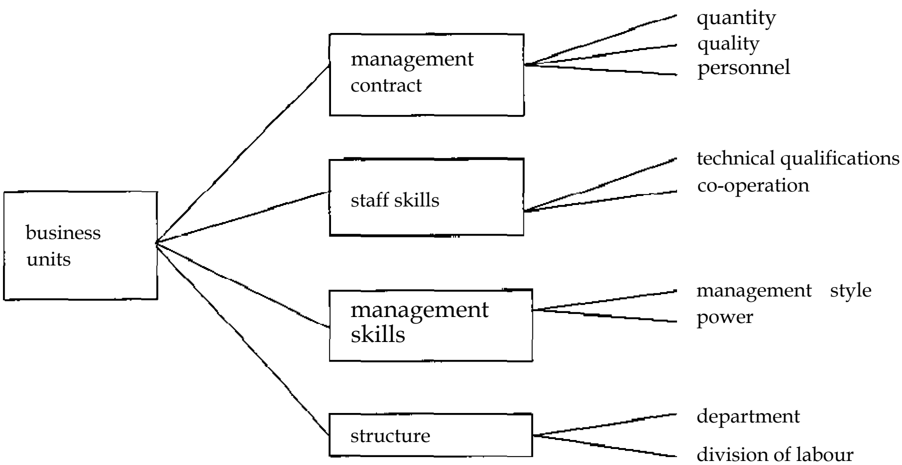
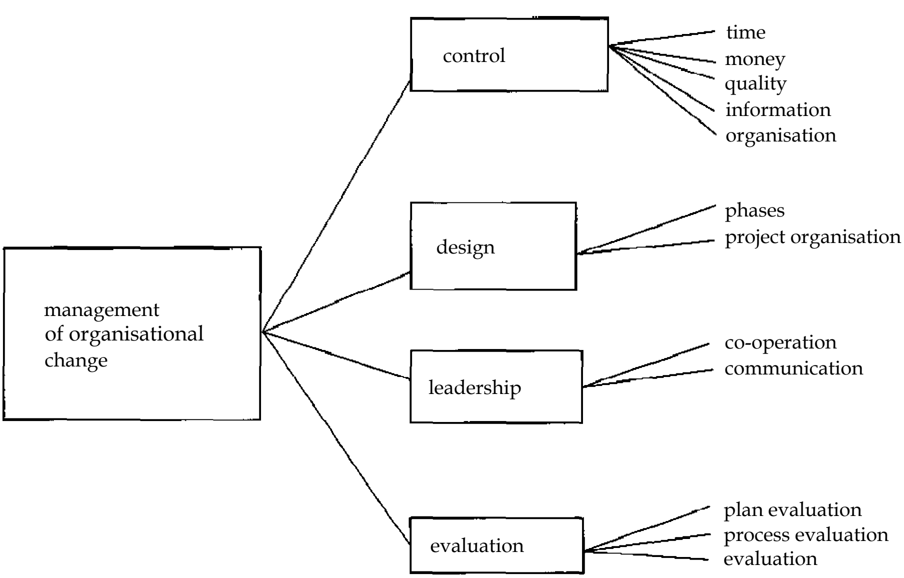


Figure 4.14 Tree diagram "management of organisational change"



Step 2c: *Selection of aspects*
It is not possible to include all the aspects and parts identified in the various tree diagrams in the research project. Therefore, the researcher has made a well-though-out and well-justified choice. In order to do so, he or she has checked again the project context and the research objective and has consulted - as part of the preliminary research study - a few experts in this field concerning the selection of the aspects and parts to be studied. It became clear that the commissioner of AGB/JOVA was particularly interested in the question of whether the level of staff and management skills in each of the four local offices was high enough to successfully implement the concept of business units. In addition, the researcher found out that it was important to know whether the management was able to both control the risks regarding time and money, and to design the change project adequately. Therefore, the researcher decides that the focus of the research will be on the aspects 'management skills' and 'staff skills' of the core concept 'designing business units', as well as on the elements 'time management', 'financial control", 'phases' and 'project organisation' of the core concept 'management of organisational change'.
Now that we have made these choices, we are able to present the influence of these aspects and parts on a successful implementation of business units in Figure 4.15.

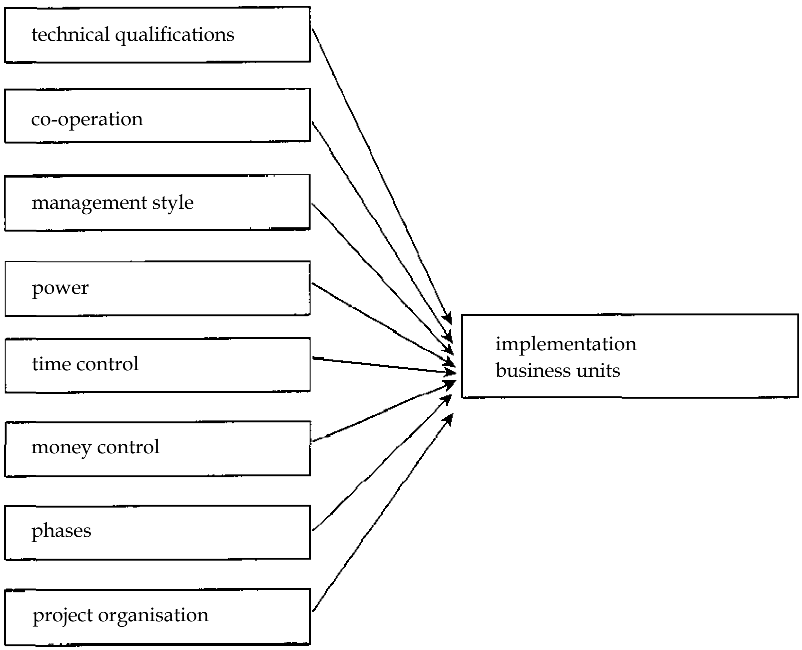
For each of these aspects from the domains 'business units' and 'organisational change' we can formulate sub-questions. These sub-questions are in the domain of:

a. what does the theory state about it, i.e. prescribes or recommends. These are the sub-questions of the first central question;
b. the current situation in AGB/JOVA with regard to the selection of aspects. These are sub-questions of central question 2a;
c. the gap between (a) and (b) above with regard to these aspects. Here we will have sub-questions regarding central question 2b;
d. the similarities and differences between the results of analysis in each of the four local offices, i.e. sub-questions of central question 3.

This would, for example, result in the following sub-questions for central question (1):
What does the theory state about the desired situation with regard to:

1.1 the technical qualifications of the staff?
1.2 the co-operation between staff members?
1.3 the leadership style of the management?
1.4 management power?
1.5 time management?
1.6 financial control?
1.7 the project phases?
1.8 the project organisation?

Figure 4.15 Diagram of the selected aspects of 'design business units' and 'management of organisational change' as critical factors of success regarding the implementation of business units



The sub-questions of central question 2 read as follows:
What is the current situation in each of the four local offices of AGB/JOVA regarding:

1.1 the technical qualifications of the staff?
1.2 the co-operation between staff members?
1.3 the leadership style of the management?
1.4 management power?
1.5 time management?
1.6 financial control?
1.7 the project phases?
1.8 the project organisation?

The sub-questions regarding the central questions 2b and 3 can be formulated analogously.
As the reader can see, these sub-questions clearly indicate the activities that are needed in the research project regarding the central questions. In particular, it is clear now which observations need to be done in AGB/JOVA, in other words, which data needs to be collected or generated.

Step 3: Iteration
As part of an iterative approach, the development of the above set of research questions has further accentuated the research objective and the research framework of the research project at hand. In other words, we now have a set of steering research questions. More specifically, it has now been explicitly stated that the researcher is focusing on the internal organisational critical success factors and that staff skills, management skills, control and the planning of change are the focus of attention.
The adjusted research objective is as follows.
To make recommendations for a successful introduction of business units by assessing the current situation in the four local offices in view of the critical success factors regarding the implementation of business studies, particularly as to 'technical qualifications of the staff' 'staff co-operation' 'leadership style', 'management power', as well as 'time management', 'financial control', 'phases' and 'project organisation'.

5 DEFINING CONCEPTS

The most fundamental concepts in science are basically simple and can usually be formulated in a way to make them comprehensible to everyone.

Albert Einstein

5.1 INTRODUCTION

Now that we have a clear and feasible research objective, a conveniently arranged research framework and a set of central research questions and sub-questions, it may appear that now we can start to construct the technica l research design. However, one intermediate step still needs to be taken and that is defining and elaborating the key concepts of the project. Apparently these concepts do not only have a major influence on the progress of the research project but, to the detriment of the steering capacity of the research questions, they can be defined in many different ways as well. When we speak, we rarely worry about the exact meaning of the concepts we use. Usually, an instinctive and general idea of these concepts is enough for us to hold a meaningful conversation. In the case of empirical research, however, the researcher will soon lose her or his way if the researcher fails to describe the relevant key concepts accurately. The reason for this is that the conceptual design needs to be translated into concrete research activities. This is a 'culture shock' for most beginner researchers. For example, high school students as well as college and university students are often well trained in writing essays and short assignments. Generally speaking, these essays are based upon literature study and a logical line of reasoning. In these cases, there is no need to translate the key concepts into a set of observations. The student can restrict his or her writing to an intuitive and generic understanding of the concepts used. In order to make clear that the use of concepts is totally different when applied in *empirical* research, we present the following example.

> Example 'Unemployment'
> You are studying sociology and your specialisation is research methods and techniques. You are carrying out your master's thesis project for a local authority. You have been asked to participate in a large-scale research project which will result in providing the knowledge and insight needed for developing an

unemployment policy for that particular area (external goal). You have been assigned a well-demarcated part of the research project which will contribute towards answering the following question (internal goal):

What factors have contributed towards long-term unemployment in the area concerned?

In order to find an answer to this question you decide to interview a large number of people that have been unemployed for a long time. By doing so, you hope to obtain information on matters such as age, level of education, possible disability, interests, skills, philosophy of life, social contacts, and so forth. As you are enthusiastic and inexperienced, you immediately start gathering research material. The first person on your list is a woman who regularly does house-keeping for twenty hours a week. She is the mother of four children and also looks after her invalid mother. She is not interested in doing extra work. Should she then be considered unemployed? Generally speaking, is any person who has a partner and who works for their upkeep unemployed? And how should you judge a person who is working part-time, for example, four hours a week? How does such a person qualify in terms of working hours and is such a person employed or unemployed?

As soon as you have determined the criteria for qualifying, you will find more and more examples that may leave you feeling confused, such as the case of a person who works full-time as a community service volunteer. Then there are those who are disabled or on long-term sick leave, or who have been residing abroad for a long time. On the list of names from the municipality you even find the names of a number of criminals in prison! As far as your information is concerned, they have all expressed the wish to have a job, but to what extent is this wish a genuine one? In short, you are still unclear about which individuals should and which should not be considered unemployed and, consequently, who you are going and who you are not going to interview.

Moreover, you are also uncertain about the exact nature of the target group in relation to the policy that is still to be formulated. The objective of the larger project in which you are participating is to develop a public information campaign for the unemployed with a view to increasing their chances of work. All the above is part of the unemployment policy that is to be developed in the region concerned. Your question is whether this should include the so-called hidden unemployed, meaning those people who would like to have a job, but who do not express this desire as they are convinced they do not stand a chance. Therefore, you also require an unambiguous description of the concept "unemployment'.

The example above clearly illustrates the differences between the need for clarity in everyday conversations and in writing a reflective essay, as well as in empirical research. Whereas we do not feel the need for a precise description of concepts when making conversation at a party as this may spoil the ambience, we do find it necessary when carrying out a research. Without having an exact definition of the key concepts we do not know where and what to look for in the library and in when undertaking fieldwork, and thus we do not know what our research project should focus on. However, the situation is not all that dire. Usually, important insights into the subject matter emerge while searching for definitions. In a way, you have in effect started your research project by defining the key concepts. We generally believe that during the designing of the research project the production of knowledge has, in fact, already begun.

The researcher could ask herself if she should concern herself with defining key concepts at this stage of the research project. Should one not postpone this to a later stage when carrying out the research project? This type of procrastination haunts most fledgling researchers. It is easy to understand that this does not have a favourable effect on the actual research project. The way in which you address the research issue is greatly determined by the significance of the key concepts used in the set of research questions. As a consequence, the significance of these concepts partly determines the type of knowledge to be generated during the project which, in turn, determines the answer to the question if, and to what extent, the knowledge generated contributes to achieving the research objective. If people who are unemployed in the example above are defined as 'people who are registered at the job centre', you will definitely exclude the hidden unemployed. As a result, the unemployment policy to be developed may be adversely affected. We are dealing with a politically sensitive issue on which you must decide at an early stage. The longer the researcher waits the more probable it is that her or his work will turn out later to be useless, or to focus on irrelevant research results.

But, even without making a conscious or subconscious *selection* when establishing the significance of key concepts, the significance attributed may have consequenccs on the conceptual design. It is possible that you may stumble on unexpected phenomena during the process of making appropriate definitions which demand a change in the research objective and/or in the set of research questions. Furthermore, Chapter 7 will clearly demonstrate that the significance you attribute to the key concepts will strongly determine the type of material you need to gather. Therefore, we conclude that the initial definition of key concepts cannot be postponed until the implementation stage, except of course in those cases in which it is the research objective to find an adequate definition of an initially vaguely defined concept. This is sometimes the case in qualitative research. In all other cases, a generic description or definition of the core concepts must serve as an integral part of the *iteration* process when designing research.

Formulating stipulative definitions

The following question is how you can find the appropriate descriptions of concepts and which formal criteria these definitions should meet. The answer to this question greatly depends on the nature of the research project. In theory-oriented research, the researcher will usually find well-detailed and sound definitions in the specialist literature which are perfectly useful. But in practice-oriented research in particular you are advised not to adopt the definitions given in the relevant literature without further elaboration, as the descriptions of concepts are usually too general, too complex and/or too abstract for this research. These words of warning could, for example, prevent you from carrying out a research project that cannot be concluded within the time limit stipulated, and or, cannot be conducted in a methodologically adequate way.

In this chapter we will provide the reader with a solution by formulating *stipulative* definitions, such as '...for the purpose of this research issue a ... is understood to be...' and so on. Typical of stipulative definitions is that neither the truth, nor an accepted formulation is a criterion for their adequacy, as is usually the case with definitions. Only the *usefulness* of the selected definition is relevant. This means that in the process of defining the core concepts one cannot simply use a description found in a dictionary or in literature. The researcher has to formulate a definition that fits within the purpose of the research. Most often this means, among others, that a definition with a reduced content of the concept at hand has been formulated. This is part of a delineation of the research project that most often is needed for practical reasons. Many beginner researchers resist doing this. They feel more at ease copying existing large and abstract definitions from the literature. Nevertheless, it is very important that they learn to overcome their inhibitions at this point.

The criterion of usefulness raises another question, namely how to define the concept of usefulness in this context. The following conditions have to be met in a stipulative definition:

a. *delineating* the concept to manageable proportions;
b. clarity on the question of which *observable* entities are covered by the definition; and
c. *a linking up* to the research objective and the set of research questions.

We will discuss the delineating aspect of stipulative definitions in Section 5.2. The subject of formulating definitions in observable entities will be discussed in Section 5.3. We will focus on adjusting definitions to the research objective and the set of research questions in Section 5.4.

5.2 DELINEATION

The reader may think that the delineation of a research project does not start until a technical research design has been constructed. The reasoning here is that it is only at this stage that the researcher determines what and how much material will be gathered and what will subsequently be done with it. However, this is a common misconception. In the course of this section it will become clear that an effective delineation of a research project is foremost a matter of conceptual design and it is related to a far lesser extent to the *technical* design.

In Chapter 2 the reader was introduced to the primary delineating activity which involves establishing the targets within a project context and identifying a well-defined research objective. In Chapter 4, we restricted our material to converting several subdivided components in the tree diagrams into research questions, and not doing this with others. By doing so, we implicitly narrowed down the set of research questions. In the following section, we will demonstrate how to make a systematic and reliable delineation in the set of research questions. This can be done by delineating key concepts in the set of research questions through the formulation of stipulative definitions. For this purpose, we will make a distinction between the *domain* and the *assertion* of a research question. What is also important in this context is the method of *unravelling* and *clarifying by using a tree diagram*, which we demonstrated in the previous chapter. The next two sections will cover these two subjects.

Domain and assertion

Central in this section is the size of the research project, which is to be kept within feasible limits. The size of a research project refers to all the activities that are to be carried out to obtain *valid* and *reliable* answers to the research questions. To understand the ways in which you can limit the size of a research project by means of stipulative definitions of concepts, and the mechanisms involved, it is important to make a distinction between the domain and the assertion of a statement, i.e. a hypothesis or a question. The domain is that part of the real world about which you want to say something on the basis of the research project. The assertion is what you want to say or make known about this domain. In the statement 'ravens are black', for example, 'raven' is the domain and 'are black' is the assertion. If we turn this statement into a question, i.e. 'are ravens black?' we still call 'raven' the domain and 'are black' the assertion, despite the fact that in this case the correct description would be query, instead of assertion.

Assignment domain and assertion

Which part or parts of the following statements form(s) the domain, and which part(s) form(s) the assertion?

- Most people find clerical texts difficult to understand.
- The level of education in the Netherlands is high.
- Are the peaches of Portugal yellow or beige?
- I would like to know whether the neighbourhood A is as unsafe as people sometimes claim.
- Germans consider the condition of the Dutch highways to be poor.

The next step is to demonstrate how this distinction between domain and assertion relates to the size of a research project. Compare, for example, the following two statements:

- Sail boats can reach a maximum speed of 25 kilometres per hour.
- Pleasure boats usually have favourable sailing qualities.

Let us assume we turn these two statements into hypotheses that we want to test through research. It is clear that the number of activities required verifying the second hypothesis is much higher than for the first hypothesis. There are *two* reasons for this. In the second hypothesis, both the domain and the assertion are much more comprehensive than in the first hypothesis. Sail boats are a subset of the set of pleasure boats (domain), whereas speed is only one of the many qualities pleasure boats may possess (assertion). Other qualities include: manoeuvrability, steadiness, stability, comfort, and so forth. This means that, in order to verify the correctness of these two hypotheses, we need far more information for the second hypothesis than for the first. Not only do we need to examine more types of pleasure boats, but we also need to know much more about each of these boats. Let us assume that we have decided to gather information from the boat owners by means of an interview. Not only would we need to conduct many more interviews in the second case, but each interview would also take more time. In general, we can say that the Sise of a research project can be expressed as a *multiplication* of the number of units in the Domain and the number of qualities the Assertion refers to. In symbols:

$$\boxed{S = D \times A}$$

The multiplier in this formula implies that extending the domain or the assertion has considerable consequences for the size of the research project. Our conclusion is that we can reduce the size by delineating either the domain or the assertion, or both. For example, narrowing the domain may reduce the investigation area. Hence, you can cut down on travelling time. For example, if you decided to study the unemployment only in the Dutch EU-region known as 'KAN', you would need less travelling time, all other conditions being constant compared to the situation in which you have decided to expand the research project to the Netherlands in total. If you narrow the assertion, it may suffice to use brief questionnaires that can be sent by mail or dealt with by telephone, instead of arranging long interviews.

The sum total of all the domains of all the research questions altogether is sometimes labelled the research population or simply, the *population.* The population is that part of reality the researcher wants to make statements on, based upon the results of a research project. Starting researchers often like to choose large populations, and therefore they dislike delineation. They fear that delineation would lead to less valuable research results. More specifically, they are afraid that delineating deduces the possibility of generalising the research results to greater domains, that is to say, larger populations. In other words, they fear that the external validity of their statements will diminish. Principally speaking, this is correct. However, that is the price you pay for good research. Apart from striving to be able to make general statements, scientific research should also meet the demands of *internal* validity. If researchers fail to delineate the research project substantially, they could not make any valid statements at all. They would experience great difficulties in finding empirical evidence for the research results obtained (here: the answers to the research questions). To put it differently, the *internal* validity will diminish or even disappear, and subsequently the external validity too. Therefore, when designing a research project, the researcher is better off deliberately demarcating the domain and the assertion of the research questions himself or herself rather than arriving in a situation in which critical reviewers state afterwards that they seriously doubt the reliability and the validity of the research results.

Now that we understand what is important in the conceptual design in order to determine the size of the research project, the next question is how we can delineate the domain and the assertion of the various research questions. A useful tool for doing so is the method introduced in Chapter 4 of unravelling and clarifying via tree diagrams. We apply this tool to the concepts in the set of research questions which indicate the domain and the assertion. A research question is delineated by including in the stipulative definitions of these concepts only specifically selected aspects or components from the tree diagram. By doing so you will see that, as a result, the set of research questions will become clearer, more concrete, and that they will have a greater steering capacity.

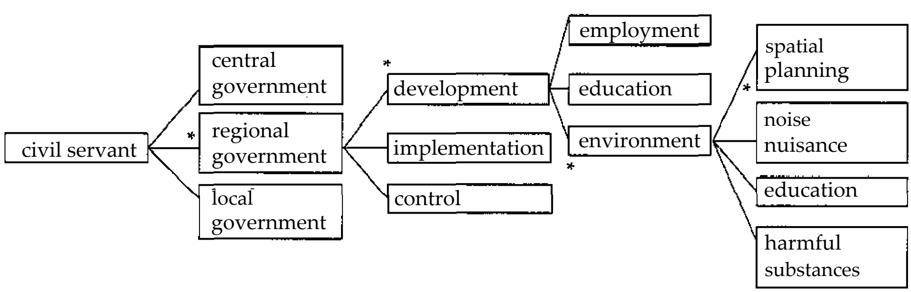
Below, we give an example of unravelling and clarifying of key concepts contained in the domain and the assertion of the set of research questions on the one hand, and of the formulation of stipulative definitions of key concepts which are based on this unravelling and clarifying on the other. In this example, we will only show the *results* of the choices made within this context. Later we will briefly discuss the backgrounds for making these choices.

Example 'Civil servants"
You are a public administration student and you are interested in administrative processes within large organisations. You are particularly interested in the democratic content of the decision-making within government bodies. One of the central questions in your thesis is: To what extent do civil servants have a democratic attitude? The two key concepts in this question are 'civil servant', referring to the domain, and 'democratic attitude', indicating the assertion.

Let us first try to narrow down the domain. As is shown in the tree diagram in Figure *51,* many types and categories of civil servants can be distinguished. Within the context of this research project, we will choose only the categories marked with an asterisk (once again, we will explain the choices later). The above will result in the following stipulative definition of the concept of civil servant:

A civil servant for the purpose of this research is understood to be someone who, at local government level, is responsible for the development of the environmental policy, in particular in the field of noise nuisance'.

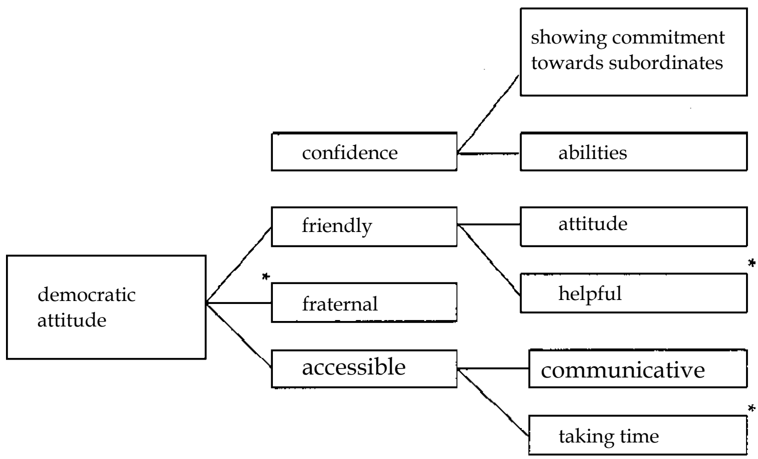
Figure 5.1 Unravelling and delineating the concept 'civil servant'



The concept 'democratic attitude' contained in the assertion can also be narrowed down and attuned to this specific research question by unravelling and clarifying (see Figure 5.2 and the asterisks used). This will result in the following stipulative definition:

Tor the purposes of this research project a democratic attitude is defined as the attitude of a person who shows commitment towards his or her subordinates, has a fraternal attitude towards colleagues, is helpful towards subordinates and takes time for them/

Figure 5.2 Unravelling and downsizing the concept 'democratic attitude' of civil servants during work



In the above example the reader can see that with respect to the concept of civil servant, a number of specific *categories* of civil servants have been selected using the tree diagram. The researcher may, of course, also include all of the categories mentioned in the diagram in the research project. Apart from the question of whether the researcher is interested in all these types of civil servants or whether they are of any interest at all with a view to your research objective, there is one major drawback to this choice. The population, the collection of potential research units, is very wide and varied. The researcher would have to carry out a random sample survey. But still the question would remain whether all categories mentioned in the diagram would be sufficiently represented to portray all of the varieties and differences.

The research project would be much more interesting if the researcher confined himself or herself to a specific type of civil servant. Delineating the research domain makes it easier, if not feasible, to acquire sound and new knowledge.

The second diagram also shows that the assertion has been narrowed down considerably. If we wish, a democratic attitude may include much more than what we have chosen in the stipulative definition. But, if we choose to do so, we would need to ask many more questions when interviewing people. It is uncertain whether this is necessary considering the objective that is chosen. If it is, it may cause the researcher to narrow down the broad research objective on account of the feasibility and internal validity of the research project.

As stated before, the domain of a research question can be made feasible by selecting specific parts and sub-parts, species and sub-species, types and sub-types, categories and sub-categories. Please make sure that the selection of dimensions and aspects does not play an important role in the delineation of the domain. However, they are important in the demarcation of the assertion, because these concepts are often complex, abstract and characterised by a high theoretical level. In addition to what has been said, another demarcation of the domain is always needed, regardless of the type of research question. This concerns the specification of *place* and *time.* For example, in the example with the pleasure boats, it is important to specify the geographical area and the time span of the research project. Are we dealing with a local, regional, national or international research project? Will it be a research project conducted at a given moment in time, and which moment will it be? Or, does the research concern a particular time period, either in the past or in the future? Please, make sure to precisely stipulate the years, or even months, weeks, and days! The designer of the research project needs to be realistic in this case, in order to prevent invalid or weak research results.

Assignment stipulative definition

Below are three examples of a research subject.

1. Learning problems of students in Dutch education.
2. Leadership styles in different organisations in Germany.
3. The social climate in UK prisons.

Assignment

a. Select one of the research subjects that interests you most.
b. Determine the domain and the assertion of this subject,
c. Use the tool of making a tree diagram to unravel and to clarify both the domain and the assertion of the research subject chosen.

5.3 OPERATIONALISING

In the introduction, we mentioned a second condition that is required for making a *workable* formulation of the key concepts. It concerns the *perceptibility* of what is called in the stipulative definition the 'characteristic of a phenomenon'. More specifically, it is important to indicate when, or under which conditions, a certain concept is applicable in reality. Let us assume, for instance, that power is a key concept in a research project. Now, when does the researcher say that person A has power, and how does he or she assess the extent of this power? To answer this question, one could say for instance that the extent of power a person has is indicated by the number of staff members in a department who require the permission of person A for a specific procedure (the object of power). This number is also called the *indicator* for the concept of power. More generally, an indicator can be described as a sensory observable phenomenon that provides us with information on the (not directly observable) phenomenon to which the concept that is to be defined refers. The process of choosing and accurately describing the indicators for complex and/or abstract concepts is called *operationalising.* Once the indicators have been chosen, the final step is to determine how the values of these indicators can be observed. We are referring to the actual process of measuring (quantitative research) or registration and description (qualitative research). In order to do this, we need (a) a set of instruments and (b) instructions for the researcher to use.

In quantitative research the set of instruments often consists of a series of so-called closed questions, which are questions having a limited number of answer possibilities, to be used in a questionnaire or a pre-structured interview. A closed question offers the respondent a series of possible answers from which he or she can choose. It can also consist of a series of well-described items to be used in a structured observation or in a document analysis. The instructions for the researcher usually help him or her to code and to interpret the observations. This entire process is often called *measurement.*

In qualitative research the set of instruments often consists of a series of so-called open questions, which are questions lacking a pre-structured set of answer possibilities. Alternatively, it could also consist of a list of topics to be used in an in-depth interview. Sometimes the researcher uses a set of observation assignments which can be used while observing the research phenomena or while analysing textual and audiovisual material. The instructions help the researcher to carry out the interviews, the observations, or the analyses of documents successfully.

It is only on rare occasions that the dimensions and aspects that have emerged as points to be studied during the unravelling and clarifying are directly measurable or observable. Then these categories and aspects need to be operationalised by finding indicators. Roughly speaking, there could be two different reasons why the aspects mentioned in a stipulative definition do not meet the criterion of perceptibility, therefore necessitating further operationalising.

The first reason is that the interpretation of certain concepts or aspects thereof is strongly associated with prevailing opinions, standards and values. We then need *criteria* to be able to decide whether the concept or aspect concerned can be applied to a certain phenomenon. In the example of 'unemployment' in the introduction, for instance, the question is under which conditions someone is labelled as unemployed (and therefore entitled to unemployment benefit). Several criteria, for example, that were applicable in the Netherlands in 2008, refer to age limitations, physical or mental disability, or being imprisoned.

A second and for rcscarchers most important reason for operationalising the key concepts is that many of the concepts are so *abstract* that further operationalisation is needed in order to observe or to measure these concepts. Part of a stipulative definition of an unemployed person could be that this person wishes to do paid work. Everyone immediately understands this part of the definition. However, how can we observe in a research project, which focuses on hundreds, maybe thousands of unemployed people, if a person does or does not want to do paid work? Of course, one possibility is to ask this person his or her opinion, by interviewing them. However, if this person states that he or she is not interested in paid work, then this person is not unemployed according to our definition and the action undertaken to contact this person and to conduct the interview will be futile. It will be a waste of time and a nuisance for the people concerned. It is more convenient to choose another indicator for the 'wish to do paid labour', namely whether or not a particular unemployed person is enrolled in a job centre or a temporary employment agency. Of course, it may be that some people are registered as unemployed, but nonetheless are not actively looking for paid work. Or vice versa, it is possible that a person is not registered but nevertheless wants to find work. Both situations restrict the validity of the indicator that is chosen. However, a researcher always has to deal with this kind of uncertainty. No operationalisation is perfectly valid. A compromise must be sought between validity and feasibility.

The analysis above makes clear that a researcher always needs an operationalisation. As the reader knows by now, an operationalisation is a translation of abstract concepts into indicators, instruments and instructions. This is true even when a researcher wants to observe whether or not a person is unemployed, although this is a simple situation in which often only one indicator suffices. However, in other more complex situations the researcher needs a greater number of indicators. For example, if he or she wants to observe someone's intelligence it usually takes an entire day of testing. There are even methods that take two days! The reason is that intelligence is a very complicated and abstract concept that has been the subject of scrupulous theoretical elaboration and testing by psychologists for decades. Hence, the concepts need to be unravelled into separate dimensions, such as linguistic, arithmetic and social competences. Each of these dimensions has to be unravelled into sets of aspects and sub-aspects. Therefore, it takes hundreds of indicators to cover the whole conceptual domain. Moreover, each of these indicators requires a complex set of instruments, such as assignments and tests.

One example of a concept that is rather simple, but nevertheless entails a set of indicators is the concept 'commitment' that an employee demonstrates towards the organisation for which he or she works. Commitment is an abstract concept, in that it is not directly visible. However, we can consider the logical consequences ensuing from it. Generally speaking, if a phenomenon is not observable, it is a useful strategy to consider the observable consequences or effects of this phenomenon in reality instead. If we do this, then operationalising the concept of commitment could result in the following five indicators.

Commitment is the extent to which the employee

1. shows an interest in the organisation;
2. takes initiatives on behalf of the organisation;

3. is concerned about the ups and downs of the organisation;
4. is willing to sacrifice some of his or her interests for the well-being of the organisation;
5. makes efforts to present a positive image of the organisation.

After having selected these indicators, the researcher subsequently needs to transfer them into instruments. In a quantitative research project the most obvious choice would be to ask the employees' opinions through a set of closed questions in a questionnaire or a pre-structured interview. Per indicator we need at least one question. However, if we want to make sure that the set of answers is valid, then we should choose more than one question per indicator. An example of the translation for each of the indicators, mentioned above, into one interview question is the following.

1. Do you ever talk to relatives, friends and acquaintances about the organisation you work for?
2. Have you ever taken any initiative towards making improvements in the organisation?
3. Should the occasion arise, are you prepared to solve or help solve any problems within the organisation?
4. If necessary, are you prepared to accept any inconveniences?
5. To what extent do you speak favourably about the organisation to people from outside the organisation?

Each question offers the respondent closed answering categories, in terms of "always', 'often', 'every now and then', 'hardly ever' and 'never'. These answering categories characterise the questions above as closed questions. Additional instructions are not necessary, since the respondent is able to choose the answer that best suits him or her. We call this system 'self rating' However, if we had decided to formulate these questions as open questions (see below), then we would need to include instructions in order to interpret the answers to these questions systematically and consistently.
In a qualitative research project we could replace the closed questions presented above with semi-open questions which, for example, may start with phrases such as 'to what extent ...' and so on. However, many qualitative researchers prefer an even more open approach. In such an approach the questions serve as a topic list that the researcher wishes to discuss during the interview. It should be clear that such an open approach requires clear interview instructions in order to make sure that (a) the research topics indeed will be brought up during the interview, (b) the expressions of the interviewee are unambiguous and to the point, and (c) the interview results of all the respondents are comparable.

It is possible, on the basis of these five indicators, to obtain a definition for the concept 'commitment'. This can be done by simply including the five indicators in the description, just as we have done with the dimensions and aspects in the definitions found in the previous section. This will then result in a so-called *operational* definition, which reads as follows:

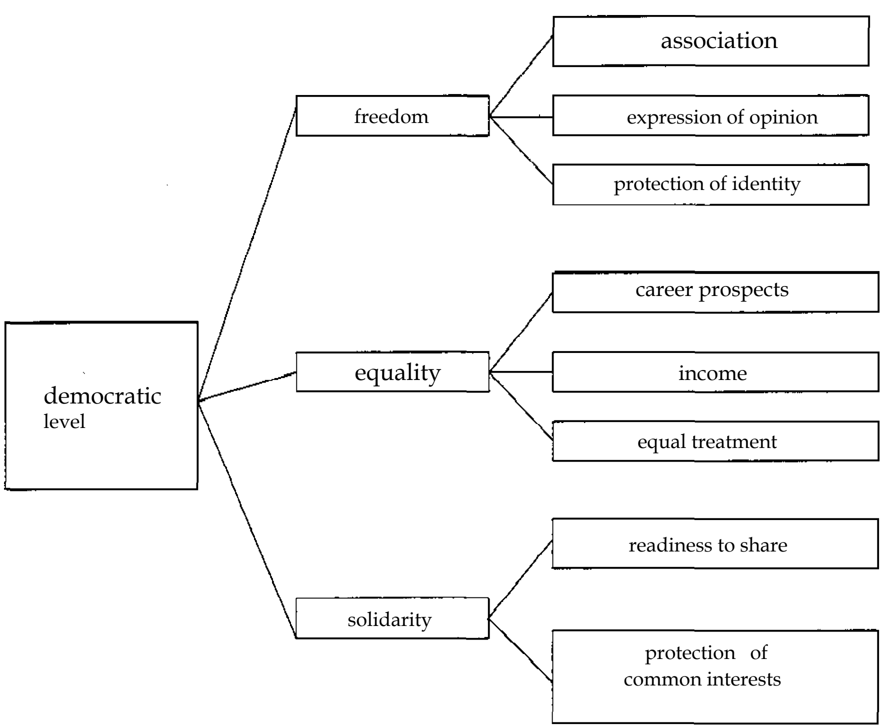
> Example 'Commitment'
> In this study an employee is understood to show more commitment to his or her organisation to the extent that the person in question states that he or she talks about the organisation more regularly, takes more initiatives to make improvements, and is more prepared to solve problems when the occasion arises. He or she is also willing to accept more inconveniences, and speaks more favourably about the organisation.

It goes without saying that the above-mentioned *operational* definition has a stipulative character, for the indicators were chosen on the basis of the research objective and the set of research questions pertaining to the research project. It is not very likely that we will find the exact same indicators in an article or handbook in the field of business administration, although more and more standardised scales can be found in scientific literature. A measurement scale, or in short a scale, is a series of instrumentalised indicators, often called items or scalc-items, that aim to measure a particular abstract and theoretical concept. The five interview questions regarding commitment mentioned above are an example of such a scale.
A concept such as commitment is admittedly rather abstract, but at the same time it is not very complex. For this reason, we can limit ourselves to relatively few indicators. As stated before, some key concepts formulated in a set of research questions turn out to be not only abstract, but also highly complex. This is often the case when so-called theoretical concepts are used, which in principle require more than five indicators. An illustration of such a concept is 'intelligence'. Another less complex example is the concept 'democratic level found in a society'. Such a concept is extensive to the degree that it is wise to first subdivide it into several dimensions and then, subsequently, to subdivide each dimension into a number of aspects before looking for any indicators. It is obvious that a tree diagram would be very useful here. Under the condition that we carry out this activity in such a way that each step in the unravelling leads to *a more sensory observable reality,* then we are allowed to call the elements, located far on the right-hand side of the tree diagram, the indicators. An attempt to do so is shown in Figure 5.3. As the example shows, in the concept 'democratic level' three dimensions can be distinguished: freedom, equality and solidarity of citizens. These dimensions are still quite abstract, and therefore the condition of perceptibility has not yet been met. Each of

these dimensions contains several aspects. When considering the dimension 'equality' for example, we can think of equality between men and women, between the young and the elderly, the native population and immigrants, and so on. These aspects are clearly less abstract than the three dimensions we mentioned earlier, but we still must cope with the problem of perceptibility.

Therefore, we need a further instrumentalisation, for example by way of questions placed in a questionnaire. To this end, we must formulate the questions in such a way that the answers provide clear information regarding how much men and women say that they are equal in a given society Since we would like to obtain an accurate and reliable figure, this can easily result in dozens of questions. For this reason, surveys often contain a large number of questions. Besides, it gives the researcher a good reason for delineating her or his research project.

Figure 5.3 Operationalising the concept ''democratic level of a society'



Assignment operationalisation

a. Make two different operationalisations of the concept 'commitment' one of 'an inmate's commitment to his or her co-inmates' and another of 'a fan's commitment to his or her favourite sport club'.
b. Please indicate the arguments and line of reasoning upon which you have based the differences between both operationalisations.

5.4 LINKING UP TO THE RESEARCH OBJECTIVE

Apart from delineation and perceptibility, we mentioned a third requirement that must be met in order to obtain a useful definition of concepts. This requirement is that the definition must relate to the selected research objective and the set of research questions pertaining to the research project. We will examine this in more detail by using the example 'Civil servants' Let us assume that the research objective of this project is to make suggestions for a training programme for young female civil servants who have obtained a few years of professional experience. The aim is to expand their career opportunities. In that case, the stipulative definition of the concept 'civil servant' the domain in this research question, can be extended as follows:

'For the purpose of the research project a civil servant is understood to be a person who works for the local authorities and who is responsible for developing environmental policy, in particular the policy regarding noise nuisance in the Netherlands, whose employment began before January 2008, who is between the ages of 25 and 35 years old, and is a member of the female sex/

This definition concerns details of *place* and *time,* which are basically standard components for a stipulative definition for the domain of the research question. The year 2008 has been chosen explicitly in order to ensure that only women who have a few years' work experience are included in the research project. Finally, details are provided concerning age and sex. Basically, these types of additions are required in *every* research project. In this case the need for these additions has resulted from the objective of the research project.
By introducing these criteria, a population has been created that consists of several dozens of women, rather than several thousands. This way we have narrowed the domain down to proportions that are manageable within the scope of the research project. Below, we will give a more detailed example that focuses on the aspect of coordinating the research objective and the research issue.

Example 'Absenteeism due to illness'
One of the research questions is the following: to what extent is there less absenteeism due to illness in organisations which have a hands-on management compared to those organisations which have a more conventional management? Apart from 'management style', 'absenteeism due to illness' is the second key concept. An initial description of this concept is:

'Absenteeism due to illness' is the number of hours employees have been absent due to illness.

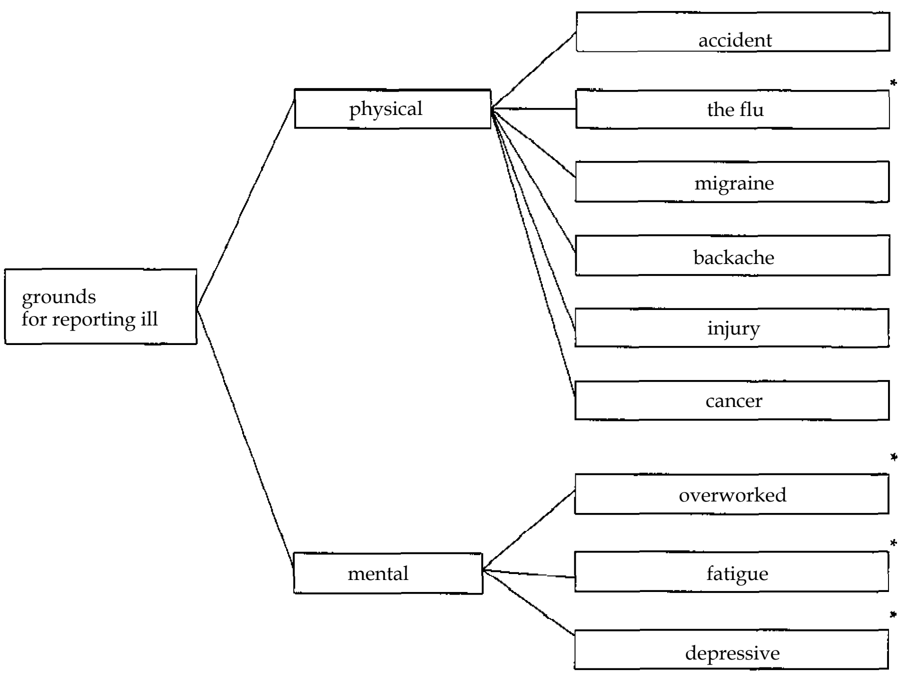
If we look at the definition from the perspective of empirical research, the description falls short on three points. Firstly for reasons of accuracy instead of an absolute standard, we must use a relative standard of absenteeism due to illness. This means that we must relate absenteeism due to illness to the number of working hours per unit of time. Secondly there is little point in examining absenteeism due to illness per employee. After all, management style is a collective feature of a company, or of one of its departments. Therefore, we must also examine absenteeism due to illness in the entire organisation or department, respectively. In other words, we must relate the absenteeism due to illness to the total number of employees concerned. Thirdly, in order to be specific, we must indicate precisely which standards we are using to determine if, and for how long, a person has been absent due to illness. This can be established by arranging for the patient to pay a visit to the company medical officer, which is a reliable but time-consuming activity. We can also base our research on those employees that have reported themselves ill, which is less time-consuming. But on the other hand it may be less reliable. Naturally everything has a price. These decisions will lead to the following definition:

In this research project 'absenteeism due to illness' is understood to be the percentage of the total number of working hours per month that the employees of company X have been absent from work, after having reported themselves as being ill.

However, this definition still provides insufficient details to be of use for the research project. We will have to exclude all symptoms for which it is clear beforehand that they bear no relation on management style. Besides, by using the above description we are shifting the problem to the question of how to define these symptoms. We must therefore unravel the concept of 'grounds for reporting ill' by using a tree diagram (see Figure 5.4) in which we indicate which categories are included and which are excluded from the research project. In Figure 5.4, the grounds for reporting ill, which may be related to management style, have been marked with an asterisk. The researcher will have to focus on the complaints which may be related to tension at work, due to a particular style of management. By using the above method, we can obtain the following stipulative definition:

For the purpose of the research project 'absenteeism due to illness' is understood to mean the percentage of the total number of contractual working days per annum that the employees of company X have been absent from work on grounds of the flu, migraine, being overworked, fatigue, and/or depression.

Figure 5.4 Unravelling and downsizing the concept 'grounds for reporting ill'



Obviously a stipulative definition as is found in the above example is not commonly found in specialist literature as it gives too many details concerning the research objective and the set of research questions at hand. The stipulative definition chosen often refers to a specific particularisation of a theoretically described phenomenon. Moreover, it is a very efficient definition for the concept in view of the execution and practicability of the research project at hand. From this it can be concluded that, while designing a research project, the researcher cannot just copy the existing definitions for concepts, although he or she may be inspired by it. The conceptualisation in dictionaries is too focused on common parlance. And scientific textbooks often define the concepts in a way that is too abstract and too general for direct use in a research project.

Assignment: linking up to the research objective

Let us assume that you plan to study the aggressiveness of patients towards their therapists in a mental healthcare organisation. Your research objective is twofold. The first objective is to help improve the social climate in the mental healthcare organisation. The second objective is to make recommendations to improve the working conditions of the therapists, which helps them to feel safer at work.

Assignment

a. Make two different stipulative definitions for the concept 'aggressiveness' of the patient towards therapists, one for each of the two research objectives.
b. Present the arguments for the differences between both stipulating definitions.
c. Operationalise each of the two definitions for the concept 'aggressiveness' into at least five indicators.
d. Presentthe arguments for the differencesbetweenbothoperationalisations.

A step-by-step approach based on an example

At the end of this chapter we will summarise the advice given in the following step-by-step approach which you can apply when structuring your own research project.

Definitions

1. Consider those concepts in the set of research questions which belong to the domain and those belonging to the assertion, including the results obtained from the processes of unravelling and clarifying by means of tree diagrams.
2. Make sure you have no more than/our *or five* key concepts. In principal, if you find more concepts, you will have to simplify or delineate your set of research questions.
3. Attach a *stipulative definition* to each of the key concepts by *listing* the dimensions and aspects you have chosen during the process of unravelling and clarifying. (See your tree diagram).
4. Check the size of the definitions (see page 134 the formula: S = D x A). If necessary, the unravelling and clarifying process may be performed in an even stricter way, or you can limit the domain by adding stipulations regarding place and time and/or characteristics of the research units.

5. Translate the definitions into perceptible observations by choosing criteria and/or indicators for each of the core concepts.
6. Formulate operational definitions of the core concepts by summing up the chosen criteria and or indicators.
7. Check whether these operational definitions have been sufficiently *attuned* to the research objective and the set of research questions.
   If not, adjust either these definitions, or the research objective and the set of research questions, or both. If you change your research objective or the set of research questions, repeat steps 1-6 (iteration).

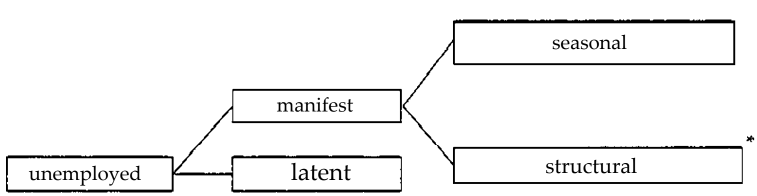
The meaning attributed to core concepts in the set of research questions (and possibly in the (b)-part of your research objective) in this way determines a research project to such an extent that the set of research questions must be considered as *one inseparable whole* with the definitions. Therefore, we suggest that you present the definitions/ and if necessary the operationalisations as well, together with the set of research questions.

Finally, we will apply the guidelines and instructions in this chapter to the example in the introduction about long-term unemployed. We follow the step-by-step plan presented above.

Step 1
The only key concept in the set of research questions is "unemployment", which indicates both the domain and the assertion. Because the set of research questions for this example has not yet been discussed, and no unravelling and clarifying has taken place, this is done below.

For the term 'unemployed' (the adjective Tong-term' is discussed later) the unravelling is shown in the diagram below:

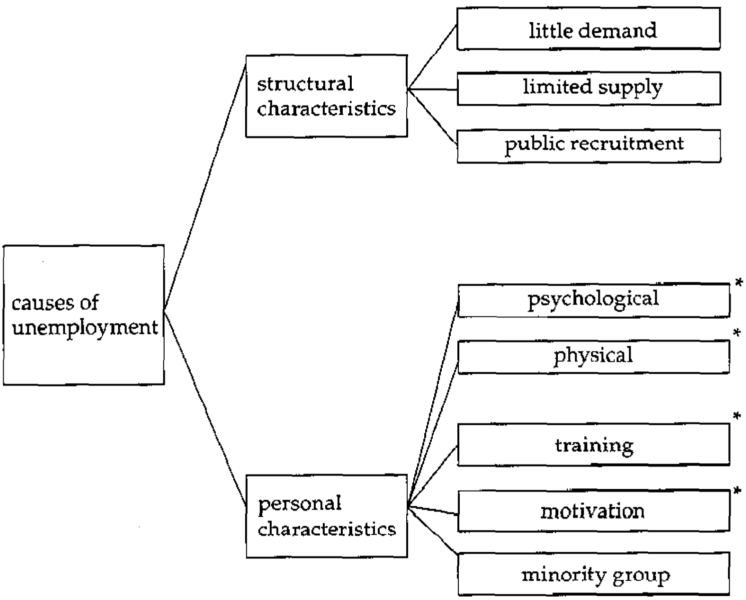
Figure 5.5 Unravelling and downsizing the concept "unemployment'



According to the asterisks used, we opt - for reasons that will be given later - for that part of the *manifest* unemployment that is labelled the *structural*

unemployment. This means that latent unemployment and seasonal unemployment are definitely excluded from the research project.
Unravelling and clarifying the term '*causes of* unemployment' shows the following:

Figure 5.6 Unravelling and downsizing the concept 'causes of unemployment'



As indicated, we have opted for a research project which focuses on *personal characteristics* as a possible background to long-term unemployment. You should be aware of the steering influence of such a decision during the research project. If you also were to opt for the structural (economic) characteristics, this would require more research material, of a very different nature. A discriminatory recruitment policy practised by companies is excluded. A practical reason for this exclusion is that it is very difficult to prove that discrimination exists. A separate research project on this subject would be more appropriate.

Step 2
Based on the *number* of key concepts, the research issue cannot be termed extensive or complex. This means that there is no reason for making any adjustments at this point.

Step 3
Based partly on applying the tool of a tree diagram, we have opted for the following stipulative definitions:

- For the purpose of this research project we refer to a *long-term* unemployed person as someone who has been in search of a job for six months or longer and whose unemployment cannot be attributed to seasonal effects.
- For the purpose of this research project, we refer to *causes* o/unemployment as personal characteristics, excluding those characteristics that could possibly result in discrimination.

Step 4

In view of the many doubtful cases the researcher in the example was confronted with, the definition of an unemployed person still seems far too broad. Note that this refers to the *domain* of the (set of) research question(s). There are particularly a lot of 'marginal cases'. Moreover, the definition does not exclude voluntary work. The following definition would seem to be an improvement:

- A person is unemployed if he or she is willing to have a *paid* job and whose demand is regarded as legitimate in the Netherlands in the year 2010.

Step 5

Although this general description does answer some of the questions raised in the example - as the reader can verify - it is, however, unclear how the researcher can determine whether a person is willing to have a paid job. We are in need of an indicator. As illustrated before, asking a person during an interview about his or her intention to find a job may meet the requirement of perceptibility, but it is nevertheless unsuitable as an indicator in this case. You would, after all, be approaching a large number of people who will be excluded immediately after having responded negatively to this first question. And just how do you determine whether a person's wish to have a paid job is legitimate? This would require criteria as well. As an indicator for the desire to find a paid job, we use a person's registration at the employment centre.

Step 6

As to the legitimacy of the desire to have a paid job, you establish - after consultation with a labour market expert - certain criteria, such as the criteria included in the following *operational* definition: Tn this research project I consider a person unemployed if this person is *registered* at an employment centre, he or she is *between 15 and 65 years of age, does not have a protracted illness or is seriously disabled, wishes to work at least 20 hours a week, does not have a job* and will be *available* for a job within two weeks/

The way in which the desire to work will be recorded has now been determined. You check whether a person is registered at the employment centre. Several criteria have been mentioned which must be met for the purpose of the research project, to be able to speak of a legitimate intention to work, and therefore, of unemployment. However, new questions arise. When do you say a person has a "protracted illness'? And to what extent must a person be disabled in order to be excluded from the labour market? You will find that the process of operationalising has not yet been completed. However, there is no need for that at this stage. Decisions on these matters can also be taken during the research project. At the stage of formulating the conceptual design it is, as mentioned before, only necessary to take the decisions that have to do with the *meaning* of key concepts and that may have a definite influence on *achieving the research objective* and the set of research questions.

Step 7
Based on the information available, it is not possible to provide a final answer to the question of whether the definition given in Step 6 meets the objective of the research project, i.e. developing unemployment policy. The circumstance in which the definition chooses to ignore hidden unemployment may be a sensitive political issue. This may involve people who are willing to have a paid job, but who do not express their desire to do so because they are convinced that they do not stand a chance from the very start. These people are not registered at the employment centre and, therefore, they are not included in the research project.
The statement that only the desire to have a *paid* job among people without a disability is not as straightforward as it appears. It is sometimes said that highly educated people with a disability perform even better through teleworking than those who are highly educated and have no disability. It is advisable to discuss questions of this nature with the person or institute commissioning the research project in order to prevent problems relating to the research results.
Apart from what has been said in Step 7 above, it would seem that the stipulative definition provided in Step 6 solves most of the problems encountered by the rcsearcher of the example presented in the introduction. As yet, a further adjustment of the research objective and the set of research questions appears not to be necessary.

Part II

Technical research design

At this stage of the design process a clear transition is taking place. Up until now, all of the activities were aimed at developing a *conceptual design,* i.e. a feasible and steering research objective and set of research questions. In this part of the book the question of what needs to be done to effectively find a sound answer to the set of research questions within a reasonable time span will be addressed. In other words, we now have to consider how we are going to carry out the research project.

A great deal of information on this subject can be found in the existing literature on research methods (see the literature recommended, p. 305-308). These books mainly discuss how to *carry out* the various types of research and how to gather the required data. The chapters in Part II differ from these methods because here we focus on the conditions that have to be met in order to construct a *technical research design*. It is advisable to acquire some knowledge of the existing literature on the methods included in your research design before you start *carrying out* the research project.

In general, two conditions will have to be met in order to make the right decisions. First of all, one needs to have an *overview* of the types of decisions regarding the range of options available. Secondly, we need to be aware of the *advantages and disadvantages* and the possibilities (and impossibilities) of the options available.

The objective of this part of the book is to assist the reader in making the decisions that need to be taken in the course of constructing the technical research design and in providing the relevant arguments. On the basis of the above we arrive at the following secondary research objectives that are discussed in Part 11:

1. Providing an *overview* of the various options available concerning research material research strategy and research planning.
2. Illustrating the various *advantages and disadvantages* and the *possibilities* of the options available.
3. Providing a *bibliography* for reference in case additional information is needed when applying the selected methods at the implementation stage of the research project.

6 RESEARCH STRATEGIES

Knowledge is not true or untrue as the Aristotelian tradition would like us to believe. It only has some strong and consequently weak aspects. Any product of knowledge can be improved upon.

Reuling (1986)

6.1 INTRODUCTION

The most significant decision the researcher has to make when constructing a technical research design is what kind of approach will be taken, i.e. which kind of strategy to follow. By research strategy we mean the coherent body of decisions concerning the way in which the researcher is going to carry out the research. We refer especially to gathering relevant material and processing this material into valid answers to the research questions. At this stage of the design process, many questions will arise. The following example illustrates this.

Example 'Noise nuisance'
A lot of contention has erupted in your town concerning the noise from the motorway near a built-up residential area. For years a conflict has been going on between the residents' association of the adjoining neighbourhood and the local authorities. The noise bothers you as well and you decide to make this particular problem the subject of your master's thesis research project. If the problems are recorded accurately on paper and a list is made of everyone troubled by the noise, if a list of the consequences for the various groups of residents are compiled, and the solutions which have already put to use elsewhere are listed, perhaps the local authorities will be willing to take appropriate measures. This may be an effective way to assist the residents' association.
However, you wonder what type of research will be involved. The first thing that comes to mind is to distribute questionnaires to a large number of residents, perhaps two hundred. You can ask people about their experiences of the noise and what consequences it has on their daily lives. The advantage of employing this

approach is that later, when you report to the local authorities, you will have a large number of supporters. This may make more of an impression than if you have only conducted a few interviews. On the other hand, you start to doubt whether this is the appropriate approach, certainly when you realise that visiting people at home will give you a truer picture than an impersonal written poll. You wonder if this will not make you a far more convincing partner in the ongoing discussion with the local authorities. Besides, several dozens of interviews should suffice, so there should still be enough time to conduct interviews with experts on sound-proof barriers and civil servants in charge of enforcing the noise nuisance policy. You will gain a far broader perspective and you will be better equipped so that you can present the local authorities with well-founded arguments. The third possibility you are considering is a literature survey. Several experts have already been working on the issue. They undoubtedly have formed an opinion on acceptable standards of noise nuisance, the possible effects of noise nuisance on the ecological environment, as well as the possible solutions and the relevant advantages and disadvantages.

After some thought on the matter, you come up with another possibility, which unfortunately further complicates your choice. This is studying research reports on noise nuisance drawn up by other municipalities. Possibly you can carry out your own evaluation research project on the effects of noise nuisance in a comparable municipality.

It will be obvious that the choice of one of these options greatly depends on the intervention strategy you or the inhabitants of the neighbourhood concerned still have to develop. But your uncertainty mainly springs from the fact that you do not know which research approaches exist, which problems the various possibilities involve, how much of an effort it will take and what the advantages and disadvantages are as seen from a methodological perspective.

A particular research strategy is a set of key decisions from which a number of other decisions will follow. The first key decision is the question of whether you want to gain a broad overview of the discipline that you have selected, or whether you are more interested in a thorough investigation of all the aspects of a phenomenon spread out over a span of time and space. In brief, is it a choice between either *breadth* or *depth.* We deliberately use the term 'choice' because there is a tension between either possibilities. If the researcher opts for breadth, he or she must use a large-scale approach which enables a generalisation of the results, but which will impose limits on depth, elaboration, complexity and the sound foundation of the results. If it is depth the researcher has decided to opt for, then he or she will aim for a small-scale approach that yields knowledge that can be generalised to a lesser extent, but nevertheless will enable the researcher to achieve depth, elaboration, complexity and soundness, thus minimising the risk of uncertainties.

A second key decision which is related to this concerns whether or not the researcher or the commissioning party prefers *quantification*, in which the research findings are compiled in tables, charts, numbers and calculations. Perhaps the researcher is more the contemplative type who prefers using a qualitative and interpreting approach, in which the reporting is mainly verbal and contemplative. The second key decision is closely linked to a third and final key consideration. Is the person involved a true *empirical* researcher, a doer, who prefers doing research in the field, gathering data herself or himself to make judgements based on the analysis of these data? Or is the researcher more of a thinker who finds the idea of doing *desk research,* in which he or she uses the existing literature or data gathered by others, more appealing?

The three key decisions mentioned above are interconnected with many other decisions. For example, they largely determine the number and the type of research units to be selected, the way in which these units are selected, the choice of sources and the method(s) that will be used to open up these sources, as well as the way in which the data and literature are going to be processed into answers to the set of research questions.
The literature will provide the researcher with various strategies that can be used for the research project. Each strategy consists of a mixture of central and derived decisions as discussed above. This chapter provides the five major strategies followed in final projects, which are:

1. survey;
2. experiment;
3. case study;
4. grounded theory approach;
5. desk research.

As the reader runs the risk of losing track of the situation due to the quantity and complexity of the information provided in this chapter, we will briefly outline the five categories below by using an example. As a result, you will have the opportunity to make an initial choice, after which a selection can be made from the sections to read further (Section 6.2). Subsequently, these five strategies will be discussed separately in detail in five further sections (Section 6.3 to 6.7). The chapter will conclude as usual with a step-by-step approach the reader can use when developing his or her own research approach. This step-by-step approach will be illustrated by the example from "Noise nuisance' mentioned earlier in the text.

6.2 FIVE STRATEGIES in A NUTSHELL

Let us assume the researcher is interested in the cultivation methods of modern farming and the quality of the crops this way of production yields. As we have mentioned earlier, there are five ways to do research in this field. Each will be discussed briefly.

1. *Survey*

The first possibility is to set up a *broad* survey of modern agricultural practices in various regions, of the circumstances surrounding the work at the farms and of the problems and bottlenecks occurring during the daily routine. It is doubtful whether the existing literature will provide you with an accurate and complete picture of these practices. It would make more sense if you were to gather data from the real world. This means that you will not be opting for a literature survey, but for *empirical* research.
Within this framework the researcher will be interviewing farmers or sending them a written questionnaire. Because he or she wants to draw conclusions that depend as little as possible on specific, local circumstances, the researcher has chosen a large number of farms scattered across the country. To get a general picture, it would be wise to take a random sample of the total number of farms in the country. Such a research project, with large numbers of randomly selected research units, i.e. farmers, that offers a broad survey of the relevant field, is called a *survey research* or simply a *survey.* In that case the researcher clearly opts for *breadth* and generalisation, rather than for depth and specificity. On account of the large number of research units and the abundance of material that will be produced, i.e. the research data, *quantitative processing* should be carried out and a *quantitative analysis* of the data should be made.

2. *Experiment*

An entirely different possibility may be, for instance, to find out what effects the various cultivation methods have in terms of yield, environmental burden and bio-diversity. Then you could decide whether to use test fields in order to cultivate crops under different conditions. The researcher can, of course, carry out this experiment on her or his own, which offers the advantage of control. But this would require detailed knowledge regarding the cultivation of crops. An alternative would be to get a number of farmers interested in the project. Perhaps the researcher could persuade them to work according to specific cultivation methods and to adhere strictly to certain rules of behaviour that the researcher has formulated, and which are important to the research project. They will be visited regularly in order to carry out various measurements and to interview them. Because the researcher and the enthusiastic farmers will have succeeded in the various circumstances under control, all those involved will be able to obtain a clear idea of what effects the various cultivation methods have had. Both of these cases involve what we call an *experiment.*

3. *Case study*

Another possibility would be to reveal, in great detail, all the ins and outs of the various cultivation methods: the ways in which these methods are applied and carried out in practice, the farmers' motivations and considerations, and the reasons for them having these motivations. Within this framework parallels will be drawn with the farmers' various socio-cultural backgrounds, such as religion, political views, ideologies, and so on. In this case you would not prefer breadth, as was the case in the survey, but you would favour depth instead. Thus, it is decided to carefully select a number of farms that you will follow closely. Through a detailed observation on location, and by conducting interviews in combination with studying all sorts of documents, the researcher will gain a profound insight into the way various processes take place, and the reason why they develop in one way instead of another. Such a research project is called a case study. *Qualitative* research methods are frequently used here.

4. *Grounded theory approach*

In the descriptions we have discussed so far, the intention was to obtain a picture of a specific (agricultural) *practice.* In other words: the researcher has been engaged in a practice-oriented research project. But what if he or she is more interested in developing a theory? For instance, the researcher may want to develop a line of thought that explains why some farmers are attracted to the more environment-friendly ways of production. He or she wants to find out what factors stimulate such an orientation, and so forth. In this way the researcher wishes to make her or his own personal contribution to the development of a theory in the field of social renewal movements in agriculture. In short, the researcher is engaged in a *theory-oriented* thesis. This approach is known as the *grounded theory approach*, and it offers interesting possibilities. This purely qualitative approach has much in common with the case study we mentioned earlier. A characteristic of the grounded theory approach is that, it tries to find out which *views* underlie the similarities and differences within the object(s) of research. As a result, the researcher must constantly *compare* the various items he or she observes in reality, with each other and with theoretical premises.

5. *Desk research*

The final type of research to be mentioned here is carried out mainly from behind a desk, in the library and/or in archives. It is known as desk research. This should be distinguished from a research project in which the researcher goes into the field to carry out observations in the empirical reality, using her or his own senses, as was the case in the previous four research strategies.
Let us assume that one wants to know which cultivation methods can be distinguished in the agricultural field and which advantages and disadvantages they

have from an agricultural and environmental perspective. It has been decided to base the research project completely on the existing literature and/or on the material gathered by others. To be considered are memoranda, files and data bases from the Ministry of Agriculture, farmers' journals, research reports from the agricultural research bureau, theoretical literature, and so forth. Via indices and registers the researcher classifies the subjects and/or data, and takes notes. He or she compares the various stances taken by the authors, and the researcher may even try to interpret these on the basis of existing interest groups. If the research is carried out in this way, it is called desk research.

We have successively discussed five research strategies. It appears that they each represent a specific blend of key decisions. The three key decisions we discussed earlier are:

1. breadth versus depth;
2. qualitative versus quantitative research;
3. empirical versus desk research.

Except for the literature survey, the strategies mentioned can be referred to as *empirical* research. Here, contrary to desk research, the researcher must go out into the field in person, in order to observe and to gather or generate relevant material. Survey research and frequently experimental research as well, can be qualified as *quantitative* research, whereas both the grounded theory approach and the case study are examples of *qualitative* research. Furthermore, a survey is associated with *breadth* and a case study with *depth.* Finally, it should be mentioned that the survey, the experiment and the case study can all three be used in theory-oriented and in practice-oriented types of research. The grounded theory approach has been developed with a view to theory-oriented research in particular. However, this strategy may also be very useful in practice-oriented research. It goes without saying that a literature survey can also be used in theory-oriented research, as it is particularly well-suited for this purpose.

Assignment

a. Formulate the project context and the research objective of a research project that is appropriate for a survey more so than for a case study. Present your line of argumentation.
b. Do the same as in a, but then vice versa.
c. Present the research objectives of two research projects that are ideal for an experiment. Present your line of argumentation.
d. Formulate a project context and a research objective of a research project that fits in with the grounded theory approach. Present your line of argumentation.
e. Do the same as in d, but then with regard to desk research.

Up until now, we have briefly discussed five major research strategies to choose from. Before elaborating on these strategies, we must make three comments. Firstly, we would like to emphasise that, although the five strategies can be found as independent, major forms of research in handbooks about methodology, in practice a mix of these strategies can be used. In particular in a qualitative research project, the design can resemble a case study, a grounded theory approach and a literature survey. This again emphasises how creative the construction of a research design can be.
Secondly, the examples mentioned above may have already demonstrated to a certain degree that each strategy relates to a specific type of research objective and research project. However, this does not imply that with regard to the design process, the research strategy is purely a derivative of the research objective and set of research questions. The researcher may have preferences for a certain strategy, and the formulation of the research objective and set of research questions is partly dependent on this preference. Moreover, when the researcher is deciding which strategy to follow, he or she may think of new or additional ideas for the research objective and set of research questions. This is something we previously dealt with in 'Designing iteratively' (see Chapter 1.3).
Thirdly, due to the large amount of attention it has received here and elsewhere in existing literature, the reader may have the impression that following a strategy is a major consideration. However, there is one predominant principle that applies to all five strategies, namely that in the implementation stage of a research project the researcher systematically works towards finding an answer to the set of research questions. Therefore, this is the first and foremost condition for a successful research project. The application of principles from the strategies presented could contribute to this by making it easier improving the validity.
We will now move on to a more extensive discussion of the various research strategies. We will do so along established lines. First, the main *characteristics* of the research strategy concerned will be outlined. Then we will discuss the separate *variants* of the major form in question, followed by an *example* of one of the variants. Each time we will conclude by offering an overview of the *advantages and disadvantages* and of the *possibilities for effective use* of the various major forms and their variants.

6.3 Survey research

A survey is a type of research in the course of which the researcher tries to gain an overall picture of a comprehensive phenomenon spread out over a stretch of time and/or space. This could involve, for example, the pattern of absenteeism due to illness of asthma sufferers, the compliance with environmental regulations by the corporate sector, the fine-tuning of the European town and country planning with its national counterparts of the member states, and so forth.

Characteristics

A survey is characterised by:

1. a substantial domain, consisting of a *large number* of research units;
2. *extensive* data generation;
3. more *breadth* than depth;
4. a *random* sample rather than a strategic sample;
5. an assertion which consists of variables and the relationships between these variables;
6. preferably *remote, closed* data generation;
7. *quantitative data* and *quantitative data-analysis.*

These seven main characteristics are closely interrelated and are further elaborated on and explained below. In survey research the most distinctive characteristic is that the data is gathered from relatively large numbers of research units. A research unit can be literally anything the researcher intends to make statements about. Research units can be, for example, civil servants at a local authority, the products manufactured by a company such as software packages or even hospital services, the circulation of an in-house magazine, and so on. But they could also be larger units such as companies, regional authorities, municipal civil services, or comprehensive schools. A large number within this context is understood to be at least between 60 to 80 units. Fewer units will result in less reliable and/or less precise results of quantitative analysis.

A second main characteristic of a survey is that the researcher uses less time-consuming methods to generate data. This is essential considering the large number of research units that need to be approached. As a rule, the researcher will stick to one method that can be followed through fairly quickly. The written poll is the most popular.

Due to the desired breadth of the research project - the number of potential research units (the population) could easily range between 5,000 and 50,000 or more - carrying out a *sample survey* is the most common approach. Taking a *random sample* is typical for a survey. A random sample is a sample in which all potential research units in the population of interest have an equal chance of being included, regardless of their characteristics. A random sample selection is the best guarantee of gaining a representative picture of the whole population, which in its turn is needed for generalisation of the results later on. This is very different from a case study which will be discussed in the next section, and in which the research units are chosen especially for their distinctive characteristics. This is an instance of a so-called strategic sample.

Another characteristic of the survey is that the assertion is formulated in terms of several variables, and the relationships between these variables. This implies that this research strategy can be categorised as a *reductionist* one. This means that the reality is reduced to a set of research units (first reduction), and the latter to a set of variables (second reduction). Due to the large amount of data needed in this type of research, data collection has to take place in a well-structured way. This implies the use of closed questions (questionnaires and structured interviews), and closed observation categories, to be used in systematic observation and content analysis of written and audio-visual documents and contents of media. Using larger amounts of data usually means that the data has been processed and analysed in a quantitative way based on statistical principles and procedures.

Variants

In survey research there are several variants,, depending on the question of whether the material has been gathered at one specific or several moments in time, and whether the material has been gathered from one and the same group or from various groups.

1. *Cross-sectional research*

A cross-sectional survey is a type of research that has all seven characteristics mentioned at the beginning, and in the course of which material is gathered at a certain moment in time from one and the same group. Due to the high degree of practicability and the relatively low costs - much has been standardised and/or can be carried out automatically - it is one of the most popular types of research. It includes most public opinion polls, market research surveys and election polls.

2. *Panel research*

Panel research is a type of quantitative survey during which measuring takes place at various moments in time within one and the same group. This type of research is especially suitable for showing changes that have taken place *within* research units. For example, one would like to know the influences a further training course for employees would have on their ability to solve problems that arise during work. In this case the researcher could measure their problem-solving skills before and after the training course, respectively called ex-ante and ex-post measurement. After comparing both measurement results, this researcher is able to determine for each employee whether he or she has made any progress, and if so to what degree. Asking the exact same questions for both measurements is of vital importance. If the researcher fails to do this, he or she will not know to what extent the differences in measuring results could be attributed to the intervention on the one hand, or to the different stimuli used while measuring on the other.

As all kinds of coincidences may influence the performance of each individual employee, it will not be clear whether the training course has had any effect until the results of all employees have been compared. One of the major advantages of this survey design is, besides the possibility of generalisation, that coincidences can be eliminated due to the large number of observations. This means more security for the researcher.

3. *Time-series research*

Sometimes several measurements are not carried out in one and the same group, as with the employees in the above example, but in constantly *varying* sample surveys. This is called time-series research or a trend study. Usually, the objective of this type of quantitative research is to find trends or changes in some collective characteristic. For example, by taking regular polls the researcher can count the number of unemployed people registered at the job centre (approximate numbers). Or the researcher could work out the average number of kilometres a year travelled by the citizens of a city between 1980 and 1995 in order to find out what *trend* has arisen. Because a relatively large number of measurements is required to define a trend, the measurements are usually taken over a number of years. The researcher is most often unable to gather the data in person, but must use data that is constantly being gathered by different sorts of organisations. This is called official statistical material. As in both panel and time sequenced research, quantitative data is being used that has been obtained from large numbers of research units, mostly by drawing a random sample. These research strategies belong to the category of survey designs. Usually quantitative data is processed on computers. All sorts of software packages can be used to process this type of data, such as SPSS and SAS. They enable the user to make interesting tables, charts and statistical calculations, such as means, percentages and correlations. We will explain the above by using the following example.

Example /Public information"

Quantitative research has been carried out into the efficiency of a public information campaign on how to prevent breaking into cars. The campaign was organised in November 1998 and consisted of press conferences for the national, regional and local television, and radio stations and newspapers. In addition, brochures were distributed at petrol stations, car rental services and also door-to-door. The brochures provided tips on how to limit the risk of valuables being stolen from parked cars.

The ex-ante measurement took place by means of telephone interviews during which closed questions were asked. The measuring was taken by using a sample survey from the inhabitants of the three cities where the campaign was held. It was a random sample of all the inhabitants who had telephones. Names were drawn from the phone book using a table with random numbers. As soon as the phone was picked up, the interviewer asked for the head of the family or his or her partner. The first question was whether the family owned a car and whether they used it at least once a month. If the answer was negative, the interviewee in question was excluded from the sample survey, which meant the end of the interview. If the answer was affirmative, a number of questions was asked about possible experiences with breaking into cars and about the information people had on how to prevent cars from being broken into, as well as the preventive measures that could be taken. The researchers continued telephoning people until the proposed number of 600 polls had been reached. In addition, before the information campaign had even started, at random moments in time and in random districts, systematic observations were made of 3,000 parked cars. Attention was paid to, for example, valuables that had been left in the car with the doors and windows unlocked. After the campaign, the 600 people who had participated in the first poll received another phone call. Finally, after repeated attempts, 445 polls were taken. The questions were the same as in the first poll, supplemented by questions about the brochures the participants had received. Parked cars were again inspected on the same days of the week, at the same points in time and in the same districts as the first time. This all had to be done in order to get a maximum comparability of the research data. In total 4,304 parked cars were checked in this second round. Research showed that a lot of people had seen the brochure, had even read it and were able to quote the contents reasonably well. Compared to the ex-ante measurement there was an increased understanding of how to prevent one's car from being broken into. But during the observations, its effect in terms of taking preventive measures turned out to be very limited. It should not come as a surprise that police statistics hardly showed a reduction in the number of cars being broken into. In other words, there was no change in the trend of the number of cars that had been broken into. It is therefore not likely that other cities will start a similar campaign, and subsequently it was decided to review the information thoroughly.

The above is an example of a *panel research project*. *Repeated measurements* have been taken using a large and random sample of research units: 600 individuals and 3,000 cars, 444 individuals and 4,304 cars, respectively. Therefore, it should be noted that for reasons of a practical nature, concessions have been made in order to adhere to the principle of randomising. Strictly speaking, not all of the inhabitants of these three cities have an equal chance of being included in the sample, as a selection can only be made from those who have a telephone connection. Hence, only those mentioned in the directory can be drawn. This also excludes people who do not have a connection, who are not listed or who were recently connected or disconnected. Young people living with their parents are excluded as well. Finally, as a result of the procedure, ill people and the elderly were also excluded from the sample if they were in hospital and homes for the elderly.

The same applies to the panel nature of the research project. Only the part where the poll is taken can be classified as panel research. Only in this case can repeated research be carried out with *the same* individuals. As to the inspection of parked cars, the principles of time-sequenced research are being followed. After all, the difference between the set of parked cars at the time of ex-post measurement and that at the time of the ex-ante measurement is unknown. In other words, at this stage various groups are used, which is typical of time-series research. Besides, the researchers do not know whether the parked cars belong to those who are participating in the poll. A much stronger argument would be to focus the inspection on the cars belonging to the participants, both at ex-ante and ex-post measurement. This way a link could be established between the responses people give on the phone and the measures they take to prevent their cars from being broken into. We could then also be more certain when attributing to the campaign any improvements in the situation with regard to the number of precautionary measures and the cars being broken into. It is obvious, however, that such research would be more extensive and difficult to carry out. Therefore, a simpler variant has been selected.

In accordance with the principles of survey research, the method of generating data is not very labour-intensive. Ordinarily speaking, using various methods of generating data is too extensive for a survey, as this involves taking polls and making systematic observations in the field. But a telephone poll can usually be carried out quite quickly, i.e. observations in this type of research is taken relatively fast, as it concerns a quick check of a number of issues. This research project has one drawback that cannot easily be precluded, i.e. a relatively large number of people who drop out between ex-ante and ex-post measurement. The ex-post measurement only includes 444 of the 600 individuals participating in the initial sample. As those dropping out usually do not make up a random sample of the complete number of people involved at the time of the ex-ante measurement, this will have an adverse effect on the results of the research. Dropping out is a drawback in most panel research projects.

The above example will have given the reader a clear picture of the various aspects of possible research strategies. Firstly, it has confirmed our previous assertion that, in practice, research strategies are mixed. The reader could even develop her or his own specific strategy to use for, for example, a final project. The situation you find yourself in, the options available and the demands made on you, will serve as guidelines in this process. Secondly, the example shows that several concessions will have to be made in a research project. Often pragmatic decisions will have to be taken that may seem surprising to you. However, in practice every researcher has to make such choices. We can even claim that there is no such thing as an ideal research design and, even if there was, it would be difficult to carry out.

Advantages and disadvantages

An important reason for using a quantitative survey is its scope. It is large in comparison to that of an experiment and a case study as discussed further on in this chapter. Apart from the fact that the researcher will basically obtain a wide overview and will arrive at generally valid statements, the large number of research units enables her or him to determine all sorts of statistical relationships, i.e. correlations. In the example on farming in the previous section the researcher may, for instance, try to determine the relationship between the proceeds of the crops and their nutritional value, or between the price and the way in which the crops are processed. He or she could also show a relationship between all the different characteristics or variables of companies, such as between the type of soil and the groundwater quality and level on the one hand, and the quality of the products on the other hand. When determining relationships, statistical principles are used.

Another practical advantage of survey research is that compared to other research strategies, there are many methodological handbooks (including statistical works) available that describe in detail how the various components of this type of research should be carried out. There is also a lot of software on the market for data processing and analysis, far more than in the field of the qualitative research strategies. We already mentioned software packages such as SPSS and SAS. Survey research has been standardised to a large degree/ which is not only to the benefit of the researcher. It also enables third parties, including the client, to verify both the results and the way in which these have been obtained. This may be the reason for the popularity of this type of research among researchers and, in particular, among clients. The emphasis given to this research strategy in most disciplines at universities and institutes of higher education is partially responsible for its popularity. Until now, other research strategies did not receive much attention within the students' education. A subject such as statistics, for example, which is compulsory in most university disciplines, combines very well with the strategy of a quantitative survey.

Compared to other research strategies, survey research has major limitations regarding depth and knowledge, as depth is limited and the knowledge obtained only concerns certain aspects of the research object i.e. the variables. In general, as research projects initially cover such a wide area in time and space, the researcher usually has no choice but to examine only certain aspects of the research object selected. This is different from qualitative methods of research where the emphasis is on gaining a complete overview of the research object, as will soon be demonstrated. The lack of depth is the most important price to pay in order to gain a complete overview of a wide and/or dispersed area, and knowledge that can be generalised.

Another possible disadvantage of survey research is that, relatively speaking, the researcher may need to know a lot about the subject in question beforehand. As the researcher needs to generate the data quickly, because of the large number of research units used, he or she also needs to build a well-thought out measurement instrument: i.e. questionnaire. Usually compiling an efficient questionnaire requires a great deal of prior knowledge. Often the researcher will need to examine the applicable theory in the relevant discipline thoroughly. In some cases it is not possible for the researcher to gather the necessary information adequately beforehand, and the necessary theory building may also be insufficient. Under these circumstances, carrying out a survey can be problematic or even impossible.

This holds true for rapidly changing situations as well. Due to the high degree of pre-structuring, the research project is *less flexible*. It may be difficult to anticipate exceptional circumstances, and once the questionnaire has been set up and the sample drawn, little can be changed. This could prove to be an impediment, particularly when carrying out a research project that is supposed to contribute to solving a problem. This type of research is often carried out in a rapidly changing environment, involving unexpected findings.

In general these disadvantages affect theory-oriented research less than they do practice-oriented research. For that reason many scholars in the social sciences at universities and other scientific institutions prefer this type of research.

Effective use

If the objective is to obtain general knowledge of the subject, or specific knowledge concerning research objects that are numerous and/or are wide spread, the different variants of survey research can be effective. A few examples of research projects involving a large number of research units are: problems involving the consolidation of Dutch municipalities; absenteeism due to illness in a multinational company; environmental awareness in the corporate sector; the vitality of a certain type of woodland; the extent to which the inhabitants of a city make use of the local media, and so on.

Panel research and time-series research are efficient research strategies for examining changes that take place during a certain period. For example, these methods can be used if the researcher intends to establish the degree of efficiency of a certain intervention, such as a reorganisation, new legislation or an information campaign. However, time-series research will be less efficient than panel research in these cases. This is because the differences between measuring results at both the ex-ante and the ex-post measurement in a time-sequenced research project cannot only be attributed to the intervention. These differences may also have resulted from the differences between the groups in which the measurements took place.

In principle, time-series research does not show any *test effects*, whereas panel research does, so this is an added advantage. Test effects are effects of ex-ante measurement. If, for example, during the ex-ante measurement people are asked about safe sex, the thoughts this evokes in the respondents' minds

could result in a more positive attitude towards safe sex. If, at the ex-post measurement a more positive attitude towards safe sex is established, this cannot solely be attributed to the information people have received. If different groups are being used, as is always the case in time-series research, no such after effects could interfere with the results of the ex-post measurement. Besides, in time-sequenced research, measuring can take place quite frequently without there being any risk of people becoming fed up or dropping out. After all, each individual is approached only once.
Time-series research may be the best choice for a researcher in business administration who has to carry out a research project on the career opportunities of women working for the Dutch government. In this context, the turnover based on the percentage of women employed by the government over a succession of years could be examined. Or, women in certain senior positions could be studied. This type of approach usually shows a trend, on the basis of which a conditional prognosis can be made regarding the future development of the phenomenon examined. However, the researcher first needs to find out which government bodies store the relevant data. Normally, there is no time within the research project to gather this set of data. This may be another reason for using the interesting information found during a time-series research about the process of iteration when establishing a set of problems. We recommend that the reader study Fink (1995), Foddy (1993) and Fowler (1993).

Assignment

a. Formulate the project context, the research objective and a set of research questions for a project that is appropriate for a cross-sectional survey.
b. Do the same as for a, but then for a panel research project.
c. Do the same as for a, but then for a time-series research project.
d. Briefly indicate, in each of these cases, the advantages and disadvantages, as well as the opportunities and limitations of the selected research strategy in the light of the chosen research objective and set of research questions.

6.4 EXPERIMENT

An experiment is the most suitable type of research for acquiring experience with newly created situations or processes, an experience which can be used to assess the effects of these changes. In order to obtain these effects at least two groups are needed which are as similar as possible. One group receives a treatment or an *intervention,* to be indicated as X, and the other does not, or it receives a different treatment. Afterwards, the two groups are compared by means of an ex-post measurement of the expected effect Y.

Characteristics

An experiment in its purest form, which is also called a laboratory or randomised experiment, is characterised by:

1. At least two groups are formed: an *experimental group* and a *control group.*
2. Participants, or research units, are assigned randomly to either group. This is called *randomising.*
3. The *researcher determines* (not the people being examined!) which group is subjected to the intervention X and what happens further within the groups.
4. The researcher makes sure that there are *as little outside influences as possible.*
5. In addition to an ex-post measurement of the effect under study (Y), an *ex-ante measurement* is carried out preferably before the intervention takes place.

These five characteristics are further explained below. To start with, an intervention X can consist of a large variety of subjects. A few examples are: showing an information film to prevent smoking to a group of young people, introducing a new teaching method at a primary school, implementation of an organisational change in a company, and so on. The groups subjected to the intervention, or to some interventions, are called experimental groups. The groups not subjected to an intervention are the control groups. After the intervention the behaviour of the groups involved is studied (measured) in relation to their response to what the intervention was trying to achieve. This response is also called the *target variable* (Y). In the above examples this would mean examining to what extent the participants in the experimental groups have given up smoking, have achieved a better learning performance, or are supplying better products than those in the control groups. If there are differences between the groups regarding the target variable Y, these can be attributed to the intervention. This on the condition, however, that characteristics 2,3 and 4 are fully applicable. This is a causal argumentation, which is practically watertight, provided that the intervention is indeed *the only* difference between the two groups and their circumstances.

The characteristics mentioned above determine the equivalence of the groups. Should any of the characteristics apply less, the proof of the causal relation weakens. Take for example the second characteristic, randomising. If the researcher does not explicitly leave the division into groups to chance, there may be significant differences in the number of men per group. If this is the case, this implies that it will not be clear to what extent differences in measured results in the dependent variable Y can be attributed to the intervention or to the gender.

A notorious mechanism which threatens the equality of experimental and control groups, and consequently the causal argumentation, is a mechanism known as *self-selection.* Self-selection means that people with special characteristics specifically choose to undergo the intervention or not, as the case may be. Let us assume, for example, that the researcher wishes to determine to what extent an information campaign, aimed at promoting a positive attitude towards giving up smoking, has been effective. The researcher would assume that the people who subject themselves to the information campaign (X) are those who already have a positive attitude towards giving up smoking (Y), a possibility that may well arise. If we find more people who have given up smoking in the experimental group than in the control group, the conclusion that the information campaign has been effective could be wrong. It may not be the information campaign that has induced the participants to give up smoking. It may be the opposite: the positive attitude towards giving up smoking is the reason for following the information campaign. In that case a reversal of the causality sequence has taken place. The combination of the conditions 2 and 3 mentioned above should help to prevent this self-selection from occurring,

Instead of a random division, *matching* is also used to obtain comparable groups. Matching means that if, for example, a middle-aged woman with three children and a university education is selected in the experimental group, a woman with similar characteristics is selected in the control group. In this example, the matching has been carried out for the variables gender, age, number of children and education. Of course, the emphasis is on matching variables that are considered to be the greatest threat to the argumentation. Due to their fundamental nature, in many research projects gender, age and education are included as matching variables.

Alongside the second and third characteristics, the fourth characteristic, controlling environmental factors, is necessary in order to be sure that the intervention is the sole reason for having obtained the different results regarding Y from the two groups involved. In the situation described above, certain characteristics of the participants were the cause of possible differences, whereas in the fourth case they can probably be attributed to *external causes.* The researcher should exclude the possibility that a change in smoking behaviour was caused by the participants watching television programmes which graphically illustrate the dangers of smoking broadcast during the period of the information campaign. If the participants in the experiment watch these programmes, it is no longer possible to determine the extent to which changes of behaviour related to smoking can be attributed to the information campaign or to the television programmes.

The fifth and final requirement, that is: to carry out an ex-ante measurement, is necessary in order to know whether anything has actually changed. If we have found differences between the experimental group and the control group during the course of the ex-post measurement, then we need to find out if these differences existed before the intervention. If this is the case, the experimenter risks drawing false conclusions.

Variants

Although all five characteristics should be seen as requirements for providing sound causal argumentation, often all five requirements will not be met completely. This means that both stronger and weaker variants of the experiment exist. These variants are discussed below.

1. *Laboratory experiment*

If all five requirements have been met, this is referred to as a laboratory or randomised experiment, which is the strongest variant. No other type of research is capable of demonstrating more convincingly a causal relationship between two phenomena X and Y. A research project without an ex-ante measurement of the dependent variable Y is a slightly weaker sub-variant of the laboratory experiment. This type of research project is fairly common because often the decision is to examine the effectiveness of an intervention only once the intervention has been carried out. Moreover, under these circumstances the lack of an ex-ante measurement is usually not the only requirement that has not been met. However, if this is the case, the causal proof is usually only slightly weaker. In this case, the ex-post measurement of the control group acts as the ex-ante measurement of the experimental group. Things may still go wrong when drawing conclusions if, despite the measures taken by the researcher, there are systematic differences between the experimental group and the control group. But, proper randomising and/or matching should make the chance of this occurring fairly unlikely.

Sometimes the potential disadvantage of no ex-ante measurement can even turn into an advantage. After all, when an ex-ante measurement is carried out there is always a risk of *test effects.* As mentioned earlier, a test effect is the effect on the target variable Y resulting from the ex-ante measurement. This effect could, for example, occur in the example of an information campaign against smoking. An ex-ante measurement usually involves all kinds of questions concerning smoking and giving it up. Just asking these questions makes people think about it. If after the ex-post measurement the members of the experimental group have a more positive attitude towards giving up smoking, we do not know to what extent this has resulted from the information campaign X, or from the ex-ante measurement of Y, or both, In such cases the researcher may intentionally look for a subject without an ex-ante measurement.

What is even more effective is the sub-variant known as the *Solomon four group design.* Apart from the experimental group, the Solomon four group design has *three* control groups. An initial control group receives an ex-ante measurement and no intervention, a second group receives no ex-ante measurement but does receive an intervention, and a third group receives neither an ex-ante measurement nor an intervention. This design enables us to detect test effects, and also to find possible interactions between the ex-ante measurement and the intervention. In this context an interaction is the effect of the two factors *combined.* In a Solomon four group design the proof of an effect of X on Y is at its strongest; however, this is an expensive research strategy.

A *second sub-variant* of the laboratory experiment is the so-called *factorial design.* This can be used to find out which combination of interventions is most effective. For example, imagine the researcher wants to know which combination of information campaign style and type of medium works most effectively. Regarding the style of information campaign, the researcher can choose between a cautioning and an informative approach. Regarding the medium: there are newspapers or television. This makes a total of four combinations of style and medium. In order to find out which combination is most successful, four experimental groups must be formed, one for each combination. There is no separate control group. The various groups act as each other's control group.

2. *Quasi-experiment*

In addition to the category of laboratory experiments, there are several variants known under the collective term of quasi-experiment. Compared to regular laboratory experiments, these are somewhat weaker variants because one or several of the five requirements have not been met. In this case, a causal argumentation must be carried out with fewer guarantees for the *internal* validity of the conclusions. On the other hand, this type of research can be carried out in a wider range of situations than the laboratory experiment. Moreover, these variants are usually more lifelike, which is beneficial to the *external* validity of the results. Within the pseudo-experiment, various sub-variants are possible. We will discuss two of these sub-variants.

A well-known sub-variant of the quasi-experimental category is known as working with *existing groups.* Suppose a principal of a secondary school wants to know what the effects of a new calculation method X will be on the performance (Y) of secondary education pupils. He can introduce the new calculation method in one class and continue using the former method in the parallel classes. Subsequently, it can be assessed what the differences in performance are between the pupils of the various classes. Although in this example the second requirement is not met - as working with existing groups by definition implies that there is no randomising or matching - the groups are nevertheless reasonably comparable. After all, the classes will be fairly similar with regard to the variables age and level of education. These variables are not insignificant. For understandable reasons they are very important when it comes to comparing learning performance (Y). Because schools often cater to specific geographical areas, the groups will also be fairly homogeneous in their socio-economic status. Generally speaking there is little opportunity for self-selection processes because pupils usually cannot decide in which class they will be placed and, therefore which method (X) will be used. Furthermore, the teacher or person carrying out the experiment will determine to a considerable extent what will happen in class and in the environment (see characteristics 3 and 4 at the beginning of this section). Finally, previous report marks of the students could also be used as a substitute for the ex-ante measurement, thus avoiding test effects.

A second quasi-experimental variant and one that is often employed is the *field experiment.* In this type of quasi-experiment, the researcher makes use of the differences he or she has observed 'in the field', instead of creating differences by means of an intervention. Although it is often not possible to determine who has been subjected to an intervention in this variant it is, however, always possible to determine who has *not* been subjected to it. This possibility occurs, for example, when you want to study the effects of a direct mailing. There is no certainty as to who has been exposed to the intervention, i.e. the content of the mailing, because people receiving the mailing may put it aside unread. However, people who do not receive the mailing are normally not subjected to the intervention. This means that as far as *not* being subjected, there is practically no possibility of self-selection occurring.

Another example of a field experiment concerns the researcher who wishes to study the influence of the local media. He could choose several municipalities where local media are in place, and several municipalities that do not have local media. The researcher can follow a research strategy consisting of a mix of a field experiment and a comparative case study, which we will discuss further on in this chapter. This combination is often used in practice-oriented research.

3. Imitation

The examples mentioned above all describe experiments with comparable groups. Although the following variants do not use comparable groups, and therefore strictly speaking cannot be included in the definition of an experiment, we nevertheless feel they should be presented here. These variants show similar characteristics, both with each other and with regular experiments, in that the researcher makes something happen (X) and subsequently examines the effect Y of the intervention. This is a category of research involving the imitation of the reality to be studied. This type of research also has several sub-variants.

A form of imitation that is often used with the intention of learning is *computer simulation.* An example is developing a computer model of a communication process and then subsequently altering one of the model's components. The computer can then calculate what the consequences of this alteration will be. The most important advantage of computer simulation is that various alterations to the model (the intervention) can be made relatively easily and cheaply. Moreover, a considerable advantage is that the effects of a computer simulation can be measured within a very limited time-span.

Another form of imitation that is interesting for various modern social science disciplines is *gaming.* In gaming, the part of reality to be studied is turned into a game, consisting of a number of roles and rules that govern the interactions between the roles. Each role involves a number of tasks, powers and rules to which the role player must adhere. Each player receives certain instructions and information that he or she must observe and use according to his or her own wishes when deciding on how to act. In the course of the game, all kinds of unexpected events can be included (compare the chance card in a monopoly game). The consequences of these events can then be studied.
Another way of experimenting using imitation, and one that is particularly relevant for practice-oriented research, is using *scale models.* A certain process or object can be imitated on a small scale, making alterations less costly, less time-consuming and/or less risky compared to the changes in the system to be studied. This method is mainly used when testing new technological developments.

We have provided the reader with an overview of several variants. In order to give him or her more insight into using an experiment as a form of research, we will describe the following example taken from real-life.

Example "Map reading'
In the course of nocturnal military manoeuvres, military units regularly run into trouble, partly due to unusual and unexpected conditions on the ground. For this reason the army commander may decide to increase the soldiers' skills in interpreting aerial photos, topographical maps and other geographical data. It has been decided to develop a training programme. Basically, two types of instruction material can be used in this programme: films and slides. Because it is not clear which of the two will produce the best results, both variants will be tested. Three groups are formed. One group will receive a training session with film material, another group will be given slides, and a third group will receive no instruction at all.
For the composition of the groups, the following guidelines are used:
a. The groups all belong to the same company
b- The participants are selected at random from the company, and they are randomly assigned to the two groups,
c. Once the groups have been formed, the level of education of these groups, being a crucial variable in this case, is checked again.

d. The remaining courses are given at the same time on the same days of the week. This will also apply to the measurements that will be made (see details further on).
e. In addition to d, the activities before and after receiving the instructions will be identical for the three groups.

In order to assess the map reading skills a written test is used consisting of 40 multiple-choice questions. An intelligence test is used to assess possible interaction effects between intelligence and the intervention, i.e. programme X and its effect on map reading Y. The three groups are subjected to the tests without warning, half a day after the training has ended. The results show that both training courses help to increase map reading skills to a limited extent. On average, both groups that have undergone training scored better results than the group that had no training. The assumption that static images (slides) are a better aid for learning to read maps (also static images) compared to moving images has not been confirmed. Although the group with the slides performs on average slightly better than the group which used films, this difference is not statistically significant. The contribution of the training to improve the ability to read maps has proved to be stronger in the case of the more intelligent participants than for those who scored less well on the intelligence test. This indicates a slight interaction between intelligence and programme X.

This is an example of a *laboratory experiment.* The *target variable* Y is to increase map reading skills. The *intervention* X consists of two training courses, each with separate instruction material. For each of the two methods a separate *experimental group* is set up, and parallel to this group one *control group.* With a view to proving sound argumentation, the groups are *matched* as much as possible in various ways: recruitment from *one and the same* company; *randomising* supplemented by an extra check on the most important variable education level; scheduling of all activities in the same daily periods (the individual performance level may vary according to the time of day); and planning of the training so that it takes place before or after similar activities (thus eliminating factors such as tiredness, or being 'in good form' due to activities carried out before the training, or anticipating activities later in the day, and so on).
Because of the serious possibility of *test effects,* a subject is chosen *without an ex-ante measurement.* To avoid participants putting in extra effort, they are not informed that it is an experiment and that their performance will be measured afterwards. These measures contribute to the real-life character of the experiment and therefore also to the generality, or the *external validity* of the research results.
The measurement procedure is an example of a questionnaire with yes-or-no questions. The advantage of this compared to an interview with open ques-

tions is the comparability of both the answers among the various groups and the individuals within these groups. For the external validity it would have been better still to have given real-life exploratory assignments in the field, followed by participant observations by the researcher. However, this is far more time-consuming. Besides, it may be detrimental to the internal validity, because measuring results obtained on the basis of unsystematic observations are difficult to compare. This would require calling in several independent observers, and would make it quite a time-consuming affair.
Finally, the research results show an *interaction* between the intervention and the intelligence of the participants. The training sessions have a stronger effect for intelligent participants than they have for less intelligent participants.

Advantages and disadvantages

Like surveys, the category of experimental set-ups has various advantages and disadvantages. By far the most important advantage of the regular experiment is the high degree of *internal* validity. As stated before, there is no other research strategy which gives more guarantees for the validity of the causal proof. A potential problem is the *external* validity of the results. During an experiment people find themselves in an unfamiliar situation. They are brought together in a group with other people they do not normally relate to and find themselves in a situation that differs from their daily lives. We can therefore never be certain that the outcome corresponds with their daily life pattern. Another restriction is that by no means all interventions can actually be carried out. There may be moral objections to certain experiments. For example, it may be morally dubious to test experimentally a new and promising medicine for AIDS using a control group. It could also be immoral to withhold information about the effects of a particular intervention in an experiment, although the validity of the research results would require such reservation. There could also be variables of which we would like to know the effects but which cannot, or only with the greatest difficulty, be manipulated. For example, it is difficult to find out by way of experiment what influence the socio-economic environment of people has on their learning abilities.

Effective use

An experimental research strategy can be very effective, for example, in an assessment project. An experiment is useful if the researcher wants to establish the effectiveness of a certain government policy, or if he or she wants to find out about the effects that re-organisation will have on the work atmosphere and the productivity within an organisation. Experiments in the sense of imitating situations are an option, particularly if one intends to explore future developments. This type of research can also be used to find out how people respond to changes in a new environment, or when changes are made to an existing situation.

In a more exploratory sense field experiments in particular can be useful for discovering the most suitable work procedures in an organisation. If the researcher intends to carry out experimental or quasi-experimental research, he or she would be well advised to gather information through the relevant methodological literature before setting out on the project. We recommend reading Cochran and Cox (1992), Montgomery (1991) and Kirk (1995).

Assignment

a. Formulate the project context and the research objective of a research project that is appropriate for a laboratory experiment with a factorial design.
b. Do the same as for a, but then for a laboratory experiment with existing groups.
c. Do the same as for a, but then for a field experiment.

6.5 CASE STUDIES

The case study is a research strategy in which the researcher tries to gain a profound and full insight into one or several objects or processes that are confined in time and space. This may be an organisation, a company, the processes involved in passing legislation, the choice of a dumping site, and so on.

Characteristics

Case studies are characterised by:

1. a small domain, consisting of a *small number* of research units;
2. *intensive* data generation;
3. more *depth* than breadth;
4. a *selective,* i.e. a strategic sample;
5. an assertion concerning the object as a whole (instead of an object that is unravelled in observation units and variables, as it is the case in a reductionist survey research);
6. an *open* observation *on site;*
7. *qualitative* data and research methods.

When we compare these characteristics and those of a survey we see that they are opposites in many respects. The above characteristics are elaborated on and explained below.

The first and most important characteristic of a case study is the use of *a* relatively *small number* of research units, usually referred to as *cases.* This number ranges between one and a few dozens at the most. Using small numbers has a number of consequences for carrying out the research project and for the nature of the results. The first and obvious consequence is that, in principle, a quantitative analysis of the data is not possible. Therefore a different *qualitative* research method must be used. This means that the emphasis will not be on counting and calculating on the basis of the observation units, but on comparing and interpreting these results.

A second characteristic of the case study is that the focus is on *depth* rather than breadth, as is the case in a survey. Depth is realised by using *various* and *intensive* methods for generating data. In a survey research project, the researcher usually limits himself to telephone interviews or written polls, preferably consisting of closed questions. In a case study, however, the researcher often opts for the more intensive face-to-face interview consisting of open questions or topics. However, the researcher prefers to use a combination of individual interviews and, for example, group interviews, together with participant observation and content analysis of textual and audio-visual material. This is called *the triangulation of methods.* The researcher also tries to achieve depth by working with several sources, the so-called *triangulation of sources.*

A third characteristic of a case study, which also follows from using a small number of cases, is that a *strategic* sample is taken instead of a *random* sample as in a survey. When small numbers are used, there is a greater risk of ending up with an atypical sample, which has serious consequences for the external validity of the results. With a strategic sample the researcher, when selecting research units, is consciously guided by the conceptual design or the information he or she intends to extract from these research units. To sum up, when selecting the research units the principle of chance is replaced by the use of the set of research questions that has to be dealt with.

Another characteristic of a case study is that we are trying to obtain a *general* idea of the object *as a whole.* In this case, the term *holistic* method would be appropriate, to be distinguished from a reductionist approach, which is typical of a survey. The holistic quality manifests itself in the use of a qualitative, unstructured and open way of gathering data, such as the open interview, participant and non-participant observation and the interpretation of textual and audio-visual material. In this context, *triangulation* could also be seen as an effective instrument for gaining an overall and holistic picture of the research object. Gaining an overall picture of the research object is characteristic for an ethnographic study in which a special method of data gathering is used (see Chapter 6, Section 6.4).

Another typical aspect of a case study is that the object, i.e. the case, is studied in its *natural context.* In the introduction this was referred to as a research project on site. A case study concerned with the functioning of the local broadcasting station in a city could involve, for example, visiting the station and interviewing the people there, studying documents and making observations. If you were engaged in a survey, however, you would be more inclined to send the staff a written questionnaire, conduct telephone interviews or, in the most extreme case, visit staff at home to conduct the interviews.

As the selection of the cases to be studied is of vital importance, we can conclude this section by discussing several methods of strategic sampling. Basically, the researcher has two options: he or she either selects cases that show a minimum number, or cases that show a maximum number of differences. This comes down to selecting maximally similar cases or maximally different or contrasting cases. Let us assume that as yet the researcher has little knowledge of the subject to be examined, which is why he or she has opted for an *exploratory* research project. In this case, the researcher would be well advised to look for cases that on the whole show a lot of similarities (minimal variation). If the cases are very different it is difficult to obtain generally descriptive assertions. It is also difficult to link up the various phenomena (explanation). When, for example, we believe that there is a relationship between leadership style and productivity, the differences found in productivity may be attributed to other differences between the cases studied instead of the differences in leadership style.

Another, perhaps even more interesting strategy that can be followed when drawing a sample, is to use cases that show a great number of differences in certain aspects *that have been carefully selected by the researcher,* and are similar in the remaining aspects. This could be an interesting strategy if the researcher intends to explicitly establish a causal connection between X (independent variable) and Y (dependent variable). Let us start from the hypothesis that the extent of co-operation between healthcare providers (X) strongly determines the quality of healthcare in hospitals (Y). In order to check the validity, i.e. the empirical tenability, of this hypothesis the researcher can search for an organisation in which there is hardly any co-operation and an institute that enjoys an excellent reputation in this respect. On the basis of a comparative case study, you can consequently verify whether the second institute can be distinguished from the first by providing better-quality medical care. In this case, we vary the *independent* variable to a maximum, i.e. the extent of co-operation (X).

Another option is to follow a strategy in which the *dependent* variable (Y) shows a maximum variation or contrast. In the example given, this appears to be an efficient strategy if we intend to find out which factors play a part in the quality of healthcare, i.e. the dependent variable mentioned above. In this case, we would select several hospitals (or hospital wards) known for their top-quality medical procedures and healthcare. We could compare these with hospitals (or similar hospital wards) that have a bad reputation in this respect. By making a comparative analysis, the researcher tries to find the systematic differences between the good hospitals (hospital wards) and the ones that are not so good. Of course this is preferably steered by assumptions, deduced from theory and/or logical reasoning, about possible determinants of healthcare quality. Once the researcher has found these differences in the empirical data at hand, he or she can conditionally mark them as the causes of the difference in quality. For the causes and the nature of this reservation, see section 6.4 on the experiment.

A third and final specific methodology we would like to mention concerning the selection of cases for a case study is the so-called *snowball sampling,* Here the cases are selected one by one. The first case is studied and, built on the results of the first case, a second case is selected, and so forth. This specific methodology can be used when the researcher knows little about the subject in question, or when he or she is completely in the dark about what one may come across in a certain case. Also if the population of interest is unknown or not clearly demarcated, a snowball procedure may be a good option. This is, for instance, the case in research on drifters and homeless people.

One last interesting reason for snowball sampling is relevant when researching information flows and networks of employee interaction in organisations. We can ask an employee from who or where he or she has gained information, or with whom this person interacts on a regular basis. Next we can ask the same questions to the person(s) mentioned by the first, et cetera.

Variants

Several modalities and variants can be distinguished within case studies, of which the most important are:

1. *The single case study*

In the single case study only one case is thoroughly examined. Preferably the emphasis lies on triangulation. This strategy is used to eliminate chance as much as possible, which is important as we are only using an individual case. A sub-variant of the single case study is a case study in which various sub-cases can be distinguished, a so-called embedded case study. Let us assume that the researcher intends to comment on a public administration system. In view of this, he or she may conduct a study concerning the separate ministries, or even the separate departments within these ministries, as if they were individual cases. Within this framework we should mention the difference between observation units and research units. In the above example, the ministries may be treated as research units, while the separate departments within these ministries may function as observation units, or data sources, or both.

2. *The comparative case study*

The comparative case study can be distinguished from the single case study by the fact that several interrelated cases are compared instead of just one. Several sub-variants can be identified, of which the two most important are discussed below.

In the *hierarchic method* the research project is carried out in two stages. In the initial stage the *separate* cases are examined as if they belong to a series of single case studies. It is essential for this hierarchical method that the separate

cases are studied *independently from each other.* When analysing these cases and describing the results, it would be better to proceed according to an established pattern. This facilitates making comparisons in the second stage (see below). Next the results from the first stage can be used as the input for a comparative analysis of the coherent body of all cases that are involved in the project, In doing so, the researcher tries to find explanations for the similarities and differences between the various cases that have emerged from the first stage. You could also reach a higher level of abstraction by placing various issues in general and abstract categories. A variation of this method is that during the initial stage the same case is studied by different researchers, instead of the separate cases being studied independently by one and the same researcher. The *independently obtained* research results are subsequently analysed in the second stage on a slightly higher level of abstraction. This procedure is a special variant of *the triangulation of researchers* that was introduced earlier in this study (see page 179). Basically, this method can only be used when data sources other than individuals are used. After all, you cannot expect an individual to go through the same or similar questions asked by one researcher after another.
In many cases the hierarchic case study has particularly interesting possibilities for a student engaged in a final project. For example, the latter can undertake a project together with a fellow student using the principle of the triangulation of researchers.
In *the sequential method* the researcher starts off by thoroughly examining an individual case. A second case is selected by using the results of the first one, *which case is studied by comparing it with the results of the first case.* Only after having drawn conclusions from this comparison is a third case selected on the basis of these conclusions, and so forth. This method shows similarities with both the hierarchic method and the snowball sampling, as well as with the grounded theory approach, which will be discussed later on in this chapter.

This concludes the overview given of several variants of the case study. We will give a detailed explanation on this subject by using a real-life example.

Example 'Peace and Quiet'
In 'Peace and Quiet', a home for the elderly the number of informal complaints has risen. Among the staff there are tensions and absenteeism, and the turnover rate is high. During board meetings the representatives of the residents complain bitterly: unfriendly treatment and a lack of care by members of the staff arc the order of the day. As a result of cutbacks in the past few years, the workload has become extremely high. What is most striking are the huge differences between the various departments in the home. Whereas one department seems

fairly peaceful, the other is buzzing with rumours and the atmosphere is spoilt by malicious gossip. This gives rise to questions about the cause of the problems observed. Only when these have been clearly answered, can people start thinking about possible solutions and a policy which can be adopted in order to improve the situation.
The management decides to call in a consultancy firm to investigate the situation and commissions the consultancy firm UVWD to conduct the assignment. On the basis of initial intake interviews with the various parties involved, the researchers expect that a complex set of problems has developed over several years and consequently it has been decided to thoroughly examine the situation in a broad context and from various points of view.
The decision has been made to study each department separately. The department that has the most serious problems and the one with only a few slight problems will be the first to be studied. This is an instance of most different or contrasting cases. The residents and staff members of both departments will be interviewed and staff will be consulted.
In addition, the researchers will visit the dining room, the recreation rooms and other communal rooms at regular intervals to observe systematically the situation and to find out what the subject of conversation is. The researchers are especially alert when residents are engaged in lively conversation. In addition, the researchers will be attending meetings and study reports of previous meetings. At the opening of each meeting the researchers will place the problems on the agenda. As far as observation goes, the researchers have agreed to make as many independent observations as possible and to compare the results afterwards.
Finally, the researchers will need to ask for permission for limited access to medical files; this request has been granted. Moreover, talks will be held between the researchers and the social workers who assist the regular staff working in the home.
All the material that is gathered from these different sources will be thoroughly examined per department, and compared over the departments. Based on the results thus far, a third department will be selected for further study and the same procedure will be repeated. In this way, six of the twelve departments will be investigated. Based on the initial results, a final analysis will be made in an attempt to provide a detailed picture of the causes and the background to the problems.

In the above example we have followed a team of researchers who have carried out a practice-oriented research, by using a *comparative case study design.* With reference to the *intervention cycle* as discussed in Chapter 2, making a *diagnosis* has been the *research objective* for the researchers. Within this perspective, they began with a *strategic selection* of cases, i.e. they selected two departments with a maximum of differences as to the dependent variable, the gravity of the

problems outlined. This is a useful strategy to follow in view of the researchers' intention to discover the causes and background to the problems. They will subsequently proceed using the *snowball sampling principle.*
Furthermore, from the description it can be concluded that *individuals*, i.e. the residents and staff and, at a later stage, social workers are used as *data sources.* Relevant information has been extracted from them through individual *interviews.* The instrument of *observation* has been used as well, as the researchers have decided to take a look in the communal rooms at regular intervals and to systematically observe the communal activities of the residents. In this way both the triangulation of methods and the triangulation of sources have been applied. In addition, the fact that several researchers are working on the same research project has been exploited by using a clever triangulation of researchers. After all, the decision was to make as many independent observations as possible. A further *triangulation of sources* can be applied by studying documents, i.e. the residents[7] medical files.
It must be clear by now that the researchers have opted for a *hierarchic comparative case study.* Initially the various departments were investigated *separately.* It was not until the final stage of the research project that the results of these separate studies were combined and correlated in order to obtain a *structured* and *well-founded* overall picture. There are elements from the *sequential method* since the selection and comparison of the third and consecutive cases are based on previous cases.
This mix of different variants in the case study design provides another example that clearly demonstrates the freedom you have when developing your own research design and which enables you to deviate from standard principles. Your design can also include elements of different variants and strategies. All this makes the designing of research an extremely creative activity, involving considerable imagination, assessment abilities and previously obtained knowledge and insights.

Advantages and disadvantages

Especially in practice-oriented research a case study has its advantages. Firstly, this research strategy offers the possibility to obtain a *general* picture of the research object. In this respect, case studies differ from both quantitative surveys and experiments, because with these we will obtain much more knowledge by focusing on various aspects. Having a general picture can be advantageous during a research project aimed at changing an existing situation. Attempts to change this situation are usually risky if one has insufficient knowledge of the object as an integrated whole, and of the context in which this object is embedded. After all, without this it is impossible to anticipate the consequences of an intervention.
A second advantage of a practice-oriented research project set up as a case study is that not much pre-structuring is required. It requires far less pre-

structuring than a survey or an experiment. As a result, the case study is *much more flexible* compared to the two other strategies. It also makes it much easier to change course during the research project. This could be an important advantage if the research project concerns a rapidly changing situation, which is quite often the case in a practice-oriented research.

A third and final advantage of a case study from the point of view of practice-oriented research is that the results will be accepted more readily by the people in the field than the results of a quantitative survey or a complex and often slightly artificial experiment. One reason for this is that the role of the researcher is far less distant than in a survey or an experiment. And, as mentioned before, the methods used and the type of data following from a case study are of a more everyday nature. Therefore the results are identifiable and more easily acccptcd by the stakeholders than in the case of a survey, other things being equal. Acceptance from the people in the field, i.e. the target population, is often a condition for being able to make a real contribution to the process of change. These arguments are of no or little consequence to theory-oriented research.

A possible disadvantage of the case study is that the *external validity* of the results is often under pressure. The fewer cases studied, which is often needed for achieving in depth knowledge, the more difficult it is to apply the results to a broader population of interest or to similar cases. It goes without saying that this is basically of less importance in practice-oriented research, which may include statements about one organisation in particular, rather than in theory-oriented research. In this respect a quantitative survey is the opposite of a case study. Obviously, being based on a large sample, in a survey the external validity can be achieved more easily than in a case study. However, due to the limited depth, the use of extensive methods and less flexibility, the internal validity will sooner be under pressure in a survey than it is in a case study.

Effective use

The case study offers interesting possibilities to fledgling researchers in particular. There are three reasons for this. A first pragmatic advantage is that it is easier for fledgling researchers to delimit this type of research to manageable proportions than, for example, experiments and especially surveys. This is due to the high degree of pre-structuring that surveys and experiments require and the large number of research units used in surveys for which data needs to be gathered.

A second practical advantage is the possibility of obtaining significant results in spite of the lack of thorough methodological knowledge and training. Typical of the case study is that the methods the researcher will use show similarities with everyday thinking and acting, which is different from the other research strategies. For example, it is basically easier for a student who has little knowledge of and experience with methods and statistics to carry out a

case study, running fewer risks in the process, than when carrying out a quantitative survey or an experiment. In the analysis stage of a survey, an extensive knowledge of statistics and quantitative research methods is essential.
A third and final practical advantage we would like to mention is that case studies, unlike most strategies, can be used in almost any situation. An experiment, for example, often meets with practical or moral difficulties and only causal issues can be studied. Surveys need a large number of research units, and sometimes this large number cannot be found. Also qualitative approaches would be particularly beneficial to many practice-oriented research issues, as argued before.
Any reader who considers basing their research project on the case study design, is well advised to become acquainted with, for example, Yin (1984), Franklin, Allison and Gorman (1996), Hamel, Dufour and Fortin (1993) and Stake (1995).

Assignment
Let us assume that you have decided to carry out a case study regarding the backgrounds and causes of the many conflicts which have occurred in a particular department of the local municipality.
Formulate a detailed technical design for this research. Present your argumentations and considerations regarding each of the choices you have made in this design.

6.6 THE GROUNDED THEORY APPROACH

A research that is carried out according to the grounded theory approach may be characterised as a strategy that can be used to gain theoretical insights with only the minimum of prior knowledge, and by continuously comparing phenomena that are involved.

Characteristics
The main characteristics of a grounded theory approach are:
1. an *inquisitive* (tentative, hermeneutical, *'verstehende') attitude* from the researcher;
2. a continuous process of *comparing* empirical data and theoretical concepts;
3. a careful and consistent use of the *procedures and techniques* as set out below,

Here is a brief illustration of these three characteristics.

An inquisitive attitude
In this pre-eminently qualitative research approach, a theory or theoretical concept materialises slowly but surely *during the course of* the research.

The researcher does not start out with a detailed theory that is subsequently tested. Like an explorer, he embarks on a journey. It is for a good reason that Glaser and Strauss's pioneering study, published in 1967, is called *The discovery of grounded theory.* It is a search that not only leads through familiar regions, but it also leads to unknown areas where the researcher has trouble finding his or her way and staying on track. The researcher must keep an open mind in order to absorb all the impressions received while studying research data and relevant literature. An open mind - also called 'theoretical sensitivity' - 'refers to the attribute of having insight, the ability to give meaning to data, the capacity to understand, and the ability to separate the pertinent from that which isn't' (Strauss & Corbin, 1990). To some researchers, more than others, an open mind comes naturally. However, this could also be an acquired attitude and is reinforced as one becomes more familiar with the techniques and procedures of the grounded theory approach.

In the social sciences this attitude of the researcher is known as a 'hermeneutical' or '*verstehende*' attitude. This can be distinguished from a hypothetical-deductive attitude of the survey-researcher who is often involved in testing hypotheses. Both are legitimate scientific attitudes that are instrumental to the further development of science, provided the scientific criteria of reliability, validity and controllability are met. An inquisitive attitude implies that the researcher is constantly alert and is not carried away by fantasy and creativity. Instead he or she must maintain a critical and sceptical attitude towards the development of the theory at hand. It is essential that the concepts developed are tested for their validity If they cannot stand the empirical test, these concepts are to be set aside immediately (Blumer, 1964).

A process of continuous comparison

The research technique associated with the grounded theory approach is often referred to as the method of continuous comparison. During an exploratory expedition, the researcher is incessantly engaged in a process of comparing findings with previously found phenomena or interpretations, or with the ideas and notions others before him have published on the subject. The researcher investigates whether or not the newly found phenomenon has the same characteristics as a similar phenomenon which was previously found. In the latter case, the researcher is to investigate whether the new phenomenon is an exception or an adjustment to the rule, or whether it refers to an under-exposed aspect of the theoretical concept he or she is working on.

There are many ways of making comparisons, and here we will mention a few of them. The examples have been taken from a study conducted by Benschop (see amongst others Benschop & Doorewaard, 1998).

a. Primary empirical comparison

The researcher may compare a phenomenon he or she has observed with another phenomenon described in the same research project. In a research project investigating the quality of labour in the banking industry for example, Benschop finds that part-time work is mainly found in lower-qualified, administrative functions and not in the more senior commercial functions. She also found that women in particular work part-time in banks. Could there be a link between these two phenomena?

b. Secondary empirical comparison

The researcher may also compare the phenomenon he or she has observed in a similar or comparable phenomenon described by others. In our example, the researcher could decide to study reports from other researchers concerning the prevalence of part-time work. She has found that these reports also show that part-time jobs requiring lower qualifications are mainly held by women.

c. Primary theoretical comparison

The researcher compares the phenomenon he or she has been observing with the theoretical insights developed on the basis of previously found phenomena. Based on a first analysis of the phenomena observed, the researcher in our example formulates two hypotheses. The first is that especially women with young children prefer a part-time job to full-time employment because of their domestic responsibilities. The second hypothesis states that work of a repetitive nature, and therefore requiring lower qualifications, is suitable for part-time functions, at least according to the managers. The combination of both hypotheses may account for why women in particular work part-time in jobs requiring lower qualifications. The researcher decides to study both these hypotheses more thoroughly. She asks and gets permission to study females at work in another organisation. This time she includes an analysis of the women's family situation in her study, as well as the repetitive nature of the part-time jobs. Her theoretical assumptions are confirmed.

d. Secondary theoretical comparison

The researcher compares a phenomenon with theories formulated by other researchers. The researcher in our example could study the scientific literature about the quality of the work, about part-time work and about the position of women in organisations. In various studies the phenomenon she will find, i.e. that especially women with young children work in low-qualified part-time jobs, has been placed in the perspective of the *mommy-track* theory: women who have young children can often only work part-time, irrespective of their qualities and qualifications, and end up almost exclusively in the lower-qualified functions. They are often left standing on the sidelines when it comes to furthering their career.

e. Comparison of theories

The researcher compares the theoretical concepts he or she has developed with other thcorctical conccpts. Bcnschop, for example, delves more deeply into the literature and compares the *mommy-track* theory with other theories on career prospects and restrictions. It turns out that successful careers are often accomplished by people who are in a position to fully submerge themselves into their work and have no other social or family-related responsibilities. Mixed responsibilities appear to inhibit one from having a successful career.

f Deductive comparison

On the basis of a theory, the researcher derives the prevalence of a characteristic of a phenomenon. In his or her research project, the researcher sets out to look for similar characteristics. In our example, the researcher may find in the scientific literature on career development that organisations expect people who aspire to having a career to be available full time. It is automatically assumed that people who have other priorities, such as looking after children, are not interested in making a career. The researcher examines which views people have on pursuing a career in these companies. She finds many quotes and opinions that support the image of the average career maker.

g. Inductive comparison

The researcher establishes a characteristic of a phenomenon in reality and subsequently searches in existing theories to find an explanation for this characteristic. Benschop found, for example, that many people in the organisations she included in her study still have - implicitly - a particular image of what is usually considered a "career maker': a person who is willing to work more than full time, and is prepared to sacrifice his or her private life for a career. Very often one implicitly thinks the 'career maker' is male. Benschop finds it striking that many women working part-time have the same image. These women seem to accept that they have no career prospects, mainly because they work part-time. Subsequently, the researcher tries to find an explanation for this phenomenon in the literature and comes across theories that explain this self-image from the perspective of gender-specific socialising processes and the formation of gender-specific identities.

These are but a few examples. If he or she so wishes, the researcher can choose different comparative methods. Therefore, this research strategy has an iterative nature with regard to both the designing of the research project and the research activity itself. Should the researcher come across a theoretical explanation halfway through the research project, then he or she can return to interview reports or documents that were analysed earlier and take a fresh look at these, based on the explanation found. This way, he or she will acquire new data associated with this recent insight.

It is of crucial importance that the researcher carries out these activities in an accurate and transparent way. Each step needs to be recorded in order to indicate how he or she has reached certain conclusions. Standardised procedures and techniques for the grounded theory approach will prove to be useful here. We will discuss these in greater detail.

Procedures and techniques

Because there is always a risk that the development of new theories and theoretical concepts lacks controllability, the designers of this research strategy have attached great value to a consistent adherence to certain procedures and techniques. Careful and consistent use of these procedures and techniques enables critical fellow-researchers to follow the development process of the new theory step-by-step and therefore to determine its value, and to contribute to the theory themselves. Next, we will briefly discuss the major procedures and techniques. These techniques are complementary and the researcher may use them during any stage of the research project.

1. Sensitising concepts and open coding

The first stage involved in theory building following a grounded theory approach concerns exploration of the field of study. The researcher makes use of all the sources available and he or she is interested in any information relating to the relevant field of study. At this stage, the so-called 'sensitising concepts' become important. Sensitising concepts are vaguely defined, but inspiring or intriguing concepts. At the start of the research project the precise meaning of these concepts is left open. During the course of the research a more precise meaning is gradually attached to these concepts according to the findings. The actual research activities at this stage consist of taking notes on the phenomena observed and tentatively formulating concepts that could interpret these phenomena. Strauss and Corbin (1990) call these activities 'open coding'. During this process, data is compared, labelled and classified. Below you will find an example of open coding based on sensitising concepts.

Example 'Hopping'

Many students keep putting off studying until just before their exams start. In a project into the learning behaviour of students, the researcher tries to provide insight into this phenomenon. One of the students interviewed claims that 'this has a lot to do with "hopping". You put off studying because you feel you first need to do something else/ The researcher wants to know about the aspects associated with this kind of behaviour and decides to interview other people, analyse his own 'hopping' behaviour and read other studies on this subject. This way, 'hopping' is a 'sensitising concept' in the study of the learning behaviour of students. By describing the various manifestations of 'hopping' and by comparing these activities (open coding), the researcher can acquire more insight into the reasons why people procrastinate.

2. Axial coding

The concepts and insights then need to be improved with a new or more specific meaning. This process continues until the concepts have sufficiently crystallised into satisfactory clear concepts that cover important aspects regarding the field of study that is to be analysed, In this context, Strauss and Corbin (1990) refer to 'axial coding' a procedure in which the various concepts (codes, labels) are correlated within a cause-and-effect diagram. In this process, the *conditions and context* associated with the *phenomenon* are indicated, as well as the *strategies for action* that bring out the phenomenon and the *effects* of these strategies. We will illustrate this below.

Example 'Hopping'

In 'hopping' (*phenomenon*), a number of aspects are involved, such as: the difficulty of the exam, the performance of the student thus far, social contacts, the student's fear of failure, and so on *(conditions and context).* Hopping *(strategy)* itself consists of several instances of behaviour that are found in the areas of actual learning behaviour (reading another article first), social behaviour (visiting some friends first) and personal behaviour (cleaning the kitchen and doing some shopping first). Hopping causes tension, bad exam results and feelings of guilt *(effects).*

3. Selective coding

The multitude of phenomena described, and the formulated concepts and key words, are reduced to a concise description of the theory that is to be developed. This is done by determining the key concepts and by formulating the essence of the relations between the key concepts on the one hand, and similar phenomena in a specific *line of argumentation* on the other. Strauss and Corbin (1990) call this 'selective coding', establishing a 'core category' in a selective way by indicating the reasoning behind the relation between the phenomena at hand (story line).

Example 'Hopping'
'Hopping' behaviour of students appears to be part of a more complex pattern of living and thinking that is typical of today's students. Apparently there exists a so-called student sub-culture (key concept). This sub-culture consists of structural characteristics, for example the nature of their accommodation, and activity characteristics, such as cramming for an examination and leading a life which is typical for a student to live. Further analysis of the characteristics of the student sub-culture will explain more about the learning behaviour, including 'hopping' behaviour by students.

After formulating the key concept and the central line of argumentation, the theory is further elaborated. It is essential to carefully formulate the connections between the distilled key concepts and the remaining substantive concepts of the research project. Links are established with other existing theories in this field. The boundaries of the theory are explored by studying extreme situations that initially seem to contradict the theory. Then the time has come to test the theory empirically.
There are three consecutive procedures a researcher can use. We will now illustrate the entire process.

Variants
There are no standardised variants of the grounded theory approach. You can make your own design by emphasising certain aspects and making a selection from the various comparison methods. We will illustrate this below.

Example 'Gender subtext'
An example of the use of the procedures and techniques of the grounded theory approach is the previously discussed study by Benschop (Benschop & Doorewaard, 1998) into the phenomena and effects of the distinction between men and women and between masculinity and femininity in organisations. In the scientific publications in the field of women's studies there is a reference to the prevalence of underlying, power-related processes within organisations. These processes are said to be responsible for the persistence of gender incongruity in organisations. Benschop uses this notion of underlying power-related processes as a 'sensitising concept'. She then further develops this concept in an exploratory way by confronting the existing theories in this area with the material she has gathered empirically. She searches in scientific literature on women's labour, women's studies and organisational theories for concepts and notions that may prove useful. She also gathers information on these processes in five cases in the banking industry. This is done in accordance with the principles of triangulation by means of observations, interviews and document analysis.

Using the technique of open coding, she works out various concepts that could be useful for describing the phenomenon of gender incongruity. One of these notions is the concept 'showpieces'. This concept refers to women who have succeeded in acquiring senior positions and whose career is considered to be a shining example for everyone in the organisation. Using the techniques of axial coding and selective coding, applied to the aforementioned concepts, Benschop and Doorewaard develop the theoretical key concept of 'gender subtext in organisations'. The gender subtext is a collection of organisational measures and social practices, which often implicitly, (re-)produce a gender distinction* Gender distinction often manifests itself as gender discrimination. The aforementioned arrangements are then correlated and form the basis for the various practices in the organisation which portray these distinctions.
The results of this study show that the gender subtext as conceived by Benschop and Doorewaard, can be found in various and varying social contexts and organisational frame-works. However, the men and women involved are often not explicitly aware of this, nor do they create and maintain such gender sub-text. To illustrate this, there is an unequal horizontal and vertical division of labour between men and women. At the same time, however, both men and women in all organisations included in the study were of the opinion that men and women received equal treatment and were valued equally. In this sense there is an equality ideology.
The nature of Benschop's study is mainly exploratory. The concept of 'gender subtext' gradually takes shape due to the continuous comparison between the basic concepts of power, interaction and identity on the one hand, and empirical data on the other. It is then essential to test the concept in an empirical follow-up study by operationalising it in such a way that it also becomes possible to carry out quantitative research into the existence and the influence of gender discrimination.

Advantages and disadvantages

A major advantage of the grounded theory approach is that it can be used to develop a theory that is, despite its abstraction, easily recognised by the people referred to in this theory. It is also a method that enables the researcher to obtain an overall picture of a complex situation. There is a risk of getting lost in this complexity and letting one's imagination take over.

Effective use

The grounded theory approach is mainly suitable when a theory is to be developed in a new area, or in an area that has not yet, or hardly, been studied. This is especially favourable when the goal is not to develop abstract general theories but to develop practical theories. This strategy is also useful for developing *parts* of the set of research questions. Frequently, researchers are confronted

with insufficiently detailed theoretical concepts. By using - albeit on a modest scale - the procedures and techniques of the grounded theory approach, the researcher is able to further elaborate on the set of research questions in a scientific way. It is therefore recommcndcd that the researcher tries to find out whether the theoretical concepts formulated in the set of research questions require a more solid foundation. In this case the grounded theory approach will be combined with one or more variants of the case study, the experiment, the survey or the literature study.
For those who intend to carry out their research project in accordance with this grounded theory approach, we refer them to authors such as Glaser and Strauss (1967), Strauss and Corbin (1990), Silverman (1997), and Maso and Wester (1996).

Assignment

a. Mention within your field of study three research issues or research subjects which in, your opinion, are so new that there is hardly any theory that can count for these phenomena. This makes these issues suitable for the grounded theory approach.
b. Formulate for each of these issues a core concept which can serve as a sensitising concept. Explain your argumentation.

6.7 DESK RESEARCH

Desk research is a research strategy in which the researcher does not gather empirical data herself or himself, but uses material produced by others.

Characteristics

Desk research is characterised by:

1. the use of *existing material*, in combination with *reflection*;
2. the *absence of direct contact* with the research object;
3. the material is used from *a different* perspective than at the time of its production.

These characteristics are briefly explained below. In desk research by far the most important characteristic is that the material used has been produced entirely by others. This means that you do not conduct any interviews or observe any processes yourself.
Three categories of existing material can be used for carrying out desk research: literature, secondary data and official statistical material. *Literature* is understood to mean books, articles, conference proceedings and such works that contain the knowledge products of social scientists. By *secondary data* we mean empirical data compiled by other researchers or yourself during pre-

vious research projects. These may be, for example, records of interviews, or databases which are suitable for making a quantitative or qualitative analysis, whether or not by using a computer. There are many types of archives or so-called databases in which secondary material is stored.
It is important to realise that secondary data can emerge from a survey, an experiment or a case study. Material that has emerged from a grounded theory approach is of a highly individual nature and therefore it is generally unsuitable for use in secondary research. This means that a desk research project using secondary data largely meets the characteristics of any one of the types of research as described in Sections 6.3 to 6.5. *Official statistical material* is understood to mean data gathered periodically or continuously for a broader public.
Characteristics 2 and 3 result directly from using existing material. These characteristics have their advantages, but they also have some drawbacks. These are discussed later on in this section, under 'Advantages and disadvantages'.

Variants
Two main variants of desk research can be distinguished, namely *literature survey* and *secondary research.* Parallel to the distinction between knowledge sources and data sources, in a literature survey the researcher would use *knowledge* produced by others (knowledge sources), and in a secondary research empirical *data* produced by others (data sources). Naturally, these variants can be combined. A brief explanation of the two variants follows below.

1. *Literature survey*
As the name implies, when carrying out a literature survey the researcher is completely dependent on existing specialist literature. This research strategy is not frequently followed, but it is, for example, used to map out the latest theories pertaining to a certain subject. The way the selected literature is studied depends completely on the objective of the researcher. We will make this clear by comparing two situations. In the first situation the research objective is to compare the perceptions of power by Hunter and Dahl, two political scientists. In the second situation, the aim is to give an overview of the definitions for the concept 'cash flow' as found in the literature on business economics. In the first case we will have to thoroughly study the works of both political scientists. After all, it is not just their definition of power that you require. You are also interested in the *perception* of power that both authors have and the background to these perceptions. You may therefore decide to study their bibliographies as well. In this case, a literature survey means a thorough examination of a number of scientific studies by these political scientists. This research project strongly resembles the case study where *qualitative* content analysis is used. In the second case (definitions for 'cash flow'), however, the researcher is solely interested in a comparison between several definitions

found in business economics, often represented by formulas. In this case, a literature survey does not include a thorough study of a limited number of works. A quick survey of a large number of works on business economics would be a more efficient strategy to follow, in order to find as many different definitions as possible of the concept 'cash flow' and then to compare them all and assess them on their merits. This type of research shows the characteristics of a survey using a method that is similar to *quantitative* content analysis.

2. *Secondary research*
When the researcher rearranges existing data, and analyses and interprets this data from a different perspective during the course of the project, he or she is following a secondary research strategy. In many final projects in the disciplines of business studies, public administration and policy sciences, this strategy is used to answer research questions. Naturally this requires the use of reliable scientific data. Most statistical material published each year by recognised research institutions meets this requirement. One can also assume that the numbers provided in annual accounts or reports of companies and institutions have been verified and audited.
On the other hand, statistical data could misrepresent the facts completely, in spite of the fact that the data is correct from a technical point of view. An advertisement for a driving school states for example: '85% of our students who passed their driving tests on their first attempt had fewer than 25 lessons/ This is entirely different from: '30% of our clients pass on their first attempt, and many of these clients took more than 25 driving lessons/ Both statements may be true, but they suggest something altogether different.
In secondary empirical research the researcher frequently uses statistical data that is processed and analysed in a *quantitative* way. However, he can also make use of *qualitative* research data when carrying out a secondary research project. For example, when carrying out his final project, a student could reanalyse the interview reports compiled by a fellow student, while using a different set of research questions, in a qualitative way. He could reread the interview records and try to interpret the respondents' views from the perspective of a new theory. We will explain desk research in further detail below using two examples, i.e. a literature survey and a secondary research project.

Example 'The quality of labour'
The concept 'quality of labour' is a current issue within business administration. A great deal of empirical and theoretical research has been done on this phenomenon. However, as yet there is no clear overall definition of the quality of labour. The literature makes a distinction between objective and subjective approaches to this concept. Economists, in particular, often opt for the objective approach, where quantifiable aspects of the work are assessed using inter-subjective criteria for what is considered to be good and poor quality of labour. In

the subjective approach, the expectation an individual has towards his work is compared to the way he experiences the work. The degree of job satisfaction is established in this way. This approach is especially favoured in many labour sociological perspectives.
A researcher in the discipline of business studies intends to compare the different definitions used over the past decade in the American and European tradition of research into 'the quality of labour'. The objective of the project is to develop a proposal for a general, comprehensive scientific definition in business studies of the 'quality of labour'. By using various resources and aids such as search methods, excerpts, specialist literature and the snowball method, the researcher collects the titles of 253 research reports and scientific articles in the field of the quality of labour. She picks 85 of them at random for further examination. Subsequently, she searches these reports for a definition of these concepts. She also examines the wider context in which these definitions are used. She compares and classifies the various definitions and contexts of the concept 'the quality of labour', on the basis of which she concludes that making a single overall definition is not a practicable objective. However, she comes up with proposals to develop several objective and subjective definitions of the concept. In addition, she indicates the various advantages and disadvantages of these definitions as used in various contexts.

This is obviously an example of a literature study showing characteristics that are similar to those of a survey. The researcher uses a relatively large number of research units, in this case 85 publications (knowledge sources) selected at random from a population of 253 titles, in which a relatively small number of subjects are examined.

Example Tension costs and pension provision'
A student of business economics specialising in financial accounting is interested in how the expenses for pensions are incorporated into the annual accounts. After all, companies and institutions must reserve funds annually for the pension commitments they have towards their employees. However, it is unlikely that an equal amount will be spent on pensions in the same financial year. In other words, the amount of the pension costs does not burden the company's earnings to the same extent as for example the cost of wages in the current financial year. The question arises if, and if so, how the pension costs are incorporated into the annual account. In the literature on business economics six processing methods arc discusscd, based on different applications of principles on business economics. The student of business economics requests the annual reports of a certain financial year from twenty listed multinational companies selected at random. Subsequently, he examines if and, when applicable, how these companies incorporate the pension costs in their annual accounts. In his thesis the

student can provide insight into a large number of characteristics of the processing methods of pension costs. It turns out that there are substantial differences between the ways the various companies handle the processing of these costs. Research even shows that the processing methods of many companies can hardly be labelled transparent. For example, annual accounts do not show how many costs have been entered and what items are involved. The researcher reaches the conclusion that there is much room for improvement regarding the financial reporting of companies. He concludes the thesis by making several suggestions.

In the above example we have followed a student who has been working according to the strategy of a secondary research project. A case study, in the course of which the student personally gathers all types of data on business economics through triangulation, would have also been an option, although this would have been more time-consuming.

Advantages and disadvantages

Desk research too has its advantages and disadvantages. The most important advantage is that the researcher is able to use a large amount of data *quickly.* For instance, within the time set for a final project, the student often has no time for extensive data collection. However, a literature survey or a secondary analysis of existing material is often a realistic possibility. One disadvantage of secondary research is for example that the material used in principle has been gathered for *purposes other* than those the researcher intends to use it for. He or she must simply use it as efficiently as possible. If the researcher intends to gather the material himself or herself, he or she can determine precisely which data the researcher does or does not require. In the actual practice of secondary research, it often turns out that the research design requires changes regarding the nature and the quantity of the material available. Naturally, this drawback also applies when someone is studying the theories and fragments of theories in the context of a literature survey. In addition, it implies that this person will have to settle for a *biased* perspective on the research material. Let us assume that we are using research material gathered within the context of a research on the internal labour market of companies. Imagine also that this research project focuses on the supply side of the internal labour market, such as executives eligible for other positions. In this case, the material is less suitable to use in a research project that also intends to map out the demand side of the labour market process.

Furthermore, the fact that the researcher does not produce her or his own material has the important consequence that the formulation of the research objective and the set of research questions depends on whether all the material can be found that is needed in the available sources. If this is not the case, the research objective and the set of research questions will have to be adjusted.

A consequence of the above is that the researcher has no direct contact with the research units. If these units are people, this means missing out on all types of non-verbal information, such as the expressions on people's faces, gestures and body language. Moreover, the researcher cannot give the participants any further details if they are in danger of misunderstanding something.

Effective use

In desk research the possibilities for effective use are countless. Basically, all research strategies that use research material that has been gathered by others can also be carried out as a desk research project. Let us assume that we are using a data file that already exists, compiled from a representative sample from the population we are going to examine. We can carry out a secondary analysis of the research material, which is a particular variant of desk research. We will have all the advantages a survey research strategy has to offer, without the disadvantage of time-consuming data gathering. This also holds true for research in which we review the material previously gathered in a case study. We may achieve the same depth as was achieved in the original case study from which you obtained the material without having the obligation to gather appropriate research material ourselves. There is even the possibility of making a secondary using the data gathered in the course of an experiment. In this context, for example, you are trying to verify a hypothesis of the form 'X causes Y' or' Y is an effect of X' that has not yet been tested through making a statistical analysis.

Several circumstances indicate a research strategy in the form of desk research as being the obvious choice. Firstly, such a strategy is efficient if the material available is appropriate for the research objective and the set of research questions at hand. Most university departments organise large-scale research programmes, and both staff members and students are well advised to join such a programme. It is like hopping onto a vehicle already in motion.

A second circumstance, under which a secondary research project is the obvious choice, occurs when data carriers are used as research objects. In the thesis described above in which the student conducts a research into the financial reporting of companies, it would be the obvious choice to carry out a secondary research project. After all, many theory-oriented research projects will benefit from a literature survey. We recommend reading Fink (1998) and Cooper (1989).

Assignment

Mention five different subjects within your field of research which are in principle appropriate for secondary data analysis. Suggestion: think of the governmental and private organisations engaged in gathering and filing data systematically.

A step-by-step approach based on an example:

Research strategy

1. Decide whether you will opt for *breadth* or *depth* in view of the research objective and your own expertise and interests.
2. Decide whether you will opt for a *quantitative* or a *qualitative* approach, by using the same type of arguments as in Step 1.
3. Determine whether you will opt for an *empirical* or a *non-empirical* type of research.
4. Select *one of the five research strategies* outlined in this chapter to use in the research project, not necessarily in its exact form, based on the decisions taken in the steps above.
5. Choose one of the *variants* of the strategy selected and determine its detailed *characteristics*, on the basis of the research objective and the set of research questions.

Next we will apply this step-by-step approach to the example 'Noise nuisance[7] used in the introduction.

Step 1

As is usually the case with a component of a design, the strategy to be followed must be shaped on the basis of the project framework, the research objective and the set of research questions. However, you should be well aware that, as an element of designing iteratively, the set of research questions may be partly formulated as a consequence of your preference for a certain research strategy. The project framework consists of an action committee that wants the local authorities to adopt a policy on noise nuisance. While you are considering the research objective, you opt for providing as *true* and *overall* a picture to the local authorities as possible of the problems surrounding noise nuisance. This means that you will focus on depth rather than breadth.

Step 2

You do *not opt for an intervention* strategy whereby you try to get as many supporters as possible before appealing to the local authorities. Such a strategy would require carrying out a poll among a large random sample of residents of the municipality, which in turn would mean opting for a quantitative research project. However, in Step 1 you have opted for a more 'profound' approach, which requires a *qualitative* research project.

Step 3

You also intend to stick to reality as much as possible. This means that you opt for *empirical* research instead of desk research.

Step 4

Given the choices made in Steps 1 to 3, it is obvious that the research should be carried out using the *strategy* of a case study. After all, when you follow this strategy, a relatively small number of research units is used, which gives you more opportunity to explore in depth than would be the case in a quantitative survey.

Had you opted for an intervention strategy of applying political pressure, with a large degree of support, on the local authorities, a quantitative survey would have been the obvious choice. Based on a random sample, using a labour intensive method of data generation by means of a questionnaire and quantification, you would have compiled a research report that you would subsequently have handed over to the local authorities.

Step 5

In your case study, you first decide to conduct *open interviews* with people in their homes. You can simultaneously make *observations* as to the state of affairs surrounding the noise nuisance both in and outside the homes of the people to be visited. For this purpose sound-measuring equipment (direct measurement) will be used. Due to the multiple character of observation that is used here, this is an instance of *triangulation of methods.* You will select the *cases*, here the people of district A, according to *the snowball method.* This starts by conducting interviews, and selecting the next person to be interviewed on the basis of the results obtained thus far. You intend to select a total of *twenty* families from which you will interview the adults. Furthermore, you decide to study *five reports* on the policy on noise nuisance adopted in other municipalities.

7 RESEARCH MATERIAL

The reason why zue have two ears and
one mouth is to talk less and listen more.

Zeno, 300 BC

7.1 INTRODUCTION

One of the first steps in constructing the technical research design is to decide what kind of material is needed and how and where to gather it, i.e. the data sources. In general, this is a difficult yet exciting activity in which a certain degree of imagination and resourcefulness is required. This is because the researcher needs to convert her or his thoughts into actions, and theory into empirical reality. This means that based on the set of research questions, the researcher will have to make a selection from the relevant research material. An important steppingstone towards accomplishing this selection is defining and operationalising the key concepts of the research objective and of the set of research questions as presented in detail in Chapter 5.
A second reason why, and resourcefulness would come in handy, is that there is usually a large amount of research material available. At this stage, it may shed some light on the research object, which in turn could contribute to answering the set of research questions and achieving your research objective. The researcher needs to be very creative when converting the options available into real possibilities. Moreover, there is a great variety of considerations and motives that play a part in the selection process. We can refer to the technical arguments only to a certain extent, so subsequently we will have to include all sorts of pragmatic and personal motives. The following example will give the reader a general idea of what is meant in the text above.

> Example 'The Rotterdam Police Force'
> The first central question of your final project is as follows: How do male and female police officers in the Rotterdam Police Force interact with each other? Your first step is to go to the library to find literature on role patterns. You are bound to find some information on the subject in the gender studies section and in the sociological literature on the theory of role patterns. Furthermore, it is important that you examine how maleand female police officers interact in

practice. One option is to interview people during work hours. You feel that talking to people is a pleasant way of gathering data. The interview training that you recently did has shown that there is more to this method than you originally thought.

A completely different option you are also thinking of is whether to gather observational data in the field. The thought had crossed your mind as you know several members of the police force personally. They could arrange for you to accompany police officers during their work. You do not only find this an exciting prospect, but you also realise that this will provide you with a wealth of information 'first hand'.

You find it difficult to choose from these two options or, at least that is how you perceive the matter. Although both options appeal to you, gathering observational data in the field is somewhat frightening. 'How will I be able to find convincing arguments that are acceptable to others when I carry out research in such an unstructured way?' you wonder. You think that holding the interviews will give you more objective results. Besides, gathering observational data in the field will take more time. This will definitely be the case if you need to wade through the paper work, such as reports and memoranda of the police force management, and files of the complaints department. Interviews with experts, such as the medical officer and psychologist, could provide you with the necessary additional information, especially with a view to the consequences that role patterns may have on people's physical and mental health. Moreover, employment advertisements in daily newspapers, in video recordings of police actions and in media coverage by the local radio and television service may provide you with some additional information.

Taking into consideration the time you will need to invest, you believe interviews with members of the police force and civilians will be less time-consuming than making direct observations. Not only can you save time by handing out questionnaires to civilians. But by interviewing the members of the police force you will also have the advantage that you can ask direct questions, whereas when gathering observations in the field you will have to wait and see what comes up. You do not consider role-playing as an option. Then, there would be a select group of men and women who could take part, which does not reflect lifelike situations. Moreover, this would put high demands on you as the organiser. But on the other hand, interviews and questionnaires have their drawbacks too. You will not get as detailed and true a picture as when making observations in the field. Besides, you will have to process a large amount of completed questionnaires on the computer, which would also force you to take a course in data processing.

In the end you opt for observations on location, the decisive factor being the nature of the problem as this requires knowledge of people's *behaviour*. If you had decided to use interviews or questionnaires, you would have been able to register behaviour *intentions* and behaviour *memories*, but not the actual behaviour itself. Moreover, this is a subject which male police officers in particular are not likely to discuss freely. Both arguments are in favour of first-hand observations. Finally, it is a pleasant prospect that by opting for observations in the field you will have the opportunity to see your acquaintances at the police station under completely different circumstances than usual. You will probably have less time for watching and listening to police television and radio, which you would have enjoyed very much and would have found quite useful. But you are aware of the fact that everything has a price, as is the case in a thoroughly demarcated research project.

In the above example the researcher can choose from a variety of sources. Specialist literature, people in different positions, various types of documents and private and public media are all discussed- In order to obtain relevant information from members of the police force and from civilians, methods such as conducting interviews, handing out questionnaires and making observations are considered.
Obviously, it is impossible to deal with all of the options in the one example but the above illustration makes it clear how complex the situation can be for a researcher at this stage. The reader will find that:

a. In general there is an *abundance and diversity of* available material to choose from.
b. One needs to be *resourceful* to come up with interesting material.
c. It is necessary to make *choices* and to delineate the research project.
d. *Different motives* can play a part in making these choices within the limits of the research goal.
e. There is often great *freedom* in choosing from the options available.
f. The researcher can even change the set of research questions according to their preference for a method of gathering material, but it must be part of an iterative design.
g. The research designer must also have some idea of the *advantages and disadvantages* and the *possibilities* of the options available, in order to achieve significant results.

The aim of this chapter is to familiarise the reader with the many options available within the field of data sources and the gathering or generating of data. While applying these issues to concrete cases (see the assignments in this chapter), he or she will learn to choose from these options in a well-considered manner and to substantiate choices with sound arguments. To this end, this chapter will first present an overview of the *sources* available to the research project, as well as an overview of the *advantages and disadvantages* of these sources (Section 7.2). Next an overview will be offered of the options available for the relevant information from these sources, i.e. the *accessing* of sources (Section 7.3). We will be focusing on the various options these sources have to offer. These are generally labelled as data gathering, data collecting and data generating methods. In the final section of this chapter the relative *advantages and disadvantages* of the various methods of generating data are compared with one another (Section 7.4). We will conclude the chapter in usual style with a step-by-step approach based on an example.

7.2 SOURCES

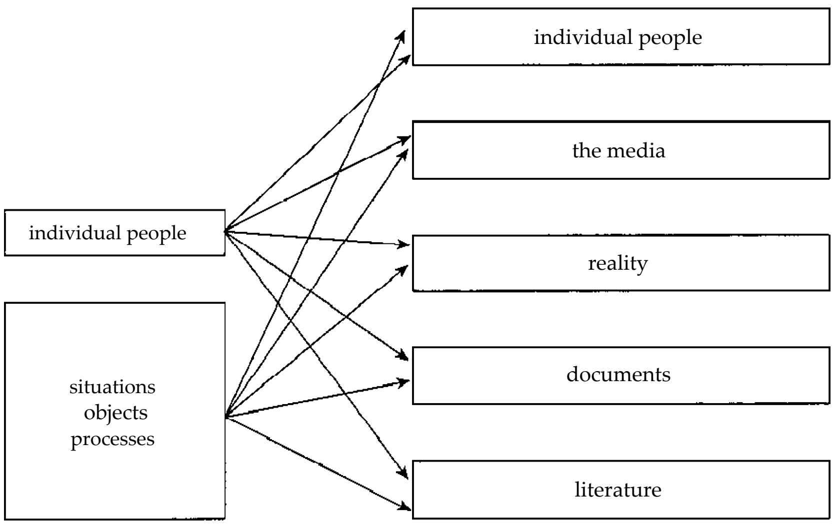
Just as the title suggests, this section deals with the question of where to gather the relevant information for answering the research questions. However, before entering into this at length, the reader needs to know the *objects* about which data will be gathered, and the *type of information* that is needed. The following questions need to be answered successively:

a. What are the main categories of research objects that can be distinguished?
b. What types of information on these objects are relevant to the research project, and how can this information be identified?
c. Where this information can be gathered or how can it be generated?

The first question is about the objects in empirical reality that the information we are looking for relates to. Since we focus on empirical disciplines in this book, what we need to study are tangible phenomena in real-life. In the left column of Figure 7.1 is a classification of these phenomena into two broad categories, i.e. (1) individual people (or groups of people) and (2) situations, objects and processes.

Examples of individual people as the object of research are local government officials in charge of compliance with the Noise Pollution Act, or those who work for the local radio and television station. We refer to a situation as a research object if, for example, the current state of affairs on the employment market in Great Britain is being studied, or the noise pollution at Schiphol Airport in Amsterdam. The object of research can also be a physical one, for instance a building or a computerised information system. Finally, the object of research can be a process if we study the development or implementation of something. For example, we may study the process of negotiations between several agents, or the way in which news reports in the media are compiled.

Figure 7.1 Research objects and sources of information



A second question that should be answered with respect to sources is *what* information the sources are supposed to supply. Roughly speaking, two types of information are important in social science research:

a. data (or facts);
b. knowledge.

Thus we speak of *data sources* and *knowledge sources.*

For data the emphasis is on the characteristics of research objects, in the broadest sense of the word. In other words, anything that makes up a research object. In quantitative research we refer to these as variables, i.e. characteristics that vary in a research project. If persons are the objects of research, we are interested in their experiences, behaviour, opinions and ideas, feelings and perceptions. But also bare facts, such as age, education, income, body weight or shoe size can be relevant for a research project. In the second broad category of research objects, i.e. situations, objects and processes, we could decide to look at data. These could be skills required or offered on the local employment market; the quality of the environment; the bio-diversity at a specific location; the leadership styles of managers and the types of power that play a part in large organisations; the number of water taps and the number of square meters of window surface in a building; the duration of and persons involved in a decision-making procedure, and so on.

The second type of information, i.e. knowledge, is found in the form of ready-made *insights* and *theories* that have been developed previously by others, such as knowledge about the effect of power in an organisation, the causes and effects of authoritarian leadership, the functioning of a certain law, et cetera. In

Chapter 3, where we describe the construction of a research framework, it was shown how knowledge from theories can be used when formulating answers to a set of research questions. Chapter 4 demonstrated how this framework can be applied when formulating such a set.

It is a characteristic of data that it can be represented very concisely using only a minimum indication. This is often done through numeric codes, but in a qualitative research project this can also consist of brief notes from the researcher (see the grounded theory approach in Section 6.6). Knowledge involves reasoning and therefore more text is required. In case of both data and knowledge, it is the researcher who is responsible for integrating the separate elements by thinking about them, analysing them and drawing conclusions. In case of quantitative research based on empirical *data,* the researcher counts observation units with certain characteristics,, i.e. values on variables, and calculates averages, percentages and/or correlations. In short, here the researcher is making a *statistical* analysis, usually by means of computer software such as SPSS and SAS. In qualitative research, on the other hand, he or she tries to interpret the research material, and compares the data in order to draw conclusions. This is an instance of *conceptual* analysis. Finally, if elements of *knowledge* are the basic materials for the research project, then these insights are confronted with each other in order to derive new insights. When doing this, the researcher looks for inconsistencies, differences and similarities, as well as where they supplement each other, and on the basis of these he or she draws conclusions.

We have now arrived at the most important part of this section, i.e. the question *where* can we gather the necessary data and knowledge, i.e. the sources. In the right column in Figure 7.1, five types of sources have been distinguished. We will briefly discuss these below. Before doing so, we would like to point out that each source may in itself also be the object of research. Persons, or groups of persons, for example, can also be the object of study. The same obviously applies to, for example, the media and documents. In these cases the researcher tries to gather material using these and/or other sources.

Additionally, we note that in fact there is a sixth source of material that can be used for a research project. We are referring to data that has been gathered earlier by other people or institutes. There are currently many institutes where such databases are compiled and filed. Also, in most countries institutes can be found where all sorts of data is gathered periodically or continuously (see also Section 6.6).

We will now discuss the five sources mentioned in Figure 7.1. Each source will be discussed according to a fixed scheme. First, we will explain what the specific source actually is. Next the reader is provided with an overview of the possibilities and variants of the source. Finally an overview of the advantages and disadvantages of each source is provided. We conclude with an outline of their various uses.

People

In social science research the main sources of information are individuals. There are two reasons why people are a popular source of information or data for most researchers in the social, policy and management sciences:

a. People, either individually or as a group, can provide a very wide *diversity* of information.
b. This information can be gathered in a relatively *quick way.*

These two potential advantages of people as sources of information are explained below.

Diversity

There are three ways in which people can act as a source:

1. A person supplies information about himself or herself. This person is called a *respondent.*
2. Someone provides data about other people or about situations, objects or processes he knows about. Here, the person acts as an *informant*
3. A person acts as the supplier of knowledge. This person is referred to as an *expert* (in the broadest sense of the word).

In the first two cases individuals serve as a data source, and in the third case they are a source of knowledge.

Information provided by *respondents* refers to, for example, their opinions, beliefs, interests, motives, attitudes, skills, capabilities and behaviour. For example, when interviewing school-leavers on the subject of the prospects they have on the labour market, the researcher may inquire after their interests, knowledge and skills, their wishes with regard to the type of work they are looking for, the labour hours, the desirable maximum and minimum distance to their work, their future plans, and so on. Various background features such as sex, age, religion and education can be of direct or indirect interest when formulating the answers to the set of research questions, particularly if the researcher is looking for explanations of aspects such as opinions, attitudes and behaviour of those interviewed.

In his or her role as an *informant*, a person provides information about other people or about things not directly pertaining to himself or herself. For example, a teacher (informant) gives the researcher information on the interests and abilities of his or her pupils (research objects), or eyewitnesses talk to the traffic researcher about the facts and circumstances of an accident.

Finally, we are dealing with persons as *experts* if, for example, we are looking for the causes of declining productivity in a company and we call in the company doctor as well as a management consultant. The group of experts is not restricted to people who have specialised theoretical and practical knowledge as a result of higher education. Moreover, and in particular, expertise based on experience can often represent a welcome source of knowledge.

Speed

Two reasons account for the relatively high *speed* with which information can be obtained from people. First, distances in place and time can be easily bridged when using people, i.e. informants. For example, someone who has travelled to Russia will be able to tell us much about this country, and therefore we do not need to visit it ourselves. A second reason is that this information can be tapped into through a specifically chosen stimulus-response technique, such as the interview as will be discussed further on in this chapter. We can stimulate someone to give information by means of questions and statements or we can use other stimuli such as pictures or actions, to give precisely the information that is required for the research project. In other words, we do not need to wait until something comes up, as is the case when observing a process or studying documents.

Advantages and disadvantages

The two most important advantages of using people as a source of information for a research project have already been mentioned, namely the wide *diversity* of information and the *speed* with which it can be disclosed. Another advantage is that the researcher, to a relatively large extent, is able to *steer* the people he or she is interviewing, and therefore he or she can be *certain* to receive answers to his or her questions. By asking specifically formulated questions, the researcher is able to steer towards the information required for answering the *research* questions. With respect to the sources we will deal with later, such as documents, the media, literature and reality, the reader will probably - but mistakenly - have less confidence that he or she will be able to obtain precisely the information that is needed.

However, despite all the advantages, there can also be reasons for not using people as a source of information. For example, if you are investigating something people find difficult to talk about and which is also difficult to find out through observation. Some examples of this include alcohol abuse, or offences that have been committed. You should also expect strongly subjective answers to your questions during assessment studies into the success and failure of people. It could also be that the research project deals with matters people are not, or insufficiently aware of, or matters they have never thought about before and which they find difficult to express in behaviour or in words. Problems with formulating thoughts can be found especially with children, the elderly and the mentally handicapped. In these cases, it may be useful to look for alternative sources such as informants and experts, or one or more of the other four data sources.

Effective use

People can be used to provide information in so many ways that it makes it difficult to think of a research project in the social, policy and management sciences that does not involve people as a source of information. But particularly if the research objective is time-consuming, and if it is not certain whether it is feasible, then using people as a source of information may be the answer. Let us assume you are investigating the difference in fire safety at large companies in France and Germany. Instead of visiting these companies, you contact staff members who deal with logistics, such as porters, cleaners and security personnel. You approach them in their role as informants or experts and ask them questions about the accommodation and the ins and outs of the organisation.

Another reason for using people as a source occurs in some types of evaluation research. Suppose you want to know whether a certain law meets the actual demands of practicability, then you could ask civil servants about their various experiences in implementing this law. If it involves using an information system, you could speak to office personnel about the user-friendliness when operating a computerised information system.

Assignment

Let us assume that you have decided to investigate the quality of life in Italian prisons.

a. Take a complete inventory of the categories of people you would like to use as a source of information.
b. Please indicate whether you plan to approach these people as resp ondents, informants, or as experts.
c. Indicate at face value the risks regarding the validity of the data for each of these categories as well.

The media

The media is an increasingly important category of data sources. The media is understood to be the communicators of information intended for large audiences. The difference with documents, which we will address later, is that with documents there is an addressee. As shown in Figure 7.2, the media is a widely varying group, which is still expanding. The contents of electronic media are being increasingly recorded on video and tape and subsequently filed. These files in particular offer interesting possibilities for research (see also the documents that we will discuss later). What the diagram below does not show, however, is that in addition to the currently well-established public media, certain private media are becoming more popular, too. The private media includes company television and pc-networks.

By far the most important media source nowadays is the Internet. While using different search systems, the researcher will come up with an enormous stream of data and knowledge with regard to all kinds of issues. Surfing the Internet is an extremely fast and relatively cheap way of collecting data. However, a word of warning is appropriate. Most of the information on the Internet is provided by amateurs. Hence, the validity of the information can be presumed to be questionable. We therefore suggest a critical and selective use of the Internet, particularly as a knowledge source. Please remember to carefully report the site and the date the knowledge and information was retrieved on.

Advantages and disadvantages

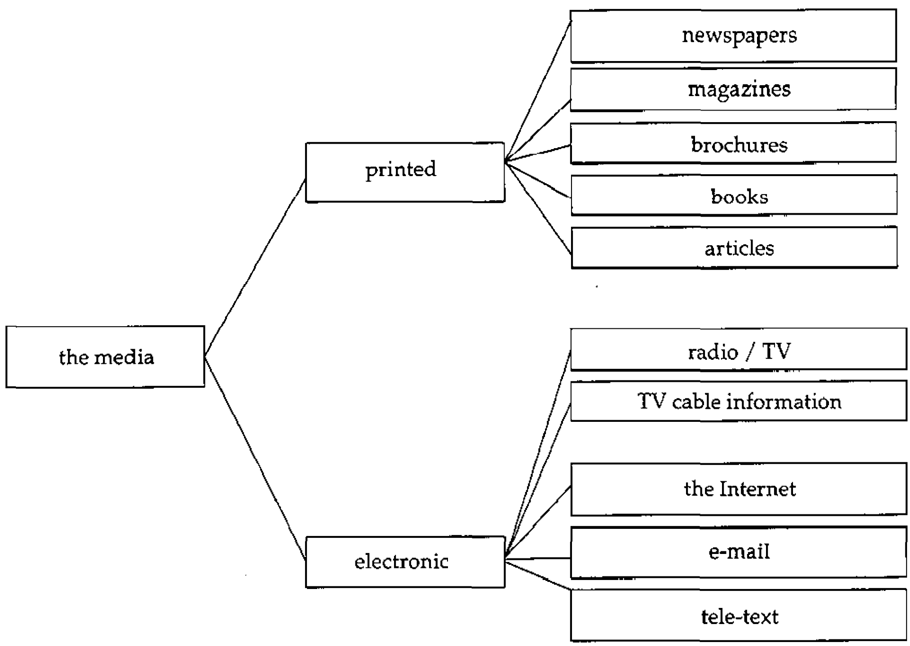
The main advantage of using the media as a source of information for empirical research is the usually high *information density* that it provides when it comes to public issues; it has a high level of *topicality* and a wide *geographical scope,* without the researcher even having to leave his or her desk. In particular, the restricted time available for a research project can give rise to thinking up a set of research questions that can entirely or partly be answered on the basis of having secured from the media.

An inherent restriction when using the media as a data and knowledge source, of course, is that not all types of research issues can be linked to relevant media reports. Moreover, you should be aware that some of the information provided by the media has a rather fleeting character and should not be given any 'permanent' significance. Examples of these sources are telephone conversations and e-mail messages.

Effective use

If the research object is time-consuming, and/or if it covers large geographical regions, the media is often one of the few options available for obtaining a complete picture without making an extreme effort. Let us assume that the researcher wants to study the political functioning of women's groups in a country such as Chile. Creating a picture by travelling around the country and interviewing people would be a most time-consuming job. Making an analysis of the relevant programmes on radio and television and of newspaper articles may be a sound alternative. Of course the researcher must make sure that the material represents the various political groups in this country. It is wise to use the media as a source if information is needed on things that can go wrong or about which people are dissatisfied or anxious. Business media such as business journals, personnel magazines, e-mail messages and the like, could produce interesting data.

Figure 7.2 Various media types as research material



In most cases the media provides information about situations, physical objects and processes in the empirical reality But also individuals or groups can, in principle, be studied by using the media. This applies in particular to public figures or groups. To illustrate this in your capacity as a political scientist or as a policy maker, you could make a study of the 'Obama' phenomenon, in so far as how he presents himself through the public media as the president of the United States. On account of its topical interest, the information people exchange through networks and e-mail can also be an important and often unexpected source of information. It may make clear for example who has contact with whom, as well as what type of information these people exchange. Other information that may be interesting for a research project can be found in personnel ads, letters to the editor, clipping services, current affairs programmes, and so on.

Assignment
Let us assume that you decide to investigate the quality of life in Italian prisons. Indicate which media sources you would like to use. Describe the advantages and disadvantages of each source with regard to the proposed research project.

Reality

On the face of it, reality can only be found in the left column of Figure 7.1, which contains the categories of objects. And yet, there are two reasons why it could also be included in the right column containing the types of sources. The first reason is that reality is sometimes a *direct* object of measuring. For example, if we determine the duration of a production process, or take the pulse and blood pressure of athletes. In that case, the object examined is in itself a source of information. In their role as respondents, people can also be included in this description. The reason why we classify respondents under 'people' and not under 'reality' is that with respondents there is a 'channel of expression'. The category 'reality' only contains people if measurements have been carried out on them *directly,* such as measuring their height, or taking their temperature, and not indirectly, by asking them questions. This is about a difference between physical and conceptual measurement instruments.

A second reason to include reality as a source in its own right is that situations, objects and processes sometimes provide *indirect* information about people. If the researcher wants to know which routes company employees follow most frequently, he or she can for example study the carpet. The interior of a building will tell us something about the hierarchy within the organisation it accommodates. Another example would be to examine people's household refuse as an indication for their environmental consciousness. These examples are called 'unobtrusive measures' by researchers.

Advantages and disadvantages

By far the most important advantage of direct measurement and 'unobtrusive measures' is the high degree of objectivity that be obtained in the results. There is no channel of expression, no behaviour based on some strategy of those examined, and little or no influence on the research object by the researcher.

A notable restriction that applies only to reality as a source of information is that it can only serve as a data source and not as a knowledge source. A further restriction of direct measurement is that it can only have limited significance for the majority of research issues in the social, policy and management sciences. A restriction in the use of 'unobtrusive measures' is that these tell us something only indirectly about what we want to know. Therefore, we prefer to use more than one of these unobtrusive measures, which can often be used in combination with other sources of information. Combined they could provide very useful information.

Effective use

Generally, the use of reality as a source of information is always interesting if the set of research questions is about matters that people do not talk about easily, or matters of which they are not very aware. Other cases in which reality itself is chosen as a source of information include situations in which you do

not have the full confidence of the people you examine and, when approached directly, they tend to give answers based on a strategy (interview) or show behaviour based on a strategy (observation).
Coming up with suitable 'unobtrusive measures' for the information that a researcher requires makes an appeal to her or his creativity and fantasy. Usually the latter will succeed in this when talking to others, in particular to people who know the ins and outs of the situation in practice. It could require some effort to explain to them exactly and in practical terms what the researcher indeed wants to measure.

Documents

A fourth category of sources that may provide information or knowledge for a research project are documents. In a way they resemble the recorded media, but they differ in that, in principle, documents are addressed to a specific public, i.e. an addressee, whereas the media is addressed to a wider and undefined public. Sometimes documents, for example files, are not intended for external use at all. Documents come in all sorts. Within the scope of a research project the researcher could consult political party broadcasts, research reports, reports of offences drawn up by the police, consultants[7] records, annual reports, reports and memoranda from senior executives, correspondence between public bodies, notices of complaints lodged by citizens, reviews from Chambers of Commerce, and so on. These types of documents are often filed in archives.
Sometimes less obvious documents can provide surprisingly interesting information. For example, family trees, logbooks, diaries, travel reports, essays by pupils, albums of verses, et cetera. The trick is to come up with these ideas at the right time and subsequently to gain access to these types of documents. All these are aspects of a research project that do not require dull intellectual activities and skills. In addition, a good researcher possesses social skills and creativity. The difficulty is to find out where useful material can be obtained.

Advantages and disadvantages

The main practical advantages of using documents for research projects are that they are often available in great quantity and in such a wide variety that, in general, they cost little to gather and to use. A practical advantage for the average researcher may be that it requires relatively little specific skills to use them. A methodological advantage is that behavioural responses are not provoked, as is the case when questions are posed during an interview. In general, documents are drawn up without their producers realising that they will be used in a research project, let alone that they anticipate their use for a certain research objective or set of research questions. This means that there is little or no chance of reactive behaviour, an advantage that documents have in common with the media.

Another advantage of documents is that they are 'durable', meaning that if we wish, we can refer to them constantly. This is important when making full use of documents for a set of research questions using one of the more suitable methods. We can repeatedly delve into the material for each separate aspect of the research question. In this way the material is used more effectively than if we had attempted to gather all the relevant information in order to answer the research questions in one go. In the latter case, a lot of relevant information would escape our attention. If we had used people as a source of information, such a method would not have been very practical. People would become tired and bored if we were bothering them with questions all the time, and this would have an adverse effect on the validity and reliability of the information. The potential advantage of having a huge number of documents that are available can also turn into a disadvantage. If there is an overwhelming amount of information at hand, this could pose a difficult problem to the researcher, since he or she would need to make a deliberate selection or draw a random sample. Apart from this, a researcher who wants to make use of documents will need to plough through a lot of material to find something relevant to the research project. In this context a stimulus-response technique such as the interview, which we will discuss later in this chapter, has certain advantages, because this technique makes it possible to focus on specific data deliberately.

Effective use

In most research projects various types of documents can provide useful *additional* information. Examples include the inspection of files from the complaints departments and company doctors' records, used as supplements to interviews that have been conducted with managers and company doctors for a research project into the causes of high absenteeism due to illness in a specific branch of industry. Another example is the study of various treaties between countries in the area of environmental protection, as a supplement to a poll on the influence of environmental groups. Documents can play a particularly important role in a research project that has a *historicising set of research questions.* This would be the case if the researcher were consulting the files for the minutes of meetings of a specific type of school in order to be able to reconstruct how a certain development has taken place. In general there are many files kept on a variety of subjects from which the researcher with an historical interest can gather data.

Assignment

Let us assume that you have decided to investigate the quality of life in Italian prisons. Indicate which documents you would like to use. Describe the advantages and disadvantages of each source with regard to the proposed research project.

Literature

Although we mention it as the final point in this book, literature that contains information on a specific discipline is what the researcher should be looking for *first* if he or she is conducting research.

We use literature as a *knowledge* source, for it contains theoretical insights in which the author finds connections between phenomena he or other people have described. These interpretations of reality can be a leading factor in a research project. The researcher will probably compare various theories or theoretical concepts in order to further develop a theoretical framework. In Chapter 3 the reader was introduced to how literature can serve as a source of knowledge for constructing the research framework.

Although literature is mainly used as a knowledge source, it can also serve as a *data* source. This could be the case if the literature consists of objective descriptions of reality. You will then, in a manner of speaking, be looking at reality through the author's eyes. You would consider elements in these descriptions as data, which you would then combine with other data to produce new insights.

Examples of literature as a data source

An example of literature that can be used as a data source would be a book about the workers in the textile industry in area X in the first half of the twentieth century, in which the lives of these people are accurately and truthfully described. Likewise, a research report containing accurate descriptions of the daily lives of a youth gang may serve as a data source in a research project into the future prospects that the members of this group have. Another way in which literature can function as a data source is when the purpose of the research project is to strengthen the definition of a concept. You can make an overview of all the possible definitions of this concept, to which you attach critical remarks. By analysing these definitions and your separate remarks, you will end up with a new proposal.

Literature comes in various *forms and variants.* Much scientific research is published in the form of *monographs*, bulky books that deal with one subject only. Most research projects by scientists who take a doctoral degree in business administration, public administration and policy studies, are published as monographs. In addition, we have various forms of *editorial volumes.* These volumes deal with a coherent body of subjects, but the various chapters have been written by different scientific authors and each has his or her own view on the subjects that are dealt with. Frequently, they are the result of seminars where scholars from various disciplines present and discuss scientific *papers.* Collected conference papers are also part of the scientific literature.

A very important form of scientific publishing is to write scientific *articles* in *specialist journals.* In university libraries you will come across a great many of these specialist journals from a number of years. A visit to these libraries is often rewarding when it comes to constructing a research design. Besides, in specialist journals, scientific views are often included in the so-called *handbooks* on a particular subject. These handbooks deal with a number of sub-areas on a scientific subject. Since these handbooks consist of loose-leaf elements that are rewritten all the time, you will often find in them a collection of the latest insights into a specific area.

Advantages and disadvantages

An advantage of specialist literature as *a knowledge source* is that in many areas profound insights have already been acquired, eliminating the necessity to start all over again. It is therefore wise to check whether a set of research questions and a research framework are completely up-to-date. It would be a shame if the researcher were to find out what others have already established. The advantage of literature as a *data* source is that the researcher does not need to go to great lengths to gather all the material himself or herself. However, he or she most probably will not find all data and information required for the research objective and the set of research questions in the literature.

The disadvantage of literature as a knowledge source may be that all those carefully edited books that are often written in difficult language, often exude a great degree of authority. The danger is that the researcher may place too much confidence in the existing literature and that he or she will follow the other authors too closely. But even in literature research, where the researcher only works with the previous insights of others, it is important that he or she formulates *new* knowledge and insights. This is the difference between a *survey* on the one hand and a *literature study* as a preparation for an examination on the other. We suggest that the reader refers to Section 6.6 for more details on this subject.

Effective use

The existing literature on a specific discipline provides relevant or even necessary information for various parts of a research project. First, literature is required when the research design is constructed. As we have seen, a rough exploration of the literature can be useful for further defining the perspective that is chosen for a research project (see Chapter 3). Furthermore, a global orientation in the literature is usually essential for the unravelling, defining and operationalising of key concepts in the research objective and in the set of research questions (see Chapters 4 and 5).

Moreover, when the research project is carried out, the existing literature usually plays an important role. The researcher will invariably make use of literature when he or she starts writing the various versions of a research report. In particular the theoretical interpretation of the research results is very often an important part of the reporting process (see also Chapter 8).

The above has given some insight into the data and knowledge sources that can be used for a research project. The five sources we have mentioned differ in the extent and the frequency with which they can function as knowledge sources or data sources. In most research projects people, the media and documents function mainly as a data source and to a far lesser extent as a knowledge source. The opposite is true for literature. Reality itself functions almost by definition as a data source.

Finally we highly recommend consulting several sources when carrying out a research project. In this context we speak of *triangulation* and, more specifically in this case, of source triangulation. One reason for this is that the various sources, viewed from the research objective and set of research questions, each have their own advantages and disadvantages. For the same reason it is essential to determine *per question and sub-question*, instead of the set of research questions as a whole, which data and knowledge sources will be used. This will result in a more creative use of the sources, and the researcher will get more out of the research project than if he or she were to work routinely with the same type of source(s) all the time.

Assignment

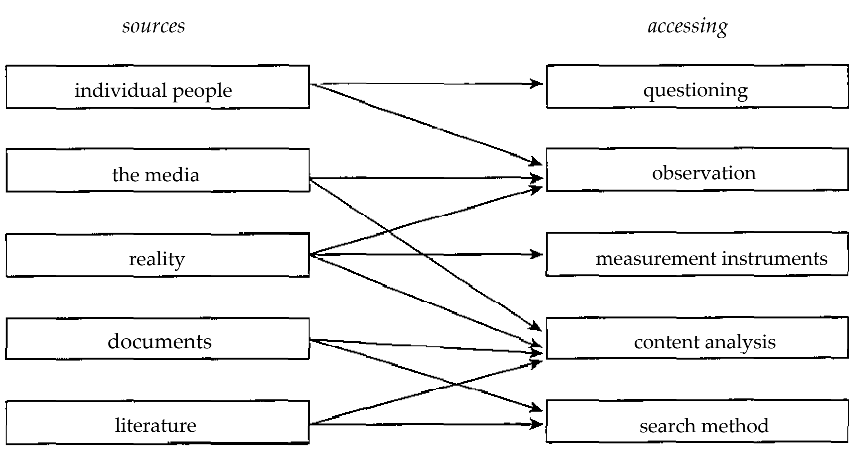
Example 'Unemployment[11]

You are studying sociology and your specialisation is research methods and techniques. You are carrying out your master's thesis project for the local authority. You have been asked to participate in a large-scale research project that will provide the knowledge and insights needed to develop an unemployment policy for that particular region (external goal). You have been assigned a nicely demarcated part of the research project, which will contribute towards answering the following question (internal goal):
Which factors have contributed towards long-term unemployment in the area concerned?
You use the following *operational* definition: Tn this research project I consider a person as being unemployed if he or she is *registered* at a job centre, is *between 15 and* 65 *years of age, does not have a protracted illness or is disabled, wishes to work at least 20 hours a week, does not have a job* and will be *available* for a job within two weeks/
Make a complete list of all the sources you could use in order to achieve the research objective. Please indicate per research question how each source will contribute to answering it. Describe the advantages and disadvantages of each source with regard to the proposed research project.

7.3 ACCESSING SOURCES

A second decision in relation to the material to be selected has to be taken when constructing the technical research design. This decision concerns the question of how the required information can be extracted from the sources selected. In this context, we will refer to *accessing* sources. For example, how can we extract relevant information from individuals for the benefit of the research project? What data can we extract from situations, objects and processes that take place in empirical reality? How do we obtain relevant extracts from specialist literature? In the right-hand column of Figure 7.3 five methods have been classified that we can use. Each method is specifically suitable for one or several types of sources.

Figure **7.3** Methods for accessing sources



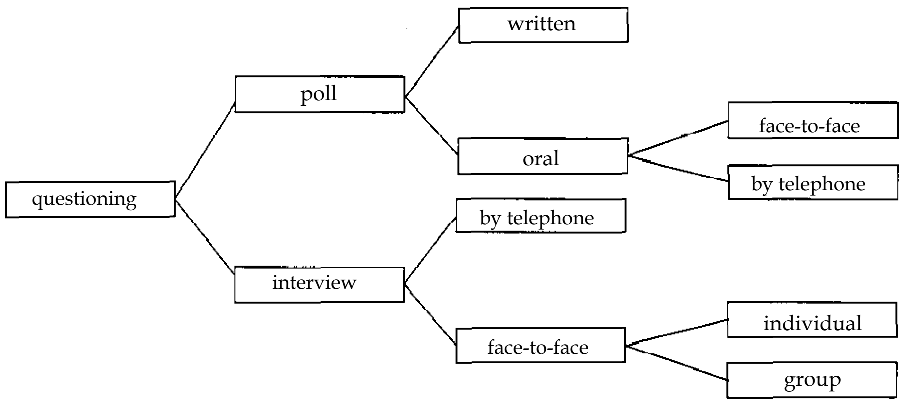
In this section the five methods will be discussed briefly. We will emphasise the major advantages and disadvantages in particular, and the use of the various methods for constructing a technical research design.

Questioning

In the context of a research project the questioning technique can be described as an activity that is steered by the set of research questions and the operationalising of key concepts, in the course of which the researcher will try to extract the necessary information from a pre-selected group of individuals by offering stimuli, usually a poll that contains questions and/or statements.
As shown in the diagram in Figure 7.4, there are different techniques for asking questions. These are classified into two main categories, *interview* and *poll,* and they differ from each other in two aspects:

a. the degree to which the interview has been pre-structured;
b. the degree to which the set of research questions is open.

Figure 7A Different questioning techniques



By pre-structuring we mean that before the questioning takes place the questions have been consistently and precisely defined in the same way for all individuals to be questioned. Subsequently we decide which questions are to be asked and how and in which order they will be asked. The openness of a question relates to the degree of freedom the respondent is given in the way in which he or she answers the question. In the case of open questions, the respondent is free to answer in any way he pleases. In the case of closed questions the respondent has to tick one or several options, known as multiple-choice questions, with possible answer alternatives formulated in advance by the researcher.

Based on the two aspects mentioned above, an interview can be characterised by a limited degree of pre-structuring, and an open style of questioning. In the most open way of interviewing the researcher has a list of questions in the back of his or her mind and he or she has the option to interact with the interviewee. For example, he or she may decide to ask the respondent to elaborate on the answer to a question. And, if necessary, the researcher can provide a detailed clarification of the question. Depending on the response, facial expression or other body language, this creates the possibility for formulating new or additional questions during the interview.

A poll is characterised by (a) a high degree of pre-structuring, and (b) closed questions. Only limited interaction takes place between the polltaker and the interviewee, or perhaps none at all. It is obvious that an interview and a poll as defined above are idealised models and that many combinations can be used in practice. This applies especially to the way in which the questions are asked. Many questionnaires used in interviews and polls contain both open and closed questions. It is a matter of emphasis.

Both questioning techniques have their variants. Generally, the *telephone* variant takes up less time than the *face-to-face* variant of interviewing. Face-to-face variants, however, give the researcher the advantage of observing the expression on the face of the interviewee and other body language, which may be of particular interest for a correct interpretation of the answer. As stated before, this information may also indicate whether the interviewee requires any further explanation or needs to be encouraged or motivated to stay alert. This may be important if the questions concern subjects the interviewer considers difficult, either in a rational or an emotional respect. Therefore, if the researcher wants to find out how companies are dealing with new environmental legislation, it would be better to interview the managers who are responsible face to face, rather than conduct the interview by telephone. Conducting the interview by telephone, however, is in its turn preferable to sending a questionnaire. For, when the subject is tricky, the researcher stands the risk of only a small number of the questionnaires being returned, and the reliability of the answers to the questionnaires that are returned will probably be low. Although a written poll is not always the appropriate choice, it is still less time-consuming than the telephone variant. The former is handled by mail, which saves both travelling time and time spent interviewing.

Apart from the individual telephone and face-to-face variant, there is the *group interview* or focus group interview, in which a number of people are brought together for a collective interview. Typical for this type of data gathering is that people can respond to one another. This may be an advantage if, for example, the researcher wants to extract information from people on subjects they have not previously thought about much. Let us assume that a research project is going to contribute to the formulation of the future policy on the working hours of the government of a country. In this case the researcher may ask students as prospective employees about their wishes concerning working hours. There is a chance that these respondents may not know exactly how to respond during a personal interview. On the other hand, in a focus group interview, where the matter can be discussed freely and where people can form an opinion, the researcher stands a better chance of extracting useful information on this issue from individual respondents than in personal interviews.

Other cases in which group interviews are the better choice concern information that is difficult to assess, such as the future developments regarding the consequences of intervening. If, for example, the researcher would like to know what the future market trends will be or the consequences of a merger, he or she can conduct a group interview. However, the researcher needs to be wary of an uncritical opinion of the group as a result of one or more dominant participants imposing their opinion on the entire group. In such cases the researcher clearly has another task in addition to extracting information, as he or she also has to act as a group moderator. The researcher is well advised to divide these tasks over two people. One acts as a group moderator and the other as an observer.

Another warning is that some inexperienced researchers see a group interview as a way to save time and work. Why would you talk to fifteen individuals separately, if you have the option to bring them together? However, this line of reasoning is wrong. The group interview and the individual face-to-face interview are two different methods, each with their own advantages and disadvantages, restrictions and opportunities.

The so-called *Delphi* method is an interviewing technique that resembles both a group interview and a written poll. It is specifically used for questioning *experts* and is, therefore, a method for generating *knowledge,* rather than generating *data*. It is arranged in several rounds. In the first round the researcher presents a number of people with relevant expertise with a certain question and asks them to respond in writing. Next he or she examines the answers closely and tries to indicate the broad outlines and the differences. This information is returned to the participants with the request to examine whether they think it necessary to supplement or adjust their initial answers based on the considerations of the other experts who are participating in the *Delphi* research. Subsequently the researcher examines the answers from the second run and, if necessary, approaches the participants a third time. Usually, the third round does not yield any significant adjustments, so in many cases two rounds will suffice for convergence of the ideas or insights.

The most important advantage of the *Delphi* method is that the participants can form a well-considered opinion in which various viewpoints have been placed next to each other. The researcher has the opportunity to obtain an overview of the various points of view about a certain phenomenon. A practical advantage of the *Delphi* method is that it can be dealt with by mail or by email. This not only saves the researcher a lot of work, but it will, basically, offer the opportunity to approach experts from all over the world to participate. This could certainly be the case when using e-mail.

Effective use

Essentially, the method of interviewing *respondents* is an efficient way for the researcher to obtain data when the research objective and the set of research questions require people's views on a subject, on the emotions evoked by this subject and how the respondents would like the subject to be dealt with. If the researcher intends to understand or explain these thoughts, emotions and targets, it is useful to ask for background information, such as age, sex, political viewpoint, occupation, education and so on.

Apart from respondents, informants and experts can also be interviewed. This is particularly true when studying large organisations or organisations that have a wide geographical scope, in which case there is often no real alternative. For example, in order to obtain information about the extent of co-operation between doctors and nurses in hospitals, we could approach one or several informants per organisation. It goes without saying that in principle the interviewing of a random sample of all staff members, or all staff members, is more likely to provide reliable and valid information, Data may be more reliable if extracted through observations by the researcher. However, the drawback of the three options outlined above is that, respectively, they are increasingly time-consuming. The time required will soon surpass the time available for the research project. Consequently, consulting informants such as representatives of hospitals may be a successful compromise between the desired certainties and forming a sound foundation on the one hand, and the time available for the research project on the other.

Gathering observational data

Gathering observational data is a method for generating data in which the researcher observes individuals, situations, objects or processes using a steering *observational scheme.* An observational scheme is an overview of the subjects that have been derived from the research objective and the set of research questions, and which are indicated in key words that need to be examined and monitored during the observation. These are also referred to as *observational categories.* Basically an operational scheme contains a time-phasing element, since the moment itself that an occasion has occurred could provide important information. We will not only discover the time of the day or day of the week (month, year) the occasion occurred. We will also be able to determine later *how long* it has taken, in which *order* the occasions occurred and in which preceding and subsequent activities and events it is embedded. For example, it may be important to note whether an exam is always scheduled at the end of a strenuous day or at the beginning of one.

For gathering observations in the field there are two variants, a pre-structured and an open variant. The distinction between the two is roughly parallel to the difference between a poll and an open interview. In the pre-structured variant, sometimes referred to as a semantic observation - which is a somewhat confusing term - the observational categories have been subdivided and described in advance. This has been done in such a way that the observer only needs to tick the various categories, strongly resembling the procedure followed for a written poll. One difference is that with a poll the participants (respondents or informants) complete the forms, whereas in the case of an observation this is done by the researcher. In the open variant of gathering observational data, the researcher only has a number of points of interest at the back of his mind, as is the case with the open way of interviewing. This means that most of the advantages and disadvantages attributed to the written poll and the open interview also hold true for the pre-structured and the open variant of gathering observational data, respectively. The reader must decide which advantages and disadvantages apply in a particular case.

In each method of systematic observation of individuals and groups, there is always the chance that the observer will be seen as an intruder, which could jeopardise the quality of the data to be gathered. Perhaps people will behave differently to how they usually would. This can be prevented if the researcher participates regularly in the daily activities of the group. This is called *participant* observation. Let us assume that a research project is focussing on the knowledge of merger processes within the corporate service sector. With this in mind, the researcher accepts a summer holiday job at a branch office of a newly established bank. In order to achieve the research objective and to answer the set of research questions you prepare a detailed observational scheme so that you know exactly what to look for and what to monitor.

Within this participatory approach the researcher can either be explicit about her or his role as an observer, or keep this information to himself or herself. If the researcher chooses not to reveal their role as an observer, a so-called undercover observation, the observation will not be affected by the 'intruder effect'. But even if this role is made known, there is a fair chance that after a while colleagues will have become so used to the researcher's presence that reactive behaviour is unlikely. This depends partly on whether the researcher decides to reveal the objective of the research project. If, for example, he or she mentions that he or she has agreed with the client to make recommendations for a new appraisal system for the merged organisation, it is conceivable that the participants will try to influence the observational results to their own advantage. This may be a good reason for not revealing any, or only some information, regarding the actual objective of the research project. We presented another example of participant observation at the beginning of this chapter in which a researcher studies the relationships and interactions between male and female police officers. A special method for gathering data through participant observation occurs in an ethnographic study. For instance, the researcher examines the daily routine in the organisation concerned. He or she works with the department, undergoes the same experiences as the staff members, but does not interfere with the daily routine of the department. This is an excellent way to obtain a picture of all kinds of complex processes taking place within a department. The ethnographic study, known from cultural anthropology, is increasingly popular in organisational research. This method is especially suited for gathering data when studying complex and more or less subconscious processes, processes of power and control, communication patterns and conflicts. Although this is a difficult and time-consuming method, ethnographic research is very productive. Ethnographic studies can yield plenty of information and, due to their depth, they can produce insights that are more difficult to acquire when applying other research strategies. Therefore, this is a popular method in initial research: the insights the researcher acquires are very useful for formulating or reformulating the research objective and the set of research questions of the pilot research project.

This section on gathering observational data concludes with a method that resembles systematic observation. This method offers the possibility for the participants to keep track of their activities themselves from hour to hour (or from half hour to half hour) instead of the researcher. This is also known as *timekeeping*. The researcher may consider using this approach if he or she plans to monitor the daily routine of individuals for a longer period and he or she will not have the opportunity to gather observational data himself or herself. Although the latter runs the risk that the data will be less reliable, less detailed and less comprehensive than when carrying out systematic observations, a lot of time will be saved nevertheless.

Let us assume the reader would like to know how counsellors for patients in psychiatric hospitals do their jobs. In such a case, the presence of an observer may be disturbing and sometimes even impossible. An alternative would be to ask these people how they spend their working hours. The question, however, is whether their memory and the recording of it prove to be accurate. For instance, they will be inclined to report only what they themselves consider to be important. But to a researcher it is often the apparently insignificant details that are interesting. As an alternative the participants could be given forms in which the left-hand side contains a timetable in half hours or quarters of an hour, and the right-hand side leaves space for making notes. Subsequently the participants are asked to describe their activities during several days while working, or asked to describe selected shifts per day as specifically and detailed as possible. This timekeeping requires discipline and may be a burden to those involved. That is why this method is only really effective if it concerns research the participants are truly committed to, or if the results are important for them. Since the methods of observation and timekeeping only provide us with information on people's behaviour and not on their *motives* for this behaviour, nor on their opinions and viewpoints and so on, this method is almost always complemented by conducting interviews and studying documents. This is an instance of triangulation of methods.

Effective use

Observation and timekeeping are the appropriate methods for monitoring people's activities over a longer period if this is important for answering the research questions. This could be the case if, for example, the researcher wants to know how staff members approach a new target group in the organisation they work for. Another example whereby making observations is the obvious choice for generating data is if we want to know what causes criminal behaviour among groups of young people. Through observation, a group of young people can be followed to detect patterns of interaction: who interacts with whom and what is the nature, intensity, frequency and duration of these interactions? In this way group processes, learning processes and networks of the youngsters can be mapped out. If the focus is on the verbal behaviour of the members of a group, then the research should be restricted to so-called conversational analysis.

However, gaining insight into people's behaviour does not necessarily have to be the only motive for choosing to make observations. This method could also be important for gaining a proper *understanding* of people's views and behaviour. Let us assume the researcher wants to acquire a detailed picture of how a police officer does his work. Then he or she could try to obtain such a picture by interviewing police officers on the beat. Accompanying police officers on the job, however, will probably produce an even more comprehensive and accurate picture. For example, we could monitor police officers walking the beat for some time during their patrols (see also the example at the beginning of this chapter). We will not only be able to observe the behaviour of the police officers themselves, but also to observe situations from their perspective. This may prove to be an important source of information in understanding, explaining and evaluating the behaviour of police officers. The researcher not only acts as an observer but as a measurement instrument as well. By introspection and imagining himself or herself in the same situation and imagining how he or she would feel, the researcher can try to understand someone else's behaviour.

Measurement instruments

In this context a measurement instrument can be described as a mechanism, an object or a procedure by means of which we can *directly* quantify or qualify phenomena in real-life situations. We emphasise the word 'directly' in order to exclude the indirect measuring through individuals, the media and documents. After all, the steering instruments that are used for these types of sources, in this case written questionnaires, observational schemes and category systems (see also the method of content analysis further in this chapter) can, as mentioned before, also be considered measurement instruments. Therefore, we may even consider an intelligence test as a questionnaire. When quantifying, phenomena are defined in measure and number. This way a ruler is an appropriate instrument to measure someone's height and a tape measure to measure the circumference of someone's waist. A stopwatch can be used to determine the exact duration of a process. When qualifying, we award a quality to the object, for example: person A is a Catholic.

Effective use

Other than in sciences, the measurement instruments mentioned above are used far less often in social, management and policy sciences. More often, measurement takes place by means of questionnaires when interviewing, observational schemes when gathering observational data and category systems when analysing the contents of media and documents. Below we will discuss the method of content analysis.

Content analysis

Content analysis generates data from documents, the media and from reality, often with the help of a *category system.* Literature, too, can be studied by means of a content analysis, that is if it is used as a data source. When literature is used as a source of knowledge, such as in the case of a literature survey, the strategies as described in Section 6.7 can be followed.

A category system in this context is similar to a written questionnaire as it is used in an interview or poll and to an observational scheme used in observations. In other words, we are dealing with a conversion of the research questions to actual cases that need special attention when studying the contents. This brings us back to operationalising the key concepts in the set of research questions. A category system is in fact a measurement instrument, as is the questionnaire that is used in interviews and the observational scheme in observations. Cases from real-life can be characterised by placing them in one of the categories. This could be the same as quantifying these cases. For example, person A is characterised for height by placing him or her in the category of 1.87 meters, i.e. measurement in everyday language. However, more frequently a *qualitative* characterisation is made, for example, when recording: person A expresses dissatisfaction about situation B. This too is a way of measuring.

It is obvious that a category system can vary from a rough to a precise or detailed categorisation. In its roughest form, the category system consists of a list of points of interest, extracted from the set of research questions, similar to the list of subjects used in an open interview. Still, the reader is well advised to use a more detailed variant in which he or she indicates more clearly when a real-life phenomenon is among the various key concepts from the research objective and the set of research questions.

There are two main types of content analysis, i.e. the qualitative and quantitative form (not to be mistaken for quantitative and qualitative *measurement* as discussed above, though they have much in common!). A strictly qualitative content analysis concerns extracting information from a large quantity of textual and/or audio-visual material that is relevant for the researcher. Observational categories are basically open categories and the researcher is looking for the meanings the producers of the material have attributed to certain cases. The researcher is more involved in indicating and understanding the contents and roughly classifying these, by means of temporarily labelling them, rather than classifying them in closed categories (see also the 'grounded theory approach' in Section 6.6). However, if the contents are classified into closed categories, then a *quantitative* content analysis is carried out. In this type of content analysis the researcher mainly focuses on establishing the importance of certain

subject matters, statements or approaches based on quantitative indications of the subject matter concerned (How often? How much? How long?).
Both in a quantitative and a qualitative content analysis, it is essential that the textual and/or audio-visual material is studied on the basis of the set of research questions or on the basis of the category system (see above) derived from these questions, in order to find the answers to these questions.

Effective use
A content analysis of documents, media (literature included) is one of the most important elements for acquiring relevant research material, as these usually are:
a. abundant and diverse and;
b. consequently may be a wclcome addition to interviews and observations;
c. relatively easy to access and;
d. fairly 'durable' By durable we mean that documents, unlike individuals, can be consulted as often and as much as we like without having to deal with tired or bored respondents.

Search methods
On most subject matters it will be easy to find an abundance of scientific literature. Obviously, it is impossible to study all this literature within the scope of a research project. A direct search has to be conducted for those articles and books that can assist in carrying out the research project. Therefore an effective search method needs to be used, which will help to select the appropriate literature. We recommend making use of various methods in a search for appropriate literature.
Firstly, there are various *search indices* based on key words. These can be consulted in most libraries. The advantage of these search indices is that the major publications on certain subject matters, if they are available in the library in question, can be consulted immediately. Until a few years ago, the scientific researcher was dependent on the extensive registers of key words present in each library. There were long rows of card index boxes, categorised by subject matter, on the most important publications from the various scientific disciplines. The key concepts from the research project were determined and these (or related concepts) were used as key words in searching for relevant literature. In the past decade most of the card search systems have been replaced by electronic search methods. By means of electronic networks the search indices of most major libraries are accessible through intranet or Internet providers. When a key word is entered, the screen displays a selection of recently published literature on this topic. Electronic search indices are far more accessible than old-fashioned card index boxes. The experienced user of the 'electronic highway' can consult a great many search indices within a short period of time.

But electronic search indices also have their limitations. After all, the method only offers the most basic information on publications, i.e. the author, title, year of publication and the publisher. There is usually no information available on the contents of the study. For this purpose the researcher needs to consult other compilations, i.e. *extracts* and *reviews.* In several fields of scientific research there are compilations of extracts on major publications and articles in the relevant field. Often publications come with a commentary from experts. In turn extracts and reviews are compiled and distributed at set times among those who subscribe to them, Many scientific libraries subscribe to this service. Once again the suppliers have made use of the possibilities offered by the modern media. Many extracts and corresponding bibliographies can be accessed using electronic networks. In many cases the selected extracts and reviews can be viewed on screen and can also be downloaded onto your own computer, where the text can be printed out or edited. A third means, which gives an even greater insight into literature contents, is to screen the specialist journals that have been selected. These journals present *annual overviews* of the articles that have been published in the course of one year. They often present additional *reviews* of recent articles that are considered important, prepared by the editors of the journal concerned. By browsing through several volumes and studying the surveys of these specialist journals, the researcher will soon find the literature that is relevant to the research project at hand.

When browsing through these journals in search of relevant articles, look for announcements of seminars and conferences included in the journals and retrieve the papers on these events.

A fourth and final method of finding publications is the use of the so-called *snowball principle.* As a first step one or several of the major publications is chosen. Next the contents tables of these publications are read and the bibliographies the author has included at the back of the books are thoroughly studied, and so on. This method goes from bibliography to bibliography. The researcher can often judge on the basis of the table of contents of a publication which area the author covers. A brief scan may give ideas or provide new key words that the searcher had not thought of before. These ideas and key words can be used in an additional search. Bibliographies may also point towards relevant scientific texts. In this way the researcher will soon be up to date in the field in question.

Effective use

Obviously the use of search methods for finding relevant literature, documents and indirect material is important to all research projects. However, it is also obvious that the role of scientific literature in a literature survey or in a theory-oriented research project is usually more important than in an empirical, practice-oriented research project. However, literature should never be accepted too easily. When using the methods discussed above, more recent and more challenging literature will soon be found. This literature will provide new insights and other approaches than the ones familiar to the researcher.

Assignment
In the assignment at the end of Section 7.2, we asked you to indicate the sources you could use in a research project regarding the backgrounds of unemployment. Now we would like to ask you to describe the methods and techniques you would use to gain access to these sources. Please try to incorporate as many techniques as possible. Then, specify the advantages, the disadvantages, the restrictions and the opportunities of each method and technique, in view of the set of your research questions.

7.4 ADVANTAGES AND DISADVANTAGES

In the previous section we discussed several advantages and disadvantages of the various techniques for accessing sources. In this final section, the *relative* advantages and disadvantages, the possibilities and limitations of the techniques and procedures in relationship to one another will be dealt with. First of all, the two main forms of questioning, the poll and the interview, have several advantages and disadvantages in relationship to one another. Compared to the interview, the poll has the advantage that it is basically less time-consuming. Therefore, under similar conditions a poll can encompass a larger number of research units than an interview.

While its reach may be smaller, in a more labour-intensive interview the subjects can be dealt with more comprehensively, and more complicated issues can be discussed than in a poll. Note that this advantage does not, or to a much lesser extent, apply to telephone interviews. On the phone, we miss the body language of the respondents that would otherwise serve as an important source of information to help us interpret the interviewee's words. Moreover, as there is no eye contact, the interview is often less emotionally intense.

Delving deeper can be necessary, for example, if the researcher wants to know about the resistance the managers in charge of a company have towards implementing and complying with a government policy regarding the environment. A written poll, as mentioned before, will have a higher non-response rate, whereas the chances of receiving evasive or strategic answers will be quite high in the questionnaires that have been handed in. The first is to the detriment of the external validity, and the second of the internal validity of the research results.

Next, we will compare the technique of interviewing to other techniques. Compared to the technique of observing, interviewing people has the disadvantage that it is very difficult to obtain a valid picture of their behaviour. As pointed out earlier, at best we can obtain information regarding the behavioural *perceptions, memories* and *intentions,* and not about the *actual* behaviour. All three can be the explicit objects of research, in which case we need not bother. For example, the subjective *perception* of patients concerning the patient-friendliness of doctors is a far better criterion for the patients' sense of well-being than an 'objective' measurement carried out by the researcher. But if the researcher intends to map the *actual* behaviour of people, he or she must realise that the three phenomena mentioned are not very valid indicators. Observation would be a more suitable instrument. A very useful alternative is a content analysis of audio-visual material.

A disadvantage of observation is that we do not learn the motives for behaviour, which we can learn from conducting interviews or polls. In this way, the interview and the observation complement one another. To learn about not only the behavioural motives and intentions, but also the experiences and perceptions of those who have been studied, it may require some form of interviewing. A few examples include the *knowledge* the members of an organisation have, for instance, of the goals of a merger and the relevant organisational measures and changes at the workplace, or the *appreciation* and other *subjective perceptions* they show towards the goals of a merger.

Apart from the impossibility of recording actual behaviour, there are some other limitations to using interviews as a method for generating data. First, this technique presupposes that people are capable of expressing their thoughts, feelings and experiences. This could pose a problem, in particular for small children and the sick or the very elderly. An alternative may be to approach, for example, the parents or children who can act as informants. However, we constantly need to remind ourselves that we are working with information that has not been obtained first hand. People may differ considerably, both in their ability and their willingness to express their thoughts and feelings in words.

One of the major threats facing the researcher who wants to use interviews and polls is the possibility that people will give *strategic answers* to questions. This risk, which we have already discussed, is stronger when we are researching something that is subject to social desirability. To illustrate this, the question of whether or not someone has observed the safety regulations will often be answered affirmatively, even if observations cast doubts. In such a situation the use of informants, direct observations and/or studying relevant documents may be a practical alternative.

As a final limitation of the interviewing technique we would like to mention that an interview or a poll usually offers little or unreliable information regarding the physical and social context. Let us assume, for instance, that the researcher would like to know how a manager responds to an intervention in a business unit. His or her reaction will strongly depend on the context within which the intervention takes place. Participant observation conducted

in a methodologically adequate way will describe this context far better than an interview.
In addition to the possibility we discussed before to discover the behaviour, interaction patterns and networks of people, an advantage of *observation* is that the risk of a strategic response by the individuals under study is, in principle, smaller than when interviews are used. Obviously, this applies in particular to *participant* observation. If the researcher participates for a longer period in certain activities or processes, he or she will be regarded as less of an outsider. However, the researcher needs to beware that he or she does not identify too much with the people who are observed, because this could interfere with an 'objective' observation. It may be necessary not to provide any, or perhaps only a little information on the type of information that the researcher is looking for. Needless to say, ethical norms should be strictly observed.
Another advantage is that with pure observation there is no 'channel' of expression and therefore no risk of distortion or of obtaining an incomplete picture of the object under study. The same applies to any disadvantages relating to biases when formulating thoughts, which play a role in interviewing. These disadvantages are eliminated in an observation. Actions are usually subconscious, and body language can also be an important source of information. Body language to a large extent is an expression of the subconscious. Moreover, it has been made quite clear that through observation the researcher can study his or her objects in their natural environment. During an interview this natural 'habitat' is usually discarded, which means that people may express themselves differently, thereby depriving the researcher of insight into the context in which people usually respond.
Observation also has a few disadvantages. For example, it can be troublesome and time-consuming to process the outcome of the observations into answers to research questions in a reliable and valid way. In addition, the controllability of the research outcome for third parties is usually more limited than if interviews were used. As a result, it may make the researcher feel insecure. This effect is amplified when the people who are being observed feel that the researcher is looking over their shoulder continually. A good, albeit time-consuming way, to surmount this obstacle is to work with the organisation concerned for some time. This is the most extreme form of participant observation.
Content analysis and observation have in common that there is little risk of distortion due to strategic answers. After all, the type of material provided by the four sources suitable for content analysis usually materialises without the researcher's involvement. Annual reports, for example, can provide more reliable information on turnover figures than a question about this subject that is posed to the manager. This way the risk of putting an idea into someone's mind is also eliminated. This risk is greater when the researcher wants to obtain information from people on subjects that they have never seriously thought about.

Furthermore, there are limitations associated with the content analysis of literature, documents and media contents. Documents and media, for instance, are subject to *editing.* Everyone has heard the chairman of a meeting say that certain statements are not meant to be included in the minutes. Television and radio broadcasts are frequently politically coloured, depending on the broadcasting company and the producer. In some countries, literature is even censured. Another limitation that studying documents has in common with interviewing techniques is that physical behaviour can only be indirectly studied at best.
Now that we have reached the end of this chapter, two conclusions can be drawn. First, the reader is well advised to consult as many sources and use as many techniques on accessing sources as possible. Any shortcomings in a source or technique can be compensated for by the other sources or techniques. In brief, try to triangulate as much as possible in order to obtain a comprehensive picture of the people, situations, objects or processes that are being studied. The second conclusion is that the most effective procedure is to choose the sources and techniques *per question or sub-question* of the set of research questions.

A step-by-step approach based on an example

Research material

1. For each *question or sub-question* determine the relevant *research objects* and the *types of information* required for these objects. To do this, use the diagram in Figure 7.1.
2. For each research object or type of information formulated in Step 1, determine *which and how many sources are* required. To do this, use the diagrams in Figure 7.2 and 7.3.
3. For each source in Step 2, determine which *methods* will be used *for accessing sources*. To do this, use the diagrams in Figure 7.3 and 7.4.
4. *Iterate* Steps 1, 2 and 3 by confronting them with one another, with the research objective, with the set of research questions and with the definitions of key concepts. Make adaptations until everything has become a coherent whole. Particularly, pay attention to the feasibility and scope of the research project in relation to the internal and external validity, triangulation and the labour intensity of the various methods.

Next we will apply this step-by-step approach to the example used in the introduction The Rotterdam Police Force'.

Step 1
This step the set of research questions provides the starting point, so we will first define the second central research question: How do male and female police officers in the Rotterdam police force interact during working hours? Although we did not do so in our introduction, it is desirable, especially with a view to the selection of relevant research material, to subdivide this question into sub-questions. Let us assume that our student in the example has formulated the following two sub-questions:

1. How do male and female police officers interact at the *police station*?
2. How do male and female police officers interact *outside the police station*?

The distinction made between work sites is particularly important from the point of view of what can be observed. As outsiders do not normally witness what goes on in the office, it is conceivable that behaviour under these circumstances may be different from behaviour displayed in public.
It is clear that in both questions the "objects' are police officers, i.e. people. As is almost always the case in social science research, the student needs *theoretical insights* into the subject in question. In addition, information is required, specifically:

a. information on the individuals in question and how they interrelate;
b. background information on the organisation at hand. This information is necessary in order to interpret in an adequate way the information referred to point (a).

The necessary theoretical insights and empirical data differ somewhat for the two sub-questions. For the first sub-question the student is inclined to opt for organisational theories, including theories on power. Questions regarding the atmosphere at work, possible incidents related to gender, who takes what initiatives, and the degree to which these initiatives are adopted by colleagues and management, can all provide useful information. The student considers background information to be important as well, such as the hierarchical relationships at work, the way tasks are divided at the police station, and so on. For the second sub-question the student chooses a different theoretical approach, i.e. the interaction theory and a theory on crisis and conflict management. In the student's opinion, there is also a difference in the information that is needed compared to the first sub-question. For this question, the information must be primarily obtained from the police organisation itself. But as to the second sub-question it is important to ask citizens how *they* feel about male and female police officers interacting. In addition, the student may regard police activity at the scene of accidents and disasters to be relevant. She believes that the relationships between policemen and policewomen are more strongly manifested when they find themselves in stressful situations.

Steps 2 and 3

In most cases there is no objection to carrying out steps 2 and 3 together, as in the example. In the following overview, the number of sources the student intends to use during the course of the research project, is indicated between brackets. The number 3 in brackets regarding observing the work situation in sub-question 1, means the intention is to spend two entire work days and one night at the police station in order to make observations; i.e. three work periods. As to observing teams of officers (10) in sub-question 2, the intention is to spend one day with ten separate teams of two police officers, cach team consisting of one man and one woman, on surveillance in separate areas of the city. The number 20 in brackets, regarding 'police news broadcasts', indicates the number of broadcasts that will be watched. The number 30 in brackets, regarding 'in-house magazine' means that all the thirty issues published during the last three years are to be reviewed since they may provide an indication of the way in which female and male police officers in Rotterdam have interacted with one another. Finally, in view of the way male and female police officers interact at the scene of accidents and disasters, the student will refer to programmes on file and topical broadcasts of the local as well as national radio and television stations. An asterisk behind the sources indicates that the source in question has been used for both sub-questions.

First sub-question

	Sources	Accessing
People	Individual police officers (30)	Face-to-face interview
	Medical officer (1)*	Face-to-face interview
fhe media	Police news broadcasts (20)*	Content analysis
	In-house magazine (30)*	Content analysis
Documents	Files from complaints dept (1)*	Content analysis
	Files medical officer (1)*	Content analysis
Situations	Work situation (3)	Observation

Second sub-question

	Sources	Accessing
People	Teams of officers m + f (10)	Observation
	Civilians (200)	Written poll
The media	Medical officer (1)*	Face-to-face interview
	Local television/radio (1)	Content analysis
	National television/radio station(l)	Content analysis
Documents	Police news broadcasts (20)*	Content analysis
	In-house magazine (30)*	Content analysis
	Files from complaints dept (1)*	Content analysis
	Files medical officer (1)*	Content analysis

Step 4
In an initial assessment the number of sources and the number to be taken from each source is usually much too large, as is the case in this example. Nevertheless, an assessment of possible sources is not superfluous. The above overview is a useful starting point because it provides the student with an *overall picture* of the material that *could* be used to answer the set of research questions- Eliminating options in such an overview will provide a well-considered and more adequate selection than a random approach. Moreover, the overview can induce the researcher to demarcate further the project at this stage, as part of an iterative designing strategy In that case a number of the research questions can be left out for the sake of feasibility and validity of conclusions.
More generally, the numbers referred to in the above overview have been tested at least twice for feasibility. The first time is during the iteration process in Step 4 (see below). When planning the research project (see Chapter 8), feasibility is re-examined once again in the light of the coherent body of activities to be carried out in the course of the research project.
At first sight, none of the student's sources seems to be superfluous, particularly if the objective is to obtain a picture of the situation that is as comprehensive as possible, by means of triangulation. However, it is questionable whether this is *feasible* for the final project and whether each source is *necessary* in order to obtain a clear picture. If the student is forced to eliminate options - which will almost always be the case - she will weigh the information likely to provide the answers to the research questions against the amount of time necessary for making this information available. This chapter illustrates that there are great differences between the time spans involved in the various techniques for obtaining information. Based on this consideration, the student will opt for the following choices (see also the case study described in the introduction).
For a start, she decides not to use the police news broadcasts, as the time spent while watching all the videotapes would be too extensive and not worthwhile since perhaps no or little information will be found. Regarding sub-question 1, she also decides not to interview the thirty police officers, but to approach them through a written poll. This technique is far less labour-intensive, and will save time. The price she has to pay for this is that the data will have less of an empirical foundation and will be less in-depth in nature. In addition, the risk of generating data that is less valid is even higher. An alternative option would be to further demarcate the research objective and the set of research questions in order to be able to study the remaining part of the project more profoundly by using more in-depth and labour-intensive methods and techniques. In sub-question 2, for the same reason as for the police news broadcasts, she decides against using the poll among Rotterdam citizens, and watching and listening to the videotapes of the local and national radio and television stations.

A careful check shows that none of these measures will provide a sufficient reason to change the research objective, the set of research questions, or the stipulative definitions (not shown here) of the key concepts. For the time being, she has decided to reopen the iteration when drawing up the research plan.

8 RESEARCH PLANNING

It was not lack of strategic insight that brought down Napoleon, but bad timing.

8.1 INTRODUCTION

Up until now, the greater part of research design has been discussed. In particular, the *what* (research objective and the set of research questions) and the *how* (research strategy and research material) of the research project have been largely dealt with. What remains is how the research material can be analysed and the results can be reported. The exact form depends to a large extent on what the rcsearcher finds during the research. That is why we have chosen to elaborate on these issues as part of how to plan the research. Planning involves the 'when' and the 'how much' of the research project. Planning concerns both the decisions regarding the order and the periods in which the various activities that must be done are carried out, and the decisions regarding the extent of these activities that is feasible. The remainder of this book deals with this planning, as well as with the analysis and research report. Again, we will start by giving an example of someone who faces the following, final task in the process of planning.

Example 'Save the goose'
A student of policy-oriented environmental science is planning to devote her final project to problems concerning a particular species of geese. Due to the large number of graylags seasonally migrating to the Netherlands, substantial damage is being done to crops. As a result the geese are being shot in large numbers. Our student thinks the so-called 'set aside regulation' of the government offers an opportunity to save the species from becoming extinct. The regulation, part of a policy to prevent overproduction in agriculture, enables farmers to lay fallow farmland over a certain period by granting them a subsidy. The student has come up with the idea to designate these grounds as forage sites for geese. In her view, the first thing that needs to be done is to inform the farmers about the government set aside regulation. Secondly, they need to understand the significance of the problem concerning the geese and, thirdly, they must know how to lay out suitable forage sites. She believes an information campaign will be the most appropriate means to achieve this end. She is convinced that her research

project will yield the knowledge required for developing efficient information material on the subject. From this specific research objective she has already derived a clear set of research questions. In her opinion, she has also completed the technical research design. She has outlined a case study in the course of which she will conduct interviews with farmers and experts on agriculture and the environment by using triangulation. In addition, she plans to study the relevant government documents and the documents produced by the farmers' associations.

She is just about to carry out the research project when her supervisor asks her to draw up a plan including a time schedule for the intermediate results. The supervisor claims that he needs such a schedule to set up an efficient plan for supervision.

While thinking over the plan, several questions arise in the student's mind. She wonders what should be her first move, conducting interviews or studying documents. And how much time will be involved in carrying out these activities? She needs to know this in order to determine how many interviews she can conduct. She also wonders what the supervisor means exactly with 'intermediate results'. Frankly, she does not see the point of her supervisor's request. Drawing up a plan may be a good idea, but in practice things are often different. You may just as well leave the plan for what it is, she reasons. It will only be a nuisance if the supervisor constantly insists on her sticking to the schedule.

There are quite a few misunderstandings about the planning phenomenon. To many, a time schedule is just a list of activities to be carried out, setting out the dates on which they are to be done. The dates are seen as definite deadlines to ensure that all of the activities will be finished in time. In brief, from this point of view planning serves only as a control mechanism when carrying out a research project, as is the case with the student in the above example. Thus, planning has become an objective in itself instead of a means to achieve the objective. In contrast to this, we view planning as a *designing* and *stimulating* tool for building a research design on the one hand, and carrying out the research project in an efficient way on the other. This chapter elaborates on the notion of planning (Section 8.2). Afterwards, this notion of planning is converted into an *activity plan* (Section 8.3) and a *time schedule* (Section 8.4). We will conclude the chapter as usual with a step-by-step approach using the example 'Save the goose'.

8.2 CHARACTERISTICS OF PLANNING

To all intents and purposes in this book, planning a research project should be understood as follows: an overview must be made of both the activities to be carried out, and the intermediate products and end products produced by these activities, including the sequence and timeline according to which the activities are to be carried out. In this formulation the reader will notice two connotations for the word planning: planning that is seen as an activity, also called a *process,* and planning which is the result of this activity, also called a *product*, which was exactly the case in the concept of research design. In the introduction, we mentioned that we are not in favour of using a concept of planning which focuses strictly on planning a product. In our view, planning in the sense of process, and planning as a product each have their own specific purpose. The purpose usually associated with planning is, as mentioned earlier, that of having a control mechanism. Planning is considered to be a standard for checking whether everything is going along according to plan and within the time set during the implementation. In contrast, we argue that a plan (as a product) primarily serves to attain an optimal method for spending time and obtaining maximum results. Unforeseen circumstances can always crop up and drawing up a plan could help one to respond adequately. Suppose we assume that a plan provides a certain intermediate goal and that this goal has not been achieved either not achieved, or not has been achieved on time. In the event, it is best to find out what has caused the failure, what measures need to be taken during the implementation stage and what adjustments should be made to the design. This is called the *monitoring function* of the planning process. Monitoring generally means "keeping a finger on the pulse' However, we are not referring to monitoring in a *controlling* sense, which is the prevalent connotation of the term, but instead we wish to refer to it in a *formative* sense. A second difference between our notion of planning and the usual meaning is that, in addition to the formative monitoring function, we can also attribute two important design *functions* to planning. Here, planning is considered a process. A first design function is that the designer can contribute in an iterative way when it comes to constructing a feasible and harmonious design. During the planning stage, for the first time during the design process, we have an overview of all the activities that are to be carried out during the research. In particular we refer to the research questions that must be answered and the choices that must be made with respect to the research material and the research strategy to be followed. This overview then may identify the bottlenecks anticipated during the execution that may require adjustments to be made to the design even before the research starts. Sometimes an adjustment to the technical design may suffice, but usually modifications to the conceptual design are also necessary. As we must also place the activities that need to be carried out in a time scheme (see the schedule on page 256), a new perspective on the conceptual and technical design may arise. This may require making certain adjustments. In other words, according to this notion, planning is an essential component to be incorporated into the iterative process of designing as outlined in Section 3.2.

A second design purpose of planning is to consider the question *when,* and in which *order,* certain activities can best be carried out, how these activities can be linked with one another and which activities can be performed *simultaneously.* This last aspect is particularly meaningful. Activities can influence each other in a positive way. Partly because of this, and in addition to our critique on the current concept of planning that focuses on planning as a *serial* or consecutive planning of activities, we opt for a *parallel* or simultaneous execution of tasks. We will elaborate on this later.
To sum up, a concept of planning has emerged that differs from the conventional idea of control mechanism in two respects. In this concept planning as a product is seen as an elegant and efficient means to properly guide the project. For instance, a plan must guarantee that after an initial disappointment the rest of the project will not be finished in a rush. Instead, adaptations in the design and/or in the execution should guarantee an optimal use of the time and the means that remain. This is called the monitoring purpose. Planning as a process plays an important role in the iterative process that leads us to a feasible and harmonious design. Moreover, with a plan the researcher designs the whole process of carrying out research. This is the designing purpose of planning.

Serial and parallel planning

The above-mentioned preference for a combination of serial and parallel planning has much to do with our view on research. A formative monitoring function would stand little chance if we were to view the monitoring function as a process that passes according to a strictly linear prefixed schedule. In that case, carrying out research could be compared to rolling out a carpet. In short, this rolling out appears as follows: start by formulating an objective, draw up a research framework, develop research questions and then make an operationalisation. Next construct questionnaires, observation schemes and/or categorisation systems, respectively. Then, gather material, to be followed by processing and analysing this material and, finally, make a report on the outcomes, with possible suggestions and recommendations.
We prefer a research approach that can be characterised as an *iterative-parallel* process rather than a *linear-serial* process, as described above. This entails that, when making a research plan, we do not opt for a mere serial plan, such as is generally accepted, but for a combination of a serial and a parallel plan. One pragmatic and two fundamental arguments can be given for this. The pragmatic argument is that during research periods of waiting are a common phenomenon. You may have to wait for certain books that you need to study to arrive by post, or you may want to interview people who have busy schedules. You will then be forced to take on other things in the meantime. In this context the difference between *working hours* and *turnaround time is* important. Working hours is the amount of time you are actually engaged in an activity.

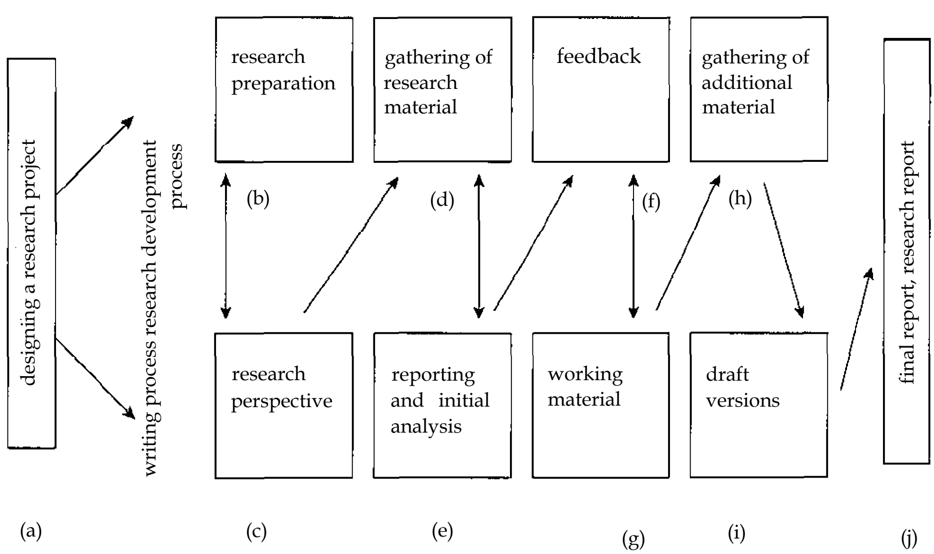
Turnaround time is the *length of time* this takes. For example, you can conduct an interview in one day (working hours). However, the period required to conduct fifteen interviews could take up to two months due to yours and the respondents' other activities. When working hours and turnaround time differ widely, it is particularly essential to plan several activities at the same time. It follows that every researcher will use parallel planning for certain activities, even if he or she prefers to use serial planning for 'safety' reasons.
In addition, there are more fundamental arguments for using parallel planning. In the previous chapters we repeatedly emphasised the value of iterative designing. The same arguments in favour of an iterative approach can be used for *carrying out* research. The basis of this idea is the uncertainty associated with carrying out research. The objective of research is to gain insight into topics we feel we know too little about. This means that, during the implementation stage, we could constantly be confronted with topics we did not anticipate. These matters may have consequences, not only for any subsequent steps, but also for *previous* steps that were made during the research project. In research that is carried out in a serial way, there is little room for adjusting earlier steps, since the activities have already been finalised. This would argue in favour of having more parallel actions and, hence/ using parallel planning in research.
A second fundamental argument for carrying out certain activities simultaneously or in combination is that this could lead to *synergy*. Synergy takes place, for instance, in interviews. If we conduct verbal interviews, it is recommended to process each interview immediately after conducting it and to analyse it in view of the set of research questions. The advantage of doing this instead of serial planning, in which we first conduct all interviews, then process, analyse and describe them (in this order), is that all the details are still fresh in the researcher's mind, including the non-verbal language of the respondent. Moreover, an interview could provide a guide to be used in the following interviews to be conducted. In this way, the research material is gathered and analysed simultaneously.
In our view, by far the most important advantage of parallel planning for theory-oriented research becomes obvious during the stage of planning the research process and the writing process. We will explain and elaborate on this in a separate sub-section entitled Analysing and writing', to be found further on in the book.

Another question is what consequences the designing functions and parallel planning (as a process) have for the form and substance of a plan (as a product), and what are the consequences for the way this form and substance develop (process). The main consequences for planning as a process are that, on the one hand, the researcher devotes more attention to planning than in the traditional view and, on the other, he or she proceeds in an iterative way. The monitoring purpose, for example, requires more than just a list of activities that states when the activities are to be concluded. It is essential to consider this carefully and to provide arguments for having chosen a certain sequence of activities, for having made an estimation of possible drawbacks during the execution and scenarios, and for having come up with a flexible plan, if possible, for how to deal with these drawbacks. With regard to an iterative procedure, during the planning stage the researcher should not only iterate within the planning process itself, but also within the entire research design. This means that it is not only the questions 'what' and 'why' (conceptual design) and 'how' (technical design) that are translated into a plan. Conversely, the researcher should constantly ask herself or himself what consequences the decisions made in the context of the plan have on the design as a whole. When parts of this design (excluding the plan) have been adjusted, this may have consequences for the plan, and so forth.

8.3 ACTIVITY PLAN

Our description of the concept 'planning' at the beginning of the previous section means that planning (as a product) can be defined as an overview of activities and its products that are subject to a time schedule. In the following section we will give an idea of these activities and products and how they are interrelated by using the diagram in Figure 8.1.

Figure 8.1 Activity plan for research as part of a plan



Three components of this activity plan will be elaborated on. First we describe the parallel activities of 'researching' and 'writing' Then some attention is paid to the working hours and turnaround time that are needed to carry out those activities in Figure 8.1 that are marked with letters. Finally, we will give an example of an elaborated table of contents for the research report. In doing this, we will continuously give indications of working hours and turnaround times that are needed. These are rough and of a general nature. In practice, there are many highly variable factors that determine these working hours and turnaround times. Nevertheless, these subject matters are presented because inexperienced researchers in particular have very little idea of how much time certain activities cost. Generally speaking, they underestimate these issues.

Analysing and writing

The above diagram distinguishes between two groups of activities during the execution of the research, namely the *research trajectory* and the *writing process.* Both can be seen in the diagram, at the top and bottom, respectively The visualisation is the result of what is, in our view, the most important part of parallel planning of research, i.e. researching and writing. Before the various activities in the diagram are discussed separately, we will first further explain the concept of parallel planning.

In this book we hold the view that, when carrying out research, we need to be aware from the start that there are two parallel processes or paths involved, i.e. a *research process* and a *writing process.* This is irrespective of whether it concerns a theory-oriented or practice-oriented research, contract research or qualifying research (final thesis or a dissertation project). By a research process we mean the coherent body of activities concerning the gathering, processing and analysing of the research material (see Chapter 6). With writing process we mean the study of research material and the finding of answers to the research questions from this material. Most researchers refer to the latter as 'analysis'. According to their line of reasoning, analysis is followed by writing, or more specifically, by *communicative* writing, where the focus is on readability, clear formulation, correct use of language, consistent layout and such matters.

Few people realise that conceptual writing must precede communicative writing. Conceptual writing is not about producing a text, but about developing *clear thoughts.* Only after you have written down these separate thoughts, can you combine them into a *line of reasoning.* Developing a sound line of reasoning that can be understood by others is far more complex than you may think. At least three stages can be distinguished, although these are hard to separate. Firstly, you will have to develop *clear thoughts* on the basis of the material gathered. Next, you must compare these thoughts and *confront* them with each other. Many people pay little attention to this aspect, which results in a line of reasoning that cannot be understood by others. A third component in developing a line of reasoning is the *formulation* of thoughts. Even if you are convinced that your thoughts are clear, when writing them down you will often find that it is not yet that clear to you, let alone for others. Part of this problem is that at this stage there is a substantial difference between the thoughts in your mind and what you have written down. The latter are implicit thoughts and have yet to be crystallised and properly verbalised. Without conceptual writing you will be unaware of inconsistencies, leaps of thought, and implicit assumptions. These usually are subconscious, and in any case they are unknown to the reader. Moreover, without being aware of it yourself, you are continuously moulding your ideas and thoughts in a certain direction.

We believe that in order to draw up a final report of the research project that can be fully understood by others, without any problems in interpreting the contents, conceptual writing is an essential tool. At this stage, you are writing for yourself. Only later will you write the report (in a communicative way) for other people to read. By taking this view, we intend to break with a procedure that is, in our opinion, inadequate and needlessly time-consuming. Consider this example: first the research material needs to be gathered, processed and analysed, for only once this has been done can the results of the analysis be formulated and reported on. This means that the reporting activities have to be carried out at the last minute. Instead of this serial method, we imagine a process whereby analysing and conceptual writing is integrated. The underlying thought is that, particularly during the process of writing, you can clearly distinguish between the various subjects, define them,, and subsequently interrelate them. Interrelating should be considered the basic characteristic of analysis. In addition, we propose that you conduct the writing process parallel to the gathering and processing of research material. In our view, by using this dynamic and efficient working method, you will start writing (conceptually) from the moment you embark on your research. During the writing process you may think of other material that could be used or perhaps you will choose a different research perspective on the basis of which the material could be studied. This means that both procedures are not planned according to a serial concept, but according to a parallel one. Furthermore, as will become clear further on in this chapter, you will need to develop a parallel plan within the separate procedures as well.

The diagram in Figure 8.1 represents both procedures. What is most striking is that these procedures begin immediately after the designing stage. Many readers will experience this as a true 'culture shock' as they are used to postponing writing until the last moment. Secondly, it is worth noting that both groups of activities are strongly interrelated, as shown by the arrows. Thirdly, the diagram shows that there is no strict and consistent time schedule. Sometimes the arrows connecting both procedures point forward and sometimes backward. This shows the iterative and parallel nature of the proposed working method.

Working hours and turnaround time
We will now discuss the separate activities as shown in Figure 8.1. We have labelled each type of activity by using a letter. Further on in this chapter these letters are used to refer to the corresponding parts of the diagram.
Here, we will give a short definition of each activity as well as provide an indication of the working hours and turnaround time involved. The reader should note that these times are only very rough indications of the actual time needed by the researcher for completing the initial process of structuring ideas. This constitutes a practical tool that can be especially helpful for inexperienced researchers. The indications that are given are based on a research project that could take up to six months, i.e. 24 weeks, in total. This is also the turnaround time of the research project. When planning, the researcher must ensure that there is no difference between the working hours and the turnaround time of the entire project. If a research project is to take more time or less time than the six months, the researcher may need to increase or decrease the working hours and the turnaround time proportionally in order to make a rough estimate.

a. Designing the research project
Although constructing a research design is a preparatory activity that has largely been concluded by the time the researcher sets up the first time schedule, he or she will still need to include the designing activity in the planning (as a product). In order to gauge how much time is required the following should be taken into consideration. At the design stage, the following are time-consuming activities, especially for fledgling researchers: exploring the project context, finding out exactly what the researcher and the client want, and overcoming uncertainties and aversions regarding delineation. These activities take up most of the turnaround time of the project. In addition, a rough screening of the literature, and developing the research objective and the set of research questions in an iterative way are also time-consuming.
The stage in which the technical design is built, however, is not as time-consuming as most people would expect. Provided the research objective is clear and feasible and the set of research questions is sufficiently steering, building a technical design should not cause too many problems. *Two working weeks* and one or two *months* of turnaround time (the researcher is engaged in the project for a longer period) are reasonable estimates for building a research design for a final project.

b. Research preparation
Firstly, the researcher will need time to *become familiar* with the context in which he or she is going to carry out the research, and or, with the theoretical material that needs to be studied. The first acquaintance often turns out to be essential for the research's success. Familiarising oneself with the context

within which the research will be carried out will increase one's faith in its outcome. Furthermore, the preparation time for a research project depends on the research strategy that has been selected. As is the case in a survey firstly the research population and the sampling procedure need to be established. Also a questionnaire must be compiled, which is a time-consuming activity because it forces the researcher to engage in building a measuring instrument. Preparation is a key factor in an experiment. The researcher will be looking for people who are suitable and who are prepared to participate in the experiment. Furthermore, the trial sessions and/or the experiment itself need to be prepared. A great deal of thinking is required in order to detect any possible irregularities in the set up and the argumentation.
As a consequence the success of a survey or an experiment totally depends on the quality of the preparations. There will be little opportunity to correct any mistakes, unless the research is carried out again. Preparing research can easily take up to *three or four working weeks* with a similar turnaround time. Other research strategies, i.e. the case study, the grounded theory approach and desk research, often require less time in preparation, but have the disadvantage that carrying out the research usually requires proportionally more time. If the researcher designs a research project using the above strategies, about *one or two working weeks* and *two or three weeks of turnaround time* should usually suffice.

c. The research perspective

After this stage the research perspective will have been specified, possibly in the form of a conceptual model (see the Appendix), by having studied the literature selected in the preliminary stage, having conducted a few preliminary interviews with experts or having studied documents and contents of media. Depending on the method selected for studying the research material, you could use this specification to compile a questionnaire for an interview or a poll, an observation scheme, and/or a category system for carrying out a content analysis of either written or audio-visual documents. Please note that the research perspective will have been specified as part of the writing process rather than as part of the research process. We have based our recommendation on the fact that the research perspective should be developed in a conceptual form as soon as the research project has started. This specification is meant to be included after some iteration in the research report at a later stage. *Two or three working weeks* and the *same amount of turnaround time* will usually suffice.

d. Gathering research material

It is difficult to give general guidelines concerning the working hours involved in gathering the research material as they strongly depend on the research strategy selected. Let us assume that all the material required can be gathered from the researcher's desk by studying 40 annual reports of large enterprises. He or she will finish sooner than if he or she was to visit twenty large municipalities in the country in order to interview the town clerks. However, we can give an idea of how many working hours are required by presenting a few examples.

- *Questioning*

Conducting a *written or oral poll* is usually time-consuming, despite the advanced technological tools the researcher has at her or his disposal. For example, questionnaires and reminders must be sent, and then the completed forms must be entered, processed and analysed. The *large number* of participants that are used in a written poll usually makes it a time-consuming activity.

During a research project based on the question To what extent do companies use direct mail?[7], the material gathered was based on sending out approximately 1,000 questionnaires of which 620 were completed and returned. The activity took *four working weeks.*

When conducting *interviews,* other standards apply as to working hours and turnaround time. Usually, if one starts from the preparation up to recording and sorting out the interview data, an interview will take approximately *eight working hours.* About half this time is needed to make a preliminary report. As this activity comes under (e) - as discussed further on in this section - we count *four to six working hours* per interview, from the preparation of the interview to conducting the interview itself (activity d). If the researcher has planned thirty interviews during the course of a research project, this will amount to approximately three to five working weeks. (But, once again, the initial processing could easily take another three weeks!) It goes without saying that the turnaround time for possible periods of inactivity will usually be considerably longer.

- *Observation*

If the plan is to observe a work process using a method of timekeeping, for example an order flow or an administrative procedure, this could easily involve three full working days per workflow. For example, in a research project concerning the efficiency of administrative data flows, the researcher gathered material on a dozen administrative products. This activity took four weeks in total.

A *participant observation* generally involves more working hours. For example, a student of mass communication studied the informal face-to-face contact between shop staff and clients. For a month he worked filling shelves at a supermarket, and he used this time for doing participant observations. At night he made notes of all he had seen and heard, and of anything that may be relevant to his thesis. After this month he needed another month to analyse his notes, and to write the research report. Thus, this research project has a turnaround time of two months in total, with effectively six weeks of working hours.

- *Content analysis*

In a research project about the medical care of the elderly a secondary analysis was made of the results of sixty semi-structured interviews. In this case, the researcher was not obliged to do the interviews herself. Nevertheless, she still needed six weeks in order to categorise, process and analyse the data.

- *Search methods*

A researcher of policy sciences has mapped out which definitions and operationalisations of the concept 'quality of labour' have been used since 1970 in research projects conducted by Dutch sociologists and psychologists working in the field of labour and organisation. To this end, he often had to delve into the archives of research institutes in order to find and study research material on the subject. This took him a full five weeks.

e. Reporting and initial analysis

This activity brings us back to the writing process. As soon as the research material has been gathered, notes should be taken of anything that has drawn attention during the gathering and initial processing of the material, and a report should be made. This may concern additional information, such as non-verbal communication, ideas that have arisen during the interpretation of the data and the contribution these ideas may provide when answering the research questions. Consequently, this report furnishes an *initial analysis* of the research material as well. At this stage, the researcher would mostly like to delve deeper into the material, studying each research question at a time. Only then is it likely that the researcher will be able to extract all the relevant details and differentiations in the research material. In this initial analysis, one must stick to the original research material. When the researcher is engaged in the activities to do with (g) 'working material' and (i) 'draft versions' he or she will be able to distance himself or herself from the rough material and try to answer the research questions in an increasingly explicit way.
Of course the number of working hours involved in this activity in the first place depends on the nature and the quantity of the research material. But, irrespective of this, the nature of this activity may vary from making a full transcription of the interview to making excerpts and listening to tapes. Note that the researcher only makes notes of those parts that may be of interest to the research questions. For example, in a diagnostic research project based on interviews, it is often unnecessary to make a full transcription of each interview separately. The ideas that come up during the interview are most important. But, if you carry out a research project on processes regarding the inter-

pretation of various religious worshippers for example, it is recommended that you make a full transcription of the separate interviews. The reason for this is that interpretation often only emerges when reading 'between the lines' and when deducing it from the respondent's reflections. This asks for a detailed and precise analysis of preferably verbatim transcriptions.

Obviously, making a full transcription of an interview is far more time-consuming than making a summary, which in its turn involves more time than just listening to tapes while making notes of what appears to be relevant. This may save many working hours, but you can only use this procedure when it involves simple research questions. And the question remains whether you can find all of the differentiations in the material gathered. What may seem to be an insignificant detail at the beginning of the analysis could turn out to be relevant information at a later stage. As a general guideline for making a time schedule, you should reserve *as many working hours* for activity (e) as is required for activity (d), i.e. 'gathering research material'

f. Feedback

The objective of this activity is to check whether the material that has been gathered is correctly reported and interpreted. This can be done by presenting the interview or observation reports that have resulted from activity (e) to the parties involved to check whether they recognise their opinions in the reports. This is also called 'member check' by qualitative researchers. It also provides an opportunity to gather additional information. As in activity (d), the researcher must immediately process the responses to the feedback in the reports. This activity should involve a maximum of approximately *one working week.* The turnaround time may be somewhat longer because of the waiting time.

g. Working material

The next part of the activity plan is also part of the writing process. At this stage the researcher *rearranges* the results of the activities *by writing them down* and *processing* them into working material. He or she does this by interpreting the material as much as possible while looking for the answers to the research questions. The resulting working material serves as a basis for the chapters in the final report.

> Example 'Decision-making process of local authorities'
> Let us assume that you are involved in the implementation stage of an administrative research project on the decision-making procedure of local authorities. In this context you have conducted interviews with local government officials at several local authorities (gathering material). You have reported the contents of the interviews and had these checked by your informants (feedback).

> Subsequently, you have studied these reports in view of the research questions. One of the sub-questions concerns the democratic level of the decision process: who is involved in which aspect of the decision process and at what stage? You find that the local authorities that you have studied show many differences in this aspect. You make notes of these findings, and you use them to make a brief note regarding the level of democracy found within the distinct local authorities. The note will provide part of the working material that you will use to write the several versions of the research report at a later stage.

The time involved in creating working material can differ. The more transparent the set of research questions, the simpler it is to translate the research material into working material. The researcher should reserve at least *a few weeks* of working hours for this activity.

h. Gathering of additional material

During the research project, the researcher often finds that not all of the material needed to fully answer the research questions is available yet. He or she may therefore decide to conduct additional interviews, study new documentation and literature, or carry out an additional experiment. If time is limited, then this could force the researcher to adjust or drop components within the set of research questions. This often also means that he or she will have to adapt the research objective. In order to prevent this from happening as much as possible, the reader is well advised to reserve *one or two working weeks* in advance so that additional supplements can be made.

L Draft version(s)

By this stage the researcher will have gathered sufficient and sufficiently detailed material to start writing the draft version(s) of the final report. Note that we still refer to conceptual writing. While writing and rewriting, the working material will be analysed again, but this time from the perspective of the research objective and the research questions, and preferably one research question at a time. Moreover, the texts will be reformulated into a coherent story. Sometimes, a single draft version will suffice, but often, in consultation with a supervisor, it becomes apparent that more versions will have to be written. If that is the case, then the researcher will need to reserve at least *four working weeks* to write and rewrite the various draft versions.

j. Final research report

Research could yield several final products, of which the bachelor's thesis, master's thesis, PhD dissertation or the research report are the most important. The research report does not only answer the research questions, it also states to which degree the objective of the research project can be achieved. Moreover, suggestions and recommendations are made, which are linked to the research objective. Bear in mind that the final version will involve several layout activities. We need to consider the page layout, pagination, tables and figures, bibliography, and so on. For converting the final draft version into a final version, the reader should reserve *three to four working weeks.*

Apart from the research report there may be other products. It may be wise to draw up a *summarised report* for those who do not need to study the full report but who would be interested in reading the research results. The researcher is often asked to give a presentation about the research results. In addition, research reports are sometimes used for as *articles* in scientific journals or other specialist journals. It could also be used to draw up a conference *paper.* These by-products are often included after finalising the research product. However, sometimes they are part of the research assignment, in which case you should reserve the working hours required.

Table of contents

An important contribution to the designing of a research plan is the compilation of a generic and provisional *table of contents* for the research report. As early as the design stage, the researcher has to decide on the broad outline of the thesis, the dissertation or the research report. The most important design feature is the search for *significant* and especially *brief* titles for the various chapters and sections. The search for titles is of a strong iterative nature. At various stages of the designing process the researcher will feel the urge to alter these titles. The value of the designing activity is therefore more in the process than in the product, which in this case concerns the titles themselves. By thinking about these titles, the researcher is constantly forced to consider the crucial points of the research project.

It may strike the reader as odd having to compile a table of contents as early as the implementation stage of the project. Would it not be more obvious to wait with compiling the table of contents until after you have concluded the actual research part of the project? The answer is no, given our understanding of designing iteratively, our views on conceptual writing as a form of analysing, and our recommended corresponding parallel time schedule. A logical consequence of the decision to start writing at such an early stage is that the researcher starts visualising the final result of all his or her writing at an early stage as well. Such a visualisation by way of a schematic table of contents consisting of significant, brief titles not only helps to work in a product-oriented manner. It also gives the opportunity to build a line of reasoning that others can understand. In this context, we would like to remind the reader of how research can be described as an elaborate argument.

The construction of a final report may consist roughly of the following:

Title: How a prestigious bank can be small

Preface

Table of contents

Summary

Obviously the research report starts with a title page. Preferably a short and sensible title has been chosen, one which covers the content of the report. In a preface some information can be given about the research background. Possibly a few people who have been important to the researcher can be mentioned or thanks can be given. A brief summary of up to two pages contains the essence of the research objective, states the research questions, reveals the main results obtained and presents the recommendations based on the research project.

Chapter 1 The bank has grown out of its clothes
The first chapter includes an introduction to the research project. This can be done by describing the project context in the first section. In the next section the research objective is described. In many cases the schematic representation of the research framework offers a clarification of the way the research was executed. By stating the research questions the core of the theoretical context is introduced to the reader. This chapter concludes with a broad overview of the research report.

Chapter II Critical success factors for introducing business units
In this chapter an elaboration of the theories that have been used takes place. It also shows how these theories have contributed to the specification of the research perspective, i.e. the conceptual model of the research project. This chapter contains an answer to the first central research question. In the example that we presented before, in which the method of subdividing the research framework was used for finding the central research questions, the first central research question is (see page 123):

1. *What are the relevant critical success factors (that is, the desired situation) for implementing the business unit concept at AGB/JOVA?*

The answer to this question is given in several sections by running through the steps that resulted in the research perspective. That is, the generic conceptual model is given, and then the answers to the sub-questions of the first main question (see page 123) are elaborated in separate sections. Here the insights and assumptions that are used in the theoretical framework are described. Next, the results of the preliminary research that helped to formulate the conceptual model are presented. The chapter concludes with a brief presentation of the final research perspective, in this case the final conceptual model. This can be done, for example, by presenting a list of subjects to be analysed, a set of expectations or hypotheses to be tested, or a set of assessment criteria to be used in evaluation research.

Chapter III Methodological justification

This chapter provides a justification of the research methods and procedures, as determined in the technical design. In the example, which is an instance of practice-oriented research, firstly the organisation where the research takes place is described. Next, an explanation is given of the selected research strategy, the choice of the data sources, as well as the way the access to these sources has been created, and the way this data has been analysed (see the Chapters 6 and 7). In the last section of this chapter the researcher gives an assessment of the three main criteria for scientific research: the reliability, the validity and the usefulness of the research results.

Chapter IV Results

Here the results of the research project are presented. An answer has been provided to the second central research question, which has been formulated as

2a. How will the actual situation with regard to these critical success factors be described in the four regional offices?

2b. How will the actual situation be assessed in the light of these critical success factors in the four regional offices?

The answer to the central question can be found in the answers to the belonging sub-questions (see pages 123-124). First of all, the situation of the banking sector in general, and the position of AGB/JOVA in this sector in particular, are described. Next, the situation in the four regional offices is described in four separate sections, by confronting them with the critical success factors. In doing so, the researcher refers to the relationships between the core concepts formulated in the conceptual model. Finally, the results are summarised and preferably presented in compact schemes.

Chapter V Conclusions and recommendations

Finally we report the conclusions that have been deduced from the results, and we present the recommendations which have been concisely formulated in such a way that they help achieve the research objective. This is done by answering the third central research question (see page 124):

3. *What are the main similarities and differences between the four diagnoses of the regional offices in terms of critical success factors?*

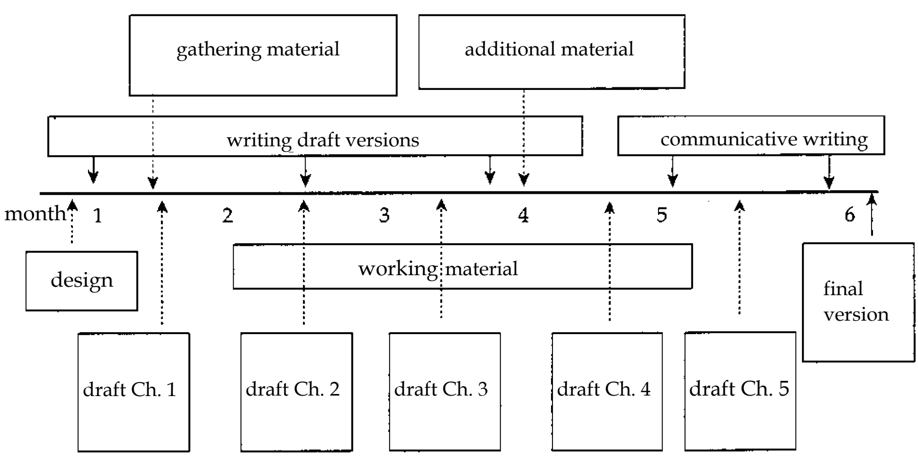
Again this question can mainly be answered by answering the sub-questions. On the basis of the confrontations of the four offices, a final conclusion has

been drawn as to the feasibility of an introduction of business units. Next, while referring to the research objective (to make recommendations...), the researcher indicates which measures are needed in order to improve the organisation with regard to the critical success factors. Finally, there is a reflection on the research as a whole, by reconsidering the theoretical context, the results and the process of the research.
Naturally, a reference list of the literature that is used, and possibly appendices, conclude(s) this report. Please note that on the basis of activities that are carried out during the designing of the research, Chapter 1 and Section 3.2 could be written.

8-4 TIME SCHEDULE

Now that we have a general picture of all the activities, including the working hours and the turnaround time required, we can draw up a time schedule. It indicates during which period the various activities will be carried out, and when certain activities and intermediate products (for example draft chapters) will be completed. A useful way to represent a time schedule is by using a *time-axis* (see Figure 8.2).

Figure 8.2 Time-axis representing a planning



The length of this axis represents the entire duration of the project. On the line we mark the relevant dates of the planning. Above the line we indicate in each relevant position which activities are to be carried out during this period. Below the line the products and intermediate products of these activities are indicated. An advantage of the time-axis is that we can see at a glance which activities and results in the project as a whole must be completed at the various stages.

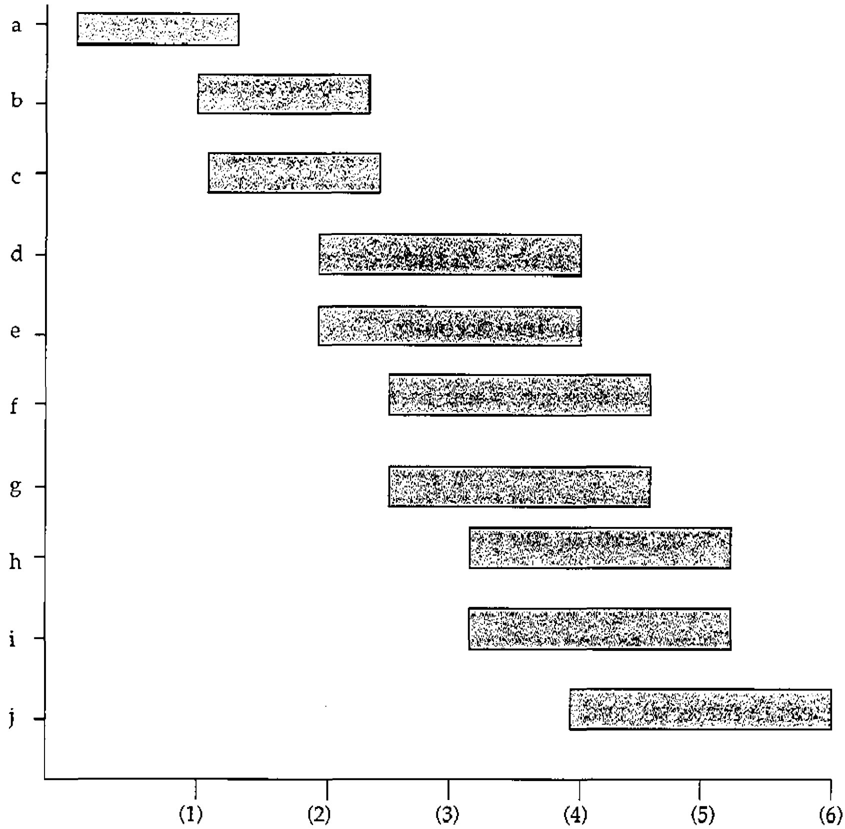
One disadvantage is that the parallel planning is not represented. A better way to illustrate this is to use a histogram, as shown in Figure 8.3. Again, the horizontal axis represents the duration of the research project, divided into six equal parts representing the six months that the project may take to complete. The vertical line represents the activities that are to be carried out during the research project. When reading the histogram vertically, we can see which activities we need to engage in at any given moment or which we should have accomplished during a certain period, according to the plan. When drawing up a histogram, the researcher needs to consider the proportional division between serial and parallel planning. In addition to what has been said about this subject in the previous section, we would also like to mention a few considerations that should be taken into account.

First, activity (a) 'designing a research project' is of course the *start* of all the activities that will be carried out. Keep in mind that designing a research project is an iterative process, the research design can be continuously adapted if necessary. Subsequently, activities (b) 'preparatory research' and (c) 'specifying the research perspective' are to be carried out *simultaneously.* Together these activities can be seen as the preparation for gathering and analysing the research material. Next, in most cases activities (d) 'gathering research material' and (e) 'reporting and making an initial analysis' can be carried out simultaneously The advantage of doing this has already been discussed in the previous chapter. The activities (f) 'feedback', (g) 'working material', (h) 'additional research material' and, (i) 'draft versions' often merge together and in most cases it is wise to make a plan to carry out these activities *simultaneously.* It will be clear that the time required for gathering and arranging the material will diminish as the draft versions materialise. The activities relating to the final versions of the products (j) of the research project have been placed at the *end* of the trajectory.

The reader can see in the above histogram that attempts were indeed made to plan several activities in a parallel way. However, it soon becomes clear that many activities can only be carried out in a serial way. It is also true that some research strategies are more difficult to plan in a parallel way than others. In this respect, the survey and case study, for example, are each other's opposites. A classical large-scale theory-testing survey, based on quantitative analysis of data that have been gathered by means of a written poll, should be carried out in a linear-serial way. If the aim is to develop a theory, however, the survey will most probably benefit from a parallel approach. In a practice-oriented case study we should resolutely opt for an iterative- parallel execution of the research project.

Irrespective of the research strategy that has been chosen, we recommend that for each part of the activity plan it should be decided when serial planning is necessary and when parallel planning is useful.

Figure 8.3 Time schedule for a research project



A step-by-step approach based on an example

Research planning

1. Make an *activity plan* in accordance with the model shown in Figure 8.1, and for each activity estimate the required working time and turnaround time.
2. Draw up a time *schedule* indicating which activities need to be carried out, in which period and which activities will be planned in a parallel way
3. Create a *time-axis,* as in Figure 8.2.
4. Draw up a *histogram* similar to the model in Figure 8.3.
5. Compile a *table of contents* for the final report.

6. During this planning carry out a continual *iteration.* Also add all the working time involved. If the total time exceeds or is shorter than the time available, determine the adjustments that will need to be made to the design (including planning). This mainly involves a reduction in the number and/or the reach of the research questions.

Finally, we will apply this step-by-step approach to the example 'Save the goose'.

Step 1: Activity plan

a. Designing a research project

Because the student had already prepared most of this design, she will not need to spend much time on this stage.
Working time: one week. Turnaround time: two weeks.

b. Preparation of the research

What she does need to do is to communicate with agricultural organisations, agricultural experts and environmentalists. For this, she will require more working hours. In addition, questions for the interviews need to be drawn up. She will have to obtain specific documents from various organisations, make appointments with experts and farmers, which in turn requires a relatively extensive turnaround time.
Working time: two weeks. Turnaround time: five weeks.

c. Specifying the research perspective

It is the student's plan to skim through a book on waterfowl and several books and documents on land development. She hopes this will help her to gain a perspective on forage sites for graylags. She is fortunate because members of an environmental organisation have kindly provided her with all the material she needs and several useful pointers. This will save her a lot of time.
Working time: one week. Turnaround time: two weeks.

d. Gathering research material

The student has opted for the case study strategy. Within this context, she plans to conduct a total of twenty interviews: two interviews with agricultural experts, two with environmentalists, one with a public information expert and fifteen interviews with farmers. The interviews will be recorded. Because a relatively large number of experts will be involved, she can greatly limit the number of documents and the amount of literature, which will save her a considerable amount of time.
Working time: five weeks. Turnaround time: two months.

e. Reporting and initial analysis

In order to save work, the student decides not to make a full transcript of the interviews or a written summary. Instead of typing the interviews verbatim and then reading the texts twice, she decides to listen to the tapes directly. She does this three times, each time focussing on one central research question. Obviously each time that she does this the procedure speeds up, because she recalls more from the previous sessions, and she becomes more and more skilled. When doing, she only enters information into her PC that appears at first sight to be relevant for answering the specific questions. She deals with the contents of the documents in a similar way. Several of the sentences she writes down during this stage can be used later as quotes.
Working hours: four weeks. Turnaround time: four weeks.

f. Feedback

The student does *not* provide her respondents with feedback concerning the results of activity (e). This would only be useful if the interviews had been worked out completely or if they had been turned into extracts.
Working hours: none required. Turnaround time: none required.

g. Development of the material

The student intends to critically examine the results of the activities (e) and (f) one more time, keeping in mind the research objective which is: to formulate guidelines and advice for developing information by providing insight into farmers[7] views, attitudes and motives relating to the 'set aside' government regulations. Sometimes she will return to the tapes. Now and again she writes out a draft consisting of advice.
Working hours: two weeks. Turnaround time: two weeks.

h. Additional material

As a contingency measure.
Working hours: one week. Turnaround time: two weeks.

i. Draft chapters

The student is aware that she will need to write three different draft versions to achieve satisfactory texts. During this procedure, the emphasis on her work will shift. It will proceed from intensive writing to extensive word processing.
Working hours: six weeks. Turnaround time: six weeks.

j. Products

After three rounds of writing, it will only be a matter of placing the finishing touches on the text in order to ensure a clear formulation *from the point of view of the reader.* Attention will also be paid to the layout. The university press informs the student that it will take two weeks to make copies of her work. Working hours: three weeks. Turnaround time: five weeks.

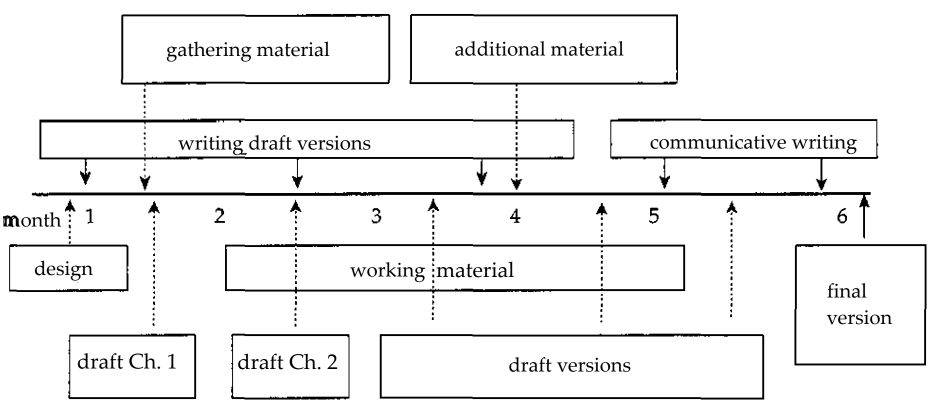
Step 2: Time schedule

The research perspective is developed simultaneously when preparing the research project. This makes it possible for the student to use her contacts in the field to obtain useful ideas for her perspective. She estimates the turnaround time for these activities to be approximately *six weeks.*

Step 3: Time-axis

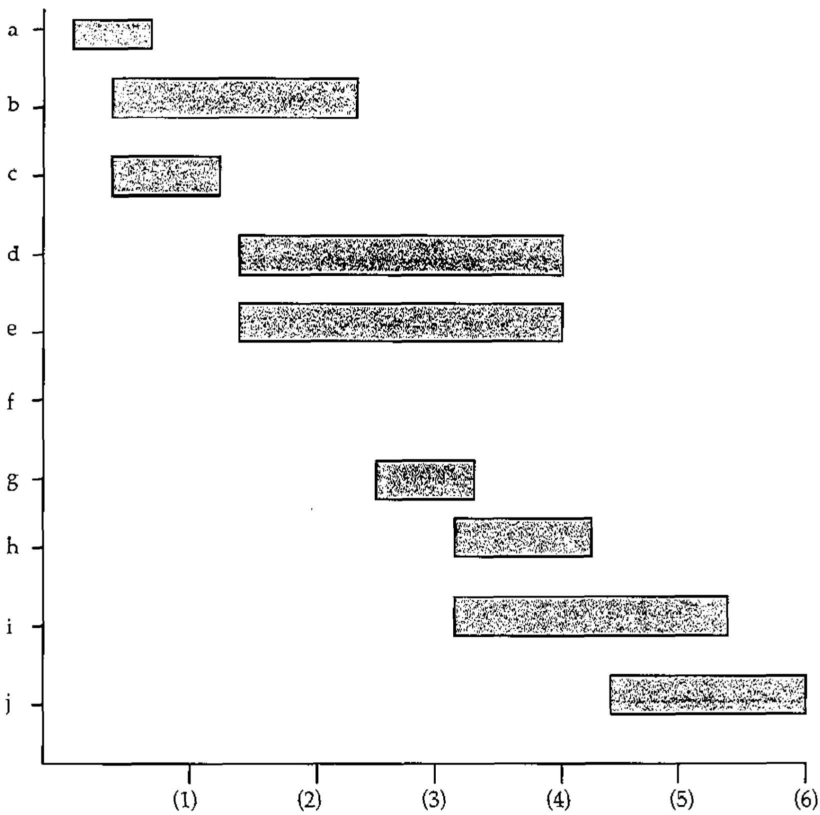
Furthermore, she intends to carry out the case study according to the sequential method. This means that the activities (d) 'gathering research material' and (e) 'reporting and initial analysis' should be planned within one and the same turnaround period. The working hours of this combination of activities will be *nine weeks* and she estimates the turnaround time to take *ten weeks.*

Figure 8.4 Time-axis of the research project 'Save the goose'



Step 4: Histogram

Figure 8.5 Histogram of the research project 'Save the goose'



Step 5: Table of contents

Title: Save the goose

Sub-title: Problems concerning the graylag in the Netherlands

Chapter 1 The endangered graylag population
1.1 What exactly is the problem?
1.2 Why is it a problem?
1.3 What can we do about it?

Chapter 2 Ecology versus economy
2.1 Ecological insights
2.2 Agricultural economic theories

2.3 Confrontation of ideas
2.4 Conceptual model

Chapter 3 Why choose a case study?
3.1 Selection of a case
3.2 Research strategy
3.3 Reliability, validity and utility of results

Chapter 4 Views of farmers and experts
4.1 Experience and knowledge of farmers
4.2 The experts believe...
4.3 Summary

Chapter 5 Public information
5.1 Conclusions
5.2 Recommendations
- Information directed at whom?
- Information on what issue?
- Information when?
- Information through which channels?

5.3 Reflection on the research

Step 6: Iteration
Our student has calculated her working hours at 21 weeks, whereas according to her training programme the thesis should not take longer than four months. She decides to reduce the extent of the project by eliminating one of the central questions. She wishes to retain her formulation of the project objective, although she believes that her assertions may have been somewhat stronger without this restriction.

APPENDIX: CONCEPTUAL MODEL

APPENDIX: CONCEPTUAL MODEL

INTRODUCTION

When designing a scientific research project a researcher will always make use of existing theories because having prior knowledge of the phenomenon at hand is very helpful in formulating an appropriate set of research questions, and finding definitions of the core concepts in these questions. Theories could also play a role in answering these questions. For the theoretical underpinning of the research, constructing a conceptual model is often an important tool.

A conceptual model consists of a set of assumed causal relationships between the core concepts of a research project. That is why it is also called a causal model. However, because of its theoretical nature, we prefer to use the term conceptual model. A well-designed conceptual model should serve two designing purposes. It helps the researcher to demarcate clearly his or her research subject, and most importantly, the conceptual model supports the researcher to formulate the assumed relationships between the core concepts correctly and to link the research project to an existing theory.

A conceptual model may be of particular interest in a theory-oriented research study, which aims at obtaining knowledge for the sake of knowledge itself. In practice-oriented research, a conceptual model could be of use in projects where explanation plays a role. This is most often the case in *diagnostic* and *evaluation* research. However, since a conceptual model is not always relevant in a research project, we have placed the instructions on how to design a conceptual model in an appendix. In this appendix we will first elaborate on the main features of a conceptual model (Section 1). In Section 2, we introduce five basic patterns of causal relationships that constitute a conceptual model. Next we describe the use of a conceptual model in designing a research project. Here, attention is paid to the differences between the use of a conceptual model in a quantitative and a qualitative type of research, as well as to a testing and an explorative way of using a conceptual model (Section 3). In Section 4, the reader finds a description of the way a conceptual model helps demarcate the research project and steer the designing of the project. Finally, in Section 5 we present a comprehensive example of the process of designing a conceptual model. This example helps the reader to demarcate his or her own research subject and to formulate the assumed relationships of the core concepts adequately. We conclude this section by offering the reader a step-by-step plan for constructing a conceptual model.

1 THE COMPOSITION OF A CONCEPTUAL MODEL

As the reader knows by now, the conceptual design of a research entails a conceptual outline of the project. Here, it is decided what exactly will be studied, and what will *not*. In this appendix, the reader is familiarised with an aid that should be useful in steering and demarcating the research study.

A conceptual model represents that particular part of reality that a researcher wishes to study. More specifically, a conceptual model shows the causal patterns that the phenomena in the empirical reality display in relation to each other. For example, if a physicist wants to study the relationship between the heating of iron and its expansion, the conceptual model will be a schematic representation of the physicist's expectation of the relationship between the phenomena or occurrences (see also Figure A.10). In this case, it is the expectation that iron will expand when it is heated. And a social scientist, for instance, anticipates that there is a link between someone's religion on the one hand, and her stance with regard to nature and the environment on the other. It stands to reason that more than two phenomena can be involved.

While designing a conceptual model, the researcher not only decides which aspects of the research study's core concepts and which relationships between these aspects he or she wishes to examine, but also which aspects should be discarded. For example, although it may be a logical choice, the physicist in our example may decide not to include the possible influence of the air pressure on the expansion of the heated iron, due to a limited research budget.

As stated above, a conceptual model consists of two sets of elements: (a) a set of core concepts indicating phenomena in the empirical reality, and (b) a set of assumed relationships between these concepts. Both sets of elements need further elaboration.

a. Core concepts

Core concepts, as they function in a set of research questions, refer to phenomena that can occur in different variations or modalities. For example, leadership style is a phenomenon with different modalities, such as 'a participatory leadership style' and 'an authoritarian leadership style'. In other words, there is a *variety* of possible styles of leadership. Because of this, researchers often use the term *variables* to indicate the core concepts of their research. For example, the concept 'sex' is a variable because it consists of the modalities 'man' and "woman' and the concept 'temperature' is a variable because temperature has many different gradations. But not all concepts are variables. The concept 'environment", for example, is *not* a variable, because we cannot define the variations of 'environment'. However, we will be able to recognise the concept 'level of environmental pollution' as a variable, because we can imagine variations exist at several levels. It is possible, for example, to distinguish a high level from a low level of environmental pollution.

Variations of core concepts, or variables, can assume the form of a *modality* or a *gradation.* They are also called the '*values*' or '*scores*' of the variable. We speak of a modality when the variation of a core concept can be presented only in terms of distinct categories, but not in terms of 'more' or 'less'. In this case, the core concept is called a *nominal variable.* Sex is a nominal variable because the modalities male and female cannot be ordered. We label the variation of a core concept as a gradation when that variation can be presented in terms of 'more' or 'less'. The concepts 'age', 'volume of profits', 'level of commitment', and 'income' are all examples of variables (core concepts) with several gradations. We call them either *ordinal variables* (in which the variation can be ranked in terms of a degree, for instance, the level of commitment) or *interval variables* (in which the numeric distance between two ranking points can be fixed, for example, age).

When we start designing a conceptual model, we must first pay attention to the following two rules. Rule 1 is to ensure that each of the core concepts is a variable (nominal, ordinal or interval) and that non-variables or constants are excluded from the conceptual model. Rule 2 is to define, precisely and exclusively, which modalities or gradations of the variables or core concepts will be included in the research.

The variables in the conceptual model should be indicated by short labels, put into boxes. These boxes may be connected by means of one-sided arrows depending on whether there is an expected causal relationship between the variables involved, or not (see below).

b. Relationships

If we talk about a relationship between core concepts we refer to a so-called *causal* relationship, in which we differentiate between a cause and an effect. We recognise a causal relationship in phrases such as 'X causes Y' 'X leads to Y', 'the consequence of X is Y', 'X influences Y' and so on. Generally speaking, we define a relationship between two variables X and Y as a causal one if we assume that, as a result of a manipulation of X, a change will occur in Y. For example, we expect a causal relationship between a leadership style and the business profits when we assume that a change in the leadership style, for example from an authoritarian style into a participatory style, will cause a change in the volume of the profit, for example, from a smaller to a larger volume. The simplest causal relation is based on a two-option-variation (options 0 and 1). For example, when the switch is on (option 1), the lamp will

burn (option 1), and when the switch is off (option 0), the lamp will not burn (option 0).
A causal relationship has two properties, the *direction* and its *strength.* The direction of a causal relationship concerns the question of whether we expect a so-called positive causal effect (indicated with a V sign) or a negative causal effect (indicated with a "sign). When a high value or score pertaining to variable X co-occurs with a high score pertaining to variable Y, and a low score pertaining to X with a low score pertaining to Y, it is a positive effect. On the other hand, when a high score on X co-occurs with a low score on Y and vicc versa, we talk about a negative effect.
Please note that if one or both variables involved in a causal relationship is/are of a nominal nature, the direction of the relation cannot be defined. This is because we can change the order of the modalities of a nominal variable without any consequence. In these cases, the researcher must define which modalities of the one variable relate to the modalities of the other variable, instead of wrongly defining the relationship as a positive or a negative relationship. For instance, in the example of 'style of leadership' and 'business profits' the researcher must define which style of leadership renders high business profits and which style results in low profits.
Please note also that the adjectives "positive' and 'negative" do not refer to any moral or ethical judgment. They simply indicate the direction of the effect.
The strength of a relationship may range from 'no effect', via 'a weak effect', to 'a strong effect' A weak effect occurs, if a relatively large or extensive change in variable X leads to a relatively minor change in Y. We speak about a strong effect if a relatively minor change in X causes a relatively major change in Y.
As stated before, a conceptual model is a schematic representation of the research object, in which the variables, represented by short labels, are put into boxes and in which the boxes may be connected by arrows, indicating a causal relationship between the variables involved. It is important to position the variables in the model in such a way that the arrows do not cross each other. Particularly in complex models with many variables and causal arrows, this way of positioning enhances the readability of a model. In most cases, such a positioning can be found, although in exceptional cases it is inevitable that one or two arrows will cross.
Imagine, as an example, that there is a researcher who wants to study the relationship between the variables X (the level of economic activity), Y (the population's physical well-being) and Z (the quality of the healthcare system) in a developing country. Figure A.l displays the generic conceptual model of this theory-oriented research project.

Figure A.l Conceptual model for economic activity (X), well-being (Y) and the quality of the healthcare system (Z) - generic version

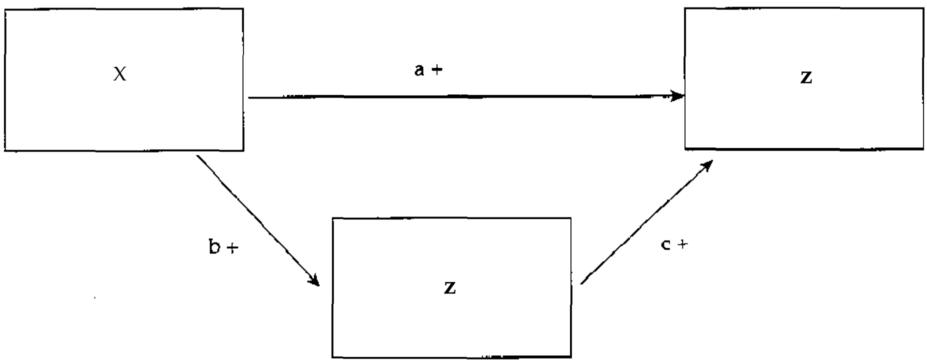


Figure A.l reads as follows. The researcher expects a positive effect of an increase of the level of economic activity on the population's physical well-being. He or she also expects an indirect effect via Z. The direct effect is presented in arrow (a +), indicating the assumption that a higher level of economic activity will improve the population's well-being directly The researcher also expects that the improvement in the population's physical well-being will also result from having a higher quality healthcare system (Z). At the same time, the researcher expects that this higher quality healthcare system results from a higher level of economic activity (X). The arrows (b +) and (c +) indicate this *indirect* effect of the level of economic activity (X) on the population's physical well-being (Y).

2 Basic patterns of causal relationship

One can distinguish between five basic patterns of causal effects:

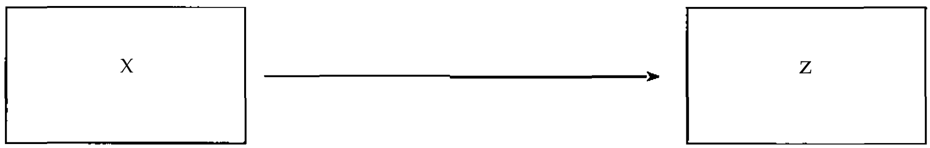
a. direct effect;
b. indirect or mediating effect;
c. interaction or moderating effect;
d. feedback effect;
e. confounding effect.

Each of these types of effects or effect-patterns will be presented in detail.

a. Direct effect

Figure A.2 presents a conceptual model with a direct effect.

Figure A.2 A conceptual model consisting of a direct effect of X on Y

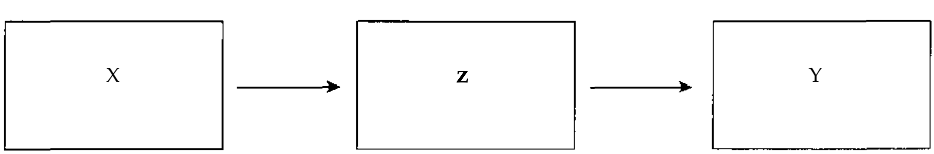


We call X the *independent* variable (causc) and Y the *dependent* variable (effect). The term 'independent' variable can be confusing. Independent does not mean that there is no other factor in reality that will influence this variable. It means that, within the constraints of our research project, we will not be investigating the influence of those other factors. Figure A.2 suggests that in this particular research we will only study the influence of variable X (cause) on variable Y (effect).

b. Indirect or mediating effect

When we explained the relationships presented in Figure A.l, we pointed out that variable X (the level of economic activity), apart from the direct effect, also affects variable Y (the population's physical well-being) indirectly. This effect goes from variable X, via variable Z, to variable Y. The line of reasoning is, for example, that an increase in the level of economic activity will lead to a higher quality healthcare system and that the latter, in turn, will increase the population's well-being. Hence we call the variable Z the *intervening* or *mediating* variable because this variable intervenes or mediates between the independent variable X (cause) and the dependent variable Y (effect). Figure A.3 presents a conceptual model with an indirect effect.

Figure A.3 Conceptual model constituting an indirect effect of X on Y, with Z as an intervening variable



It is important to take a closer look at the possible directions a mediating effect may have. In Figure A1 the researcher expects a positive effect of both X on Z, and Z on Y: an increase of X will lead to an increase of Z, and this increase will lead to an increase of Y. In this case, the overall mediating effect of X on Y is positive. Let us consider other possible combinations. First, when both relationships are negative, the total mediating effect will also be positive. For example, if the level of stress (X) has a negative effect on traffic alertness (Z), and if the latter has a negative effect on the number of accidents (Y), the total mediating effect of stress on accidents will be positive, as the reader can see: more stress leads to a lower alertness, and lower alertness induces a higher number of accidents. Second, if the researcher expects an opposite direction of the effects of the variables X and Z on Y, the overall effect of X on Y will always be negative. Please check this line of reasoning in the following case in which variable X stands for the quality of a product, variable Z for the price and variable Y for the sale of this product. We assume that there will be a positive effect of X on Z and a negative effect of Z on Y. Determining the direction of an indirect effect can be found in the same rule as is valid for multiplication in mathematics: plus x plus = plus, minus x minus = plus, minus x plus = minus and plus x minus = minus. We have to apply the multiplication rule to the separate effects constituting an indirect effect. For instance: if X has a positive effect on V, V has a negative effect on W and W has a positive effect on Y, then X has a plus x minus x plus = negative effect on Y.

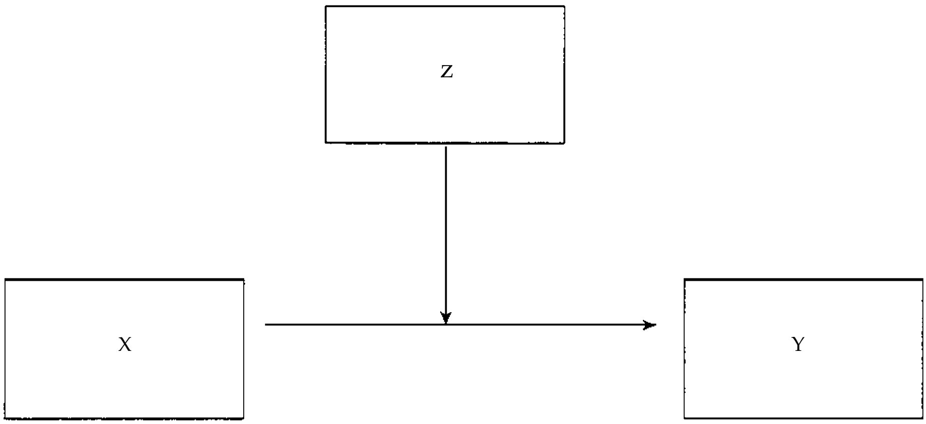
c. Interaction or moderating effect

The following situations could occur. We do expect a direct effect of variable X on variable Y, but only under particular circumstances. Another formulation is that the effect of X on Y for certain values of variable Z is different as to strength and/or direction than it is for other values of Z. Here we talk about an *interaction* or a *moderating* effect, and Z is an interacting or moderating variable. That is, Z interacts with the effect of X on Y, or it moderates this effect. Let us take a look at the following expectation: the level of financial reward (X) will have a direct effect on the level of performance (Y). However, we expect that this relationship is stronger for men than it is for women. This expectation indicates that we expect a moderating influence of a third variable, i.e. gender (Z) on the relationship between X and Y. Here Z is the interacting or moderating variable. Please note that the relationship does not state that the interacting variable Z has an effect on either X or Y. It merely states that it has an effect on the *relationship* between the two variables. In Figure A.4 this moderating effect is depicted.

Figure A.4 should read as follows. We expect a direct effect of variable X on variable Y. However, we also expect that variable Z affects the direction and/or strength of the direct effect of X on Y.

Please note that, with regard to the interaction effects in the example above, in principle three sub-questions must be answered: (a) What is the effect of X on Y within the group of men? (b) What is the effect of X on Y within the group of women? As to a third sub-question (c) there are two variants: one for a quantitative and one for a qualitative type of research. In case of a quantitative research: (c) Is the effect in one group of the interacting variable stronger or weaker than in the other group. And/or, does it have a different direction

Figure A.4 Conceptual model expressing an interaction effect of X on Y, with Z as an interacting variable



in both groups? When it involves a qualitative type of research: (c) Does the causal mechanism operating between X and Y in both groups have a different nature? In all these cases we need the methodological principle of *comparison.* The reader can verify that all of the sub-questions above have a thorough steering capacity. They make quite clear what the researcher should do when conducting the research.

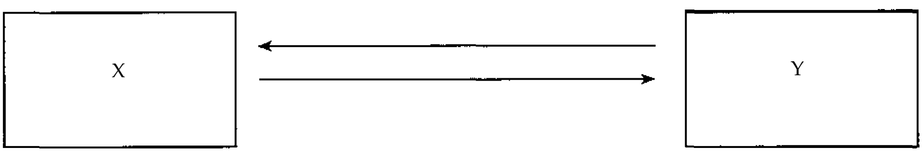
Due to its specific nature, a researcher who is building a conceptual model should always be aware of the existence of interaction. It may occur that, at face value, a researcher will expect a relationship between the variables X and Y. However, a logical line of reasoning or a profound study of the existing scientific literature may reveal that this expectation is restricted, due to certain time and place constraints. Therefore, a researcher should always pay attention to a precise demarcation of his or her research subject by answering the following questions. What will the scope of the validity of the results of my research be? In other words, what will the level of generalisation be?

Let us take a look at the following example. The research objective of a practice-oriented research in the field of Business Administration is to make recommendations for improving the cooperation between the production unit of company A and a subcontracting company B, which provides the raw materials. Both units are located in the UK. The researcher expects that the level of formality of the agreements (X) will affect the effectiveness of the communication (Y) directly, which will result in a conceptual model of X and Y connected by a direct effect. So far so good, but then the subcontracting company B decides to move its activity to China. The researcher realises that the cultural differences between the UK and China will modify the expected direct effect of X on Y, and decides to include a moderating variable Z, for example: the level of directness in conversation, into the conceptual model. Without this variable the model becomes invalid or at least useless for the company concerned.

d. Feedback effect

Sometimes, it occurs that a variable X has an effect on variable Y and that, in turn, variable Y has an effect on X. Such a conceptual model represents a so-called *direct feedback effect.* This pattern of relationship is presented below in Figure A.5. Please notice the two arrows pointing in different directions. This is not to be replaced by one double-headed arrow.

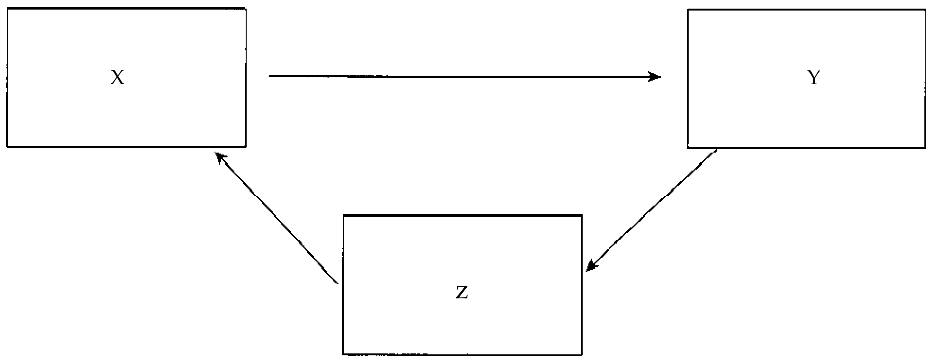
Figure A.5 Conceptual model expressing a direct feedback effect between X and Y



A simple example of a direct feedback effect is the mutual influence of the intensity of contact with criminal friends (X) on the one hand, and the level of criminal activity (Y), on the other. The more someone sees his or her criminal friends, the more he or she will be involved in criminal activities. And the more this person is involved in criminal activities, the more he or she will see or make criminal friends, and so on. In this example the direction of both arrows is positive, which leads to an escalation of mutual effects. It is a loop that grows stronger and stronger. It is also possible that the feedback effect consists of two effects going in opposite directions. In this case we expect a neutralizing feedback effect. For example, hunger (X) makes you eat (Y) (positive effect), while eating (Y) satisfies your appetite, i.e. eliminates your hunger (X) (negative effect). Fortunately, this is an instance of a neutralising (feedback) effect.

Feedback effects can also be indirect, as is demonstrated in Figure A.6,

Figure A.6 Conceptual model constituting an indirect feedback effect from X on Y, via Z



For example, the uncertainty about the exam result (X) has a positive effect on the number of hours spent studying (Y), which has, in turn, a positive effect on the knowledge of the exam subject (Z). Because we expect that Z will *negatively* affect X, we assume that this indirect feedback loop reduces the amount of uncertainty about the exam result. The reader should be aware that here again the application of the multiplication rule mentioned before will determine whether the feedback effect is of an escalating or a neutralising type.

e. Confounding effect

Despite the researcher's meticulousness with regard to the formulation of the assumed relationships in the conceptual model, there is always the possibility that an assumed relationship appears to be partly or totally non-existent. This is called spurious correlation. Consider for example the following situation. While studying patterns of fire prevention over the past twenty years, a researcher notices that whenever a large number of firemen have been appointed (X) to extinguish a fire, there is always greater fire damage (Y) than when only a small number of firemen have been mobilised. Apparently, there is a positive relationship between the number of firemen and the extent of the fire damage. Before jumping to the wrong conclusion that the number of firemen (X) *causes* the extent of the damage (Y), one must realise that in this case the relationship between X and Y is spurious. Obviously, there is a third variable at stake (Z), which is the scale of the fire. The scale of the fire (Z) affects both the number of firemen assigned to extinguish the fire (X), and the extent of the fire damage (Y). In this case variable Z is the *confounding variable* causing the spurious relationship between X and Y. Figure A.7 represents a conceptual model with Z as the confounding variable.

Figure A.7 Conceptual model with Z as a confounding variable; the relation between X and Y is spurious

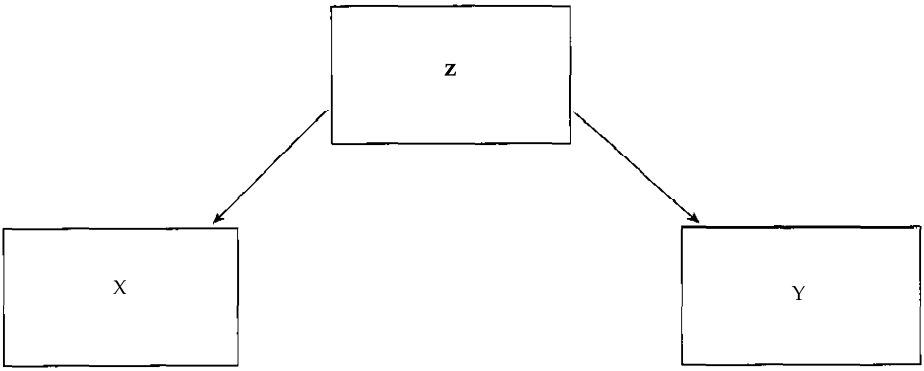


Figure A.7 indicates the following. Even if two variables X and Y have a high correlation, this correlation is totally or partly spurious if there is one or more variable(s) with an effect on both X and Y. Hence, this part of the correlation cannot be brought forward as proof of a causal effect between X and Y. While building a conceptual model it is always important to check the possibility of confounding variables* If not, the researcher will be jumping to the wrong conclusions. From this, the following important rule for building conceptual models can be derived. A variable that has a substantial effect on two or more variables in the provisional conceptual model must be included in that model. If not, the model will lead to false conclusions. If this happens, the model is then 'an *open* model' whereas it should be closed.

3 DIFFERENT USES OF CONCEPTUAL MODELS

In this section, different types of conceptual models that are used as designing devices will be explained. In two sub-sections attention is paid to (a) its use in a quantitative and a qualitative type of research, and (b) the difference between a testing and an explorative use of the conceptual model. There is a link between these two issues: in a qualitative research study often an exploratory approach is preferred, whereas in a quantitative research a testing procedure is most often followed. This does not exclude the usefulness of a testing approach in qualitative research, nor an exploratory procedure in quantitative research.

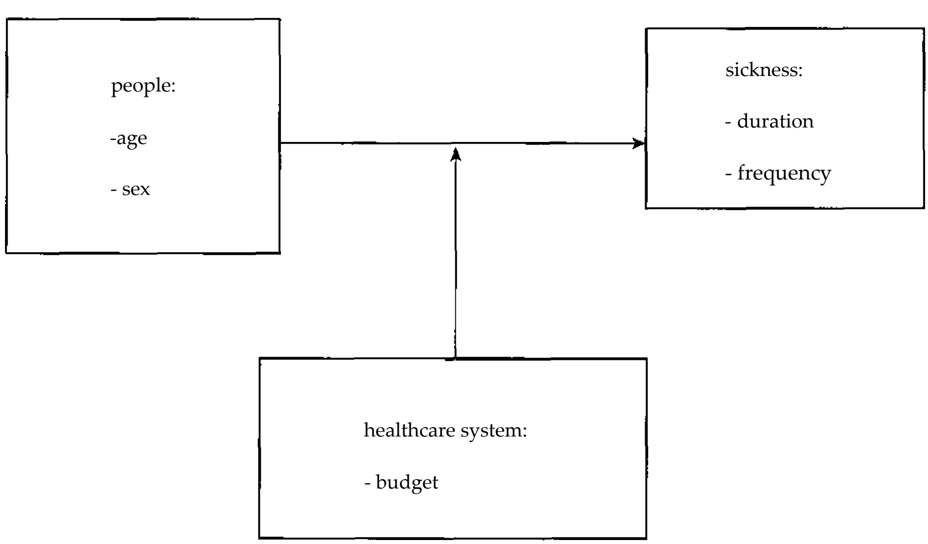
Quantitative and qualitative research

Despite the fact that often the conceptual model is perceived as only relevant for a quantitative type of research, all we have said so far about the character-

istics and types of conceptual models is applicable to both quantitative and qualitative research. In both types of research, a researcher needs to formulate his or her expectations of the assumed relationships between the dimensions and aspects of the selected core concepts.
In both cases, the researcher has to gather data and information in order to answer the question about the extent to which the assumed relationships can be found in reality In both cases, the construction of a conceptual model/ which depicts the expected relationships between the concepts just mentioned, will help the researcher carry out his or her research project successfully.

There are some differences between the detailed elaboration of a conceptual model in a quantitative and a qualitative research project. These differences concern the nature of selected core concepts, the nature of the process of *operationalisation* and, in keeping with this, the selection and specification of the data-sources and methods and procedures used in collecting or generating the data needed. Operationalisation entails the whole process of specification or even translation of core concepts into sensory observations. In quantitative research this entails selecting indicators, i.e. observable aspects of the core concept at hand, and the translation of these indicators into measurement instruments, i.e. a set of questions or propositions in a written or oral questionnaire or schemes for systematic observation (see Chapter 5). In qualitative research operationalisation takes place when selecting topics for interviews or systematic observations, and when giving instructions to the interviewer or observer in order to guide them to valid data. For more information regarding these distinctions see Verschuren (2009).

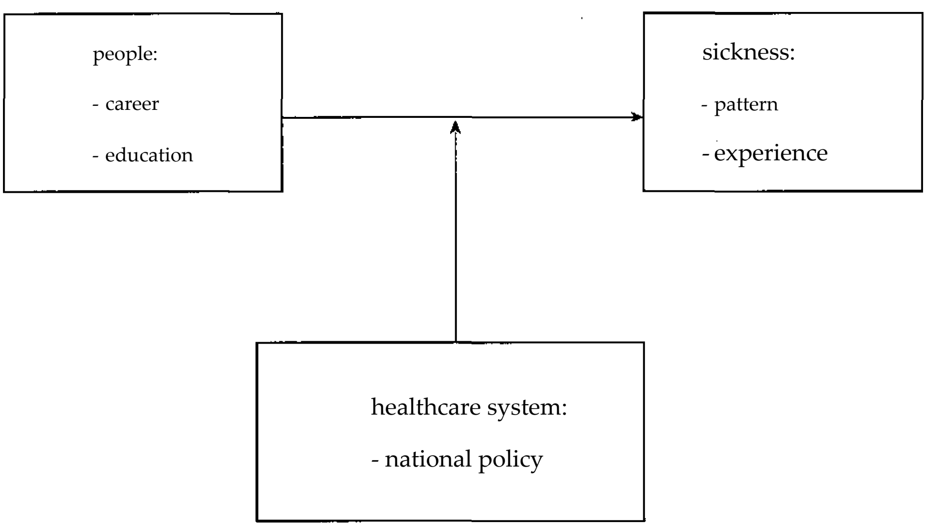
Figure A.8 A conceptual model for quantitative research into the healthcare system



With regard to the nature of the core concepts to be selected in a conceptual model there is a difference between both types of research. In quantitative research, these concepts preferably have a *narrow* and a *closed* meaning, and they are easy to quantify. In qualitative research there is often a preference for *global* and *broad* concepts that are complex and that are open to all kinds of qualifications.
Figure A.8 represents a conceptual model displaying the characteristics of quantitative research mentioned above. Please note that each of the indicators consists of easily and directly quantifiable data.

Figure A.9 shows a conceptual model of the same research project having the same goal, namely to clarify the role of the healthcare system with regard to the various aspects of people's illnesses, but which is preferable for a qualitative type of research.
Please note the differences in the nature of the concepts in Figures A.8 and A.9.

Figure A.9 A conceptual model for qualitative research into the healthcare system



Testing versus exploration
Closely connected to a different use of the conceptual model in quantitative and qualitative research is the use of a conceptual model for testing or for exploration, i.e. an empirical check of the validity of existing ideas versus the further exploration of ideas in progress.

a. Testing

Testing of theories is an important part of the use of conceptual models in empirical research. In this case, we distil from existing literature (theories) a conceptual model, and we check whether the relationships in the model, i.e. the causal hypotheses, are not falsified by empirical data. If we find data that are not in accordance with these hypotheses, then we will have doubts regarding the validity of the model. This is an instance of the *hypothetical-deductive approach,* often used in the social, policy and management sciences.

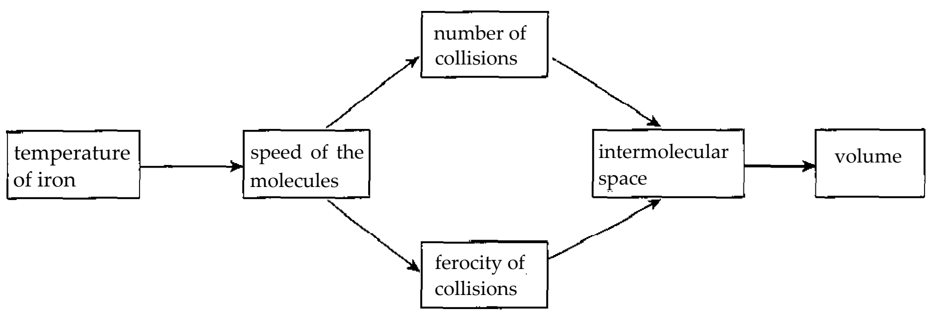
The way the testing is conducted differs slightly in quantitative and qualitative research. In quantitative research we apply statistical analysis in order to monitor how great the chance is that the results are purely accidental. If that chance is too high compared to a previously determined criterion, then the hypothesis is falsified. Then there is reasonable doubt about the validity of the conceptual model. In qualitative research, however, more stress is put on the reliability and validity of the research material, the arguments that are given for propositions, and the triangulation of methods and researchers.

b. Exploration

An exploratory use of conceptual models differs in two respects from a testing approach. First the aim is not to do an empirical check on the validity and reliability of the model. The aim is to further elaborate on the conceptual model, to make it more detailed and more precise. A second difference is that in an exploratory approach we start with a generic and more abstract model than is the case in a testing approach. In a generic model, for instance, the core concepts indicate relatively wide and open phenomena. An example is a generic theory that states that the intelligence of young people determines their scholastic performances. Intelligence is a very complex and abstract concept. It can be made more specific and concrete in different ways. For instance, more concrete and less complex aspects or dimensions of intelligence are skills in maths, skills in languages, social skills, and spatial orientation. The second variable, scholastic performance, is very complex as well, since there are different indicators of scholastic performances, such as grades, the time that is needed for a certain trajectory of the curriculum, the highest school level completed, Now the gcncric conccptual model can be transformed into a more specific and less complex one in several ways. We find in our example twelve relationships in the generic conceptual model, one for each combination of (four) aspects of intelligence and (three) types of scholastic performances. One possibility is to check by means of empirical research whether these twelve relationships are valid and, if so, how strong the relationships are. In this case, we are in the process of refining the generic model, in order to make it more precise and concrete.

The researcher can try to formulate the core concepts more precisely, concretely and In more detail, as well as to refine the causal relationships in the conceptual model at the same time. In principle, the causal arrows in a conceptual model are black boxes. Research would help us to clarify the causal mechanisms that are involved. For instance, research can look for possible mediating variables, interaction effects or confounding effects (see Section 2). The more mediating variables we find in an effect of X on Y, the more we know about the actual causal mechanisms at work. An example is the relationship between heating an iron bar and its expansion.

Figure A.10 Conceptual model of the relation between heating and expansion of iron



One of the most important functions of conceptual models is showing this type of refinement in causal relationships.
For example, the conceptual model regarding the relationship between intelligence and scholastic performances can be refined if we look for intervening or mediating variables. The three types of scholastic performances that were introduced in the example can be ordered in a causal sequence: Intelligence may lead to a quicker learning process, which in turn results in higher grades. Finally, the higher grades could lead to a higher level of education. Hopefully these examples will inspire the reader to search for intervening variables when constructing a conceptual model.
Another option for the refinement of a generic conceptual model is the search for *deeper* causes and *multiple* causes of a phenomenon. For instance, in order to explain a direct effect of X on Y, the researcher tries to find a variable Z that could cause X. In this case, the researcher looks for a deeper cause of Y. He or she can also look for additional causes of X, which is an instance of multiple causation (of X). In instances when these causes can only influence X in conjunction with each other, Ragin speaks of *multiple conjunctural causation,* a mechanism that operates quite often (Ragin, 1987).
The reader is well advised to first elaborate a generic conceptual model by unravelling and specifying its core concepts (variables), and subsequently by searching for mediating, and especially confounding variables. This elaboration can then be followed by a search for interaction and feedback effects.

There are two reasons for this. To begin with, the first set of variables is more important for the validity and utility of the model. Secondly interaction and feedback effects can easily make the model very complex, so that it may lose its main function, i.e. giving an overview and insights into the relationships between the core concepts in the set of research questions.

4 Demarcation and steering

The construction of a well-defined conceptual model is easier than it may seem. To demonstrate this, we present here a comprehensive example of the process of designing a simple, well-demarcated and steering conceptual model. We will first introduce the project context the research objective and the research framework.

Example 'The capacity to change[7]

Project context

The policy advisors at the central office of a national bank, with regional offices all over the country, have developed a new large-scale project called 'Quality first'. An important part of this project is the implementation of a new, computer-based client registration system. It is not the first time that the central office has introduced a new project. During the past few years, a number of change projects have been implemented at the local offices throughout the country It may be a bit too ambitious. Therefore, the head of the HRM department wonders whether the employees will be willing to undergo another change project. Prior research has indicated that some of the employees are more capable of changing than others. It also appeared that the differences in the capacity to change are related to a number of factors, such as the subculture of the regional offices and the job level. The head of the HRM department decides to carry out a research project on the capacity of the employees to change.

Research objective

The research objective is to make recommendations to the head of the HRM department for improving the implementation policy of the project Quality first', particularly so that this project is accepted by the employees *by* giving a clear insight into the capacity to change of the employees, from two different regions.

Research framework

Figure A.ll Research framework "The capacity to change'

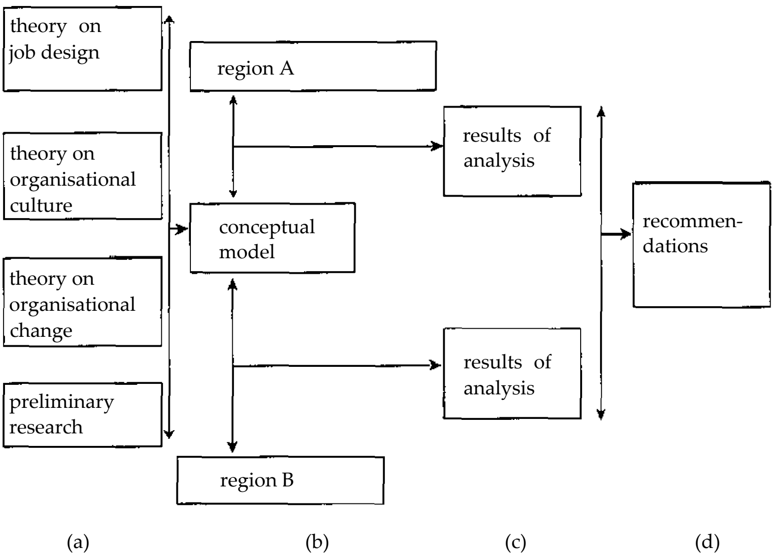


Figure A.ll reads as follows. After having studied the relevant literature on job design, organisational change and organisational culture and after having carried out preliminary research, the researcher constructs a conceptual model (a). The researcher uses this conceptual model to gather information on the actual capacity of the employees to change in two regions (b). By comparing and analysing both groups of employees' capacities to change (c), the researcher is able to make recommendations for improving the implementation of the project 'Quality first'.

How can the researcher design a conceptual model for this research project? This designing process starts by defining a *generic conceptual model.* The next steps involve a further *specification* of this generic model. The process ends with the construction of *the final conceptual model,* including the formulation of the assumed relationships to be studied.

It is particularly important for inexperienced researchers to start with a generic conceptual model, and to then develop it into a final conceptual model. This is because the core concepts the researcher encounters in the scientific literature are usually too complex, too broad or too abstract. A well-thought-out and well-demarcated set of core concepts forms the basis for a successful research project.

Example 'The capacity to change'

The information provided in the project background and in the research objective indicates that three core concepts can be defined: 'capacity to change', 'job design' and 'organisational culture'. It is evident that the researcher decides that the concept 'capacity to change' will be the dependent variable. Obviously, the researcher needs to know which factors influence the capacity to change in order to make recommendations for implementing the new project.

The researcher is familiar with the results of prior research indicating that different aspects of job design affect the capacity to change of employees. For example, the results of several previous research projects confirm the assumption that employees who perform jobs with a high level of task autonomy are more open to change than employees who perform jobs with a low level of task autonomy. Hence, the researcher decides that 'job design' will be the independent variable. The generic conceptual model, which in this case consists of two variables, is represented in Figure A.12. Please note that the third variable 'organisational culture' will be introduced later, when we consider the possibility of interaction effects. First, we have to demarcate and specify the variables of the generic conceptual model.

Figure A. 12 Generic conceptual model 'The capacity to change'

The next step is to further specify the core concepts of the generic conceptual model. The researcher needs to further unravel each of these concepts into elements which are less ambiguous, less encompassing and more concrete. This process of deconstructing is called unravelling. The researcher unravels each of the core concepts into the *dimensions, parts or classes* that are the constituting elements of these core concepts. The reader is advised to make use of the unravelling technique by means of a tree diagram. We introduced the technique in Chapter 5. Unravelling will help the reader to obtain an overview of the abundance of possible elements within the domain of each core concept. Given this overview, the researcher can decide which of the elements he or she wishes to include in the specification of the generic conceptual model, and which not.

Example 'The capacity to change'
After an intensive literature search in libraries, electronic search systems and the Internet, the researcher has made a selection of the most relevant literature with regard to 'job design' and 'capacity to change'. The researcher studies this literature and chooses carefully which of the many theoretical insights will be used to further specify the chosen core concepts. He or she decides to base the further analysis of the concept 'job design' on the classic *Job Characteristics Model* of Hackman and Oldham (1980). According to this model, a job can be characterised by five aspects (variables): 'task autonomy', 'task variety', 'task significance', 'task identity' and 'feedback'. The concept 'capacity to change' will be further specified according to Argyris' theory of organisational learning (1994) and Wissema's theory of organisational change (1996). The researcher decides to use the following three aspects (variables): 'change acceptance', 'willingness to change' and 'capacity to learn'. The researcher includes the results in the generic conceptual model (see Figure A.13).

Figure A.13 Generic conceptual model: dimensions and variables

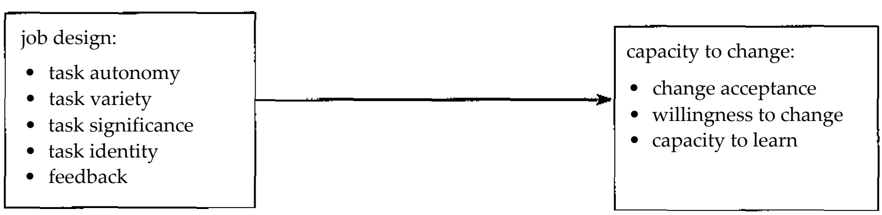
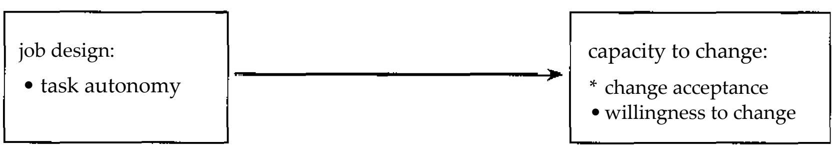


Figure A.13 indicates that the core concept 'job design' consists of five variables, and the core concept 'capacity to change' of three variables. Since the researcher wants to study the effect of each of the independent variables on each of the dependent variables, this first step regarding the further specification results in the study of 5 x 3 = 15 relationships. If the reader keeps in mind that the researcher also wants to study the influence of the core concept 'Organisational culture', he or she will agree that a thorough selection is needed of those variables in order to decide which of them will be included in the research. This choice is based mainly upon the research objective, which also includes the wishes of the commissioning parties. Of course, the selection will also be founded upon the interests and the capacities of the researcher, as well as upon research constraints regarding time and budget. All of these choices should result from an explicit and sound line of argumentation, in order to improve the credibility of the research. Often this selection takes place in a *preliminary research project.* The researcher re-examines the relevant literature in order to learn more about the relevance of each of the separate variables. Especially in a practice-oriented research the researcher may want to discuss the generic conceptual model with experts in relevant fields. The result of this preliminary research is the selection of the variables that will be included in the research project.

Example 'The capacity to change'
The researcher reads a number of articles which present overviews of all recent research that has been based on the *Job Characteristics Model* of Hackman and Oldham. The overviews indicate that, of all five variables, the variable 'Task autonomy' seems to be the most valuable. The researcher decides to concentrate on the influence of this independent variable. A discussion with the head of the HRM department results in the decision to focus on "change acceptance' and on "willingness to change', and to exclude 'capacity to learn.' Hence preliminary research of this project results in a *specific conceptual model* as represented in Figure A.M.

Figure A.14 Specific conceptual model 'The capacity to change'

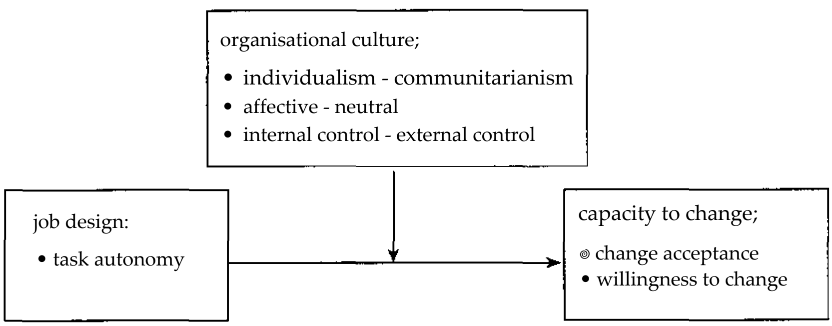


Now, having taken that decision, it is time to consider the possibilities of other influences, such as: the interaction effect and the feedback effect, and to check the possible existence of confounding variables that could cause a spurious correlation.

Example The capacity to change'
The researcher decides that it is relevant to include several aspects of the core concept 'organisational culture' as interacting (moderating) variables. The line of reasoning is as follows. The researcher assumes that 'task autonomy' will have a positive effect on 'change acceptance' and on 'willingness to change'. In addition, the assumption is that aspects of 'organisational culture' will affect the strength and/or direction of the impact of 'task autonomy' on both dependent variables. The researcher studies the relevant literature on organisational culture. After lengthy consideration, he or she decides to base the analysis of the moderating influence of the organisational culture on Hampden-Turner and

Trompenaars' *Culture Compass* (1994). The culture compass consists of seven bi-polar dimensions. The researcher chooses three of these dimensions: individualism versus communitarianism, affective versus neutral, internal versus external control, and adds them to the specific conceptual model (Figure A.15).

Figure A.15 Specific conceptual model 'The capacity to change', including an interaction effect



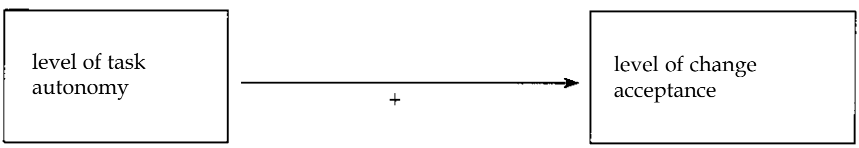
The final step in the completion of the conceptual model concerns the accurate formulation of the assumed relationships, represented by the arrows in Figure A.15. Without an accurate description, these arrows only indicate that the one factor possibly influences the other. It is important to formulate these influences more precisely. For example, when the researcher expects that 'task autonomy' influences 'change acceptance', does he or she expect this to be a positive or a negative influence? These assumptions are - obviously - based on the results of previous research. If, for example, previous research shows that a particular independent variable often has the same effect on the same dependent variables, the researcher will be inclined to expect the same relationship in this research project. However, if previous research indicates that there is ambiguity with regard to the relationship between both sets of variables, such an assumption is difficult to accept. In this case, the researcher bases the assumption on a further examination of the project background. The researcher formulates assumptions or expectations for each of the relationships. This set of assumptions finalises the conceptual model.

Example 'The capacity to change'

The researcher formulates the assumption for each of the relationships, presented in Figure A.15. The direction of the assumed relationship is indicated by the symbols [+] if the researcher expects a positive effect and [-] if the researcher expects a negative effect.

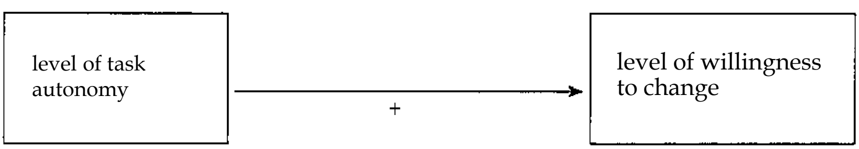
Al: The level of task autonomy has a positive effect on the level of change acceptance.

Figure A.16a Conceptual model 'The capacity to change', relationship Al



A2: The level of task autonomy has a positive effect on the level of willingness to change.

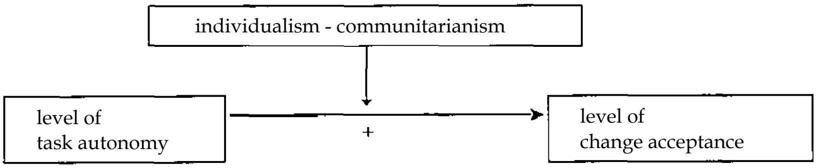
Figure A.16b Conceptual model ''The capacity to change', relationship A2



In the notation below, the symbol B represents the expected interaction effect of the interaction variables belonging to the core concept 'organisational culture' For example, B1 refers to the dimension 'individualism versus communitarianismO whereas B2 refers to 'affective versus neutral', and so forth.

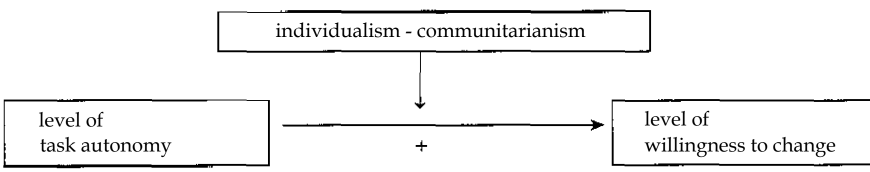
Al/Bl: The level of task autonomy has a positive effect on the level of change acceptance, but the strength of this effect depends on the organisational culture. In particular, this effect is stronger when offices have a communitarianist organisational culture compared to offices that have an individualist organisational culture.

Figure A.16c Conceptual model The capacity to change', relationship Al/Bl



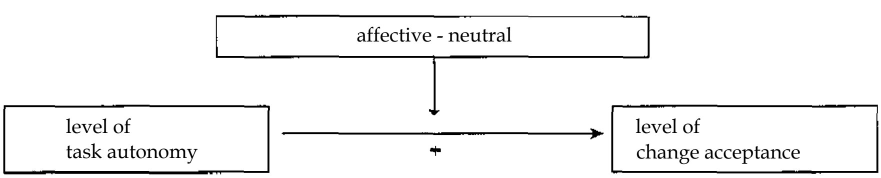
A2/B1: The level of task autonomy has a positive effect on the level of willingness to change, but the strength of this effect depends on the organisational culture. In particular, this effect is stronger when offices have a communitarianist organisational culture compared to offices that have an individualist organisational culture.

Figure A.16d Conceptual model The capacity to change', relationship A2/B1



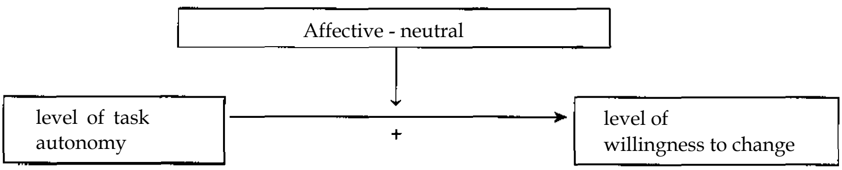
A1/B2: The level of task autonomy has a positive effect on the level of change acceptance, but the strength of this effect depends on the organisational culture. In particular, this effect is stronger when offices have an affective organisational culture compared to offices that have a neutral organisational culture.

Figure A.16e Conceptual model The capacity to change', relationship A1/B2



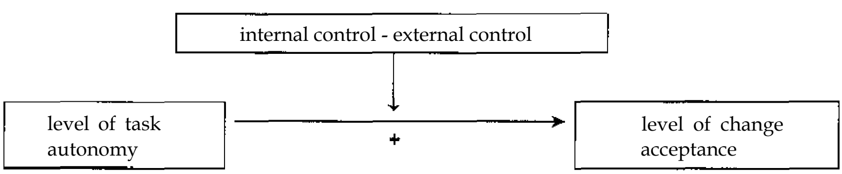
A2/B2: The level of task autonomy has a positive effect on the level of willingness to change, but the strength of this effect depends on the organisational culture. In particular, this effect is stronger when offices have an affective organisational culture compared to offices that have a neutral organisational culture.

Figure A.16f Conceptual model 'The capacity to change' relationship A2/B2



A1/B3: The level of task autonomy has a positive effect on the level of change acceptance, but the strength of this effect depends on the organisational culture. In particular, this effect is stronger when offices have an internal-control organisational culture compared to offices that have an external-control organisational culture.

Figure A.16g Conceptual model The capacity to change', relationship A1/B3



A2/B3: The level of task autonomy has a positive effect on the level of willingness to change, but the strength of this effect depends on the organisational culture. In particular, this effect is stronger when offices have an internal-control organisational culture compared to offices that have an external-control organisational culture.

Figure A.16h Conceptual model 'The capacity to change', relationship A2/B3

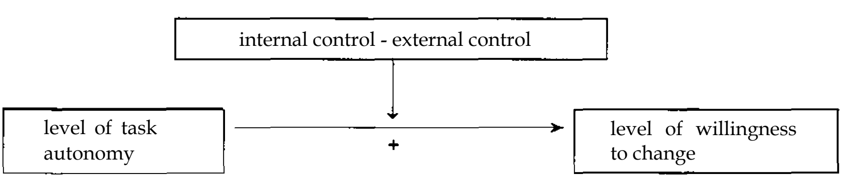
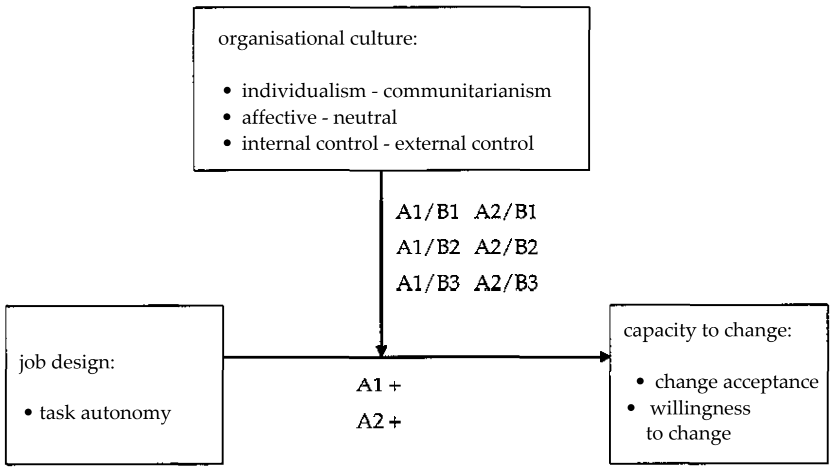


Figure A.16i combines the Figures A.16a to A.16h and, as such, represents the final conceptual model of this research project.

Figure A.16i Final conceptual model 'The capacity to change'



5 A STEP-BY-STEP PLAN FOR CONSTRUCTING A CONCEPTUAL MODEL

In Section 3, we introduced a simple conceptual model consisting of a direct effect and an interaction effect. In Section 4, we presented a step-by-step plan for constructing a more complex conceptual model that included almost all of the different types of relationships described in this paper. Here, we illustrate this step-by-step plan by giving an example.

This step-by-step plan follows the same pattern of construction as described in Section 3. First you start by constructing of a *generic* conceptual model, in which you identify the independent variable®, the dependent variable(s) and - where appropriate - the indirect (mediating) variable(s). Secondly, you unravel the core concepts of your generic model into dimensions, parts, sub-categories, and so on, and you decide which of these variables will be included in the project. This results in a *specific* conceptual model. Then we decide whether we need to add moderating variables, feedback variables and/or con-founding variables. The result of step three is th*e final conceptual model.*

Step-by-step plan

1. Determine in a theory-oriented project the variable Y that needs a causal explanation, and, in a practice-oriented project, depict the variable Y that needs to be improved (= the dependent variable).
2. Determine or derive from literature a variable X which presumably has a strong effect on Y (= the independent variable).
3. Determine whether there is one or more variable(s) P, (Q, R) that has/ have an additional influence on Y, apart from variable X (= additional independent variables).
4. Determine - when appropriate - whether there is/are one or more variable(s) U (V,W) that as (an) intervening variabele(s) make(s) part of the effect that X and eventually P,Q,R has/have on Y.

The result of these four steps is the *generic conceptual model.*

5. Carry out a literature study in order to determine which variables there are within the domain of each of the core concepts of the generic conceptual model.
6. Select, by means of preliminary research/ from the variables that resulted from Step 5, which of them will be included in the project. The result of these steps is the *specific conceptual model.*

After having reduced the size and the complexity of the generic conceptual model in a specific conceptual model, you determine in Steps 7, 8 and 9 which of the other effects should be included in the conceptual model.

7. Determine - when appropriate - which core concept(s) Z should be added to the model having an interaction effect. Add these variables and the appropriate arrows to the model.
8. Determine - when appropriate - which core concepts) should be added to the model, having a direct and/or indirect feedback effect. Add these variables and the appropriate arrows to the model.
9. Verify - when appropriate - whether confounding factors exist which may cause a spurious correlation. The proper way to do this is to verify, for each relationship in the conceptual model, whether there is another variable which has a strong effect on both variables that are involved in the relationship. Add this confounding variable to the model.

10. Formulate the assumed causal relationships (= hypotheses and/or expectations) between the variables in the model and add the symbols [+] and [-] to the arrows in the specific conceptual model. Note that if both or one of these variables is of a nominal order, one cannot indicate the direction of the relationship.

The result of these steps is th*e final conceptual model.*

Please note that designing a conceptual model is an iterative process. This means that each step in the constructing process can induce you to reconsider the decisions you make when formulating the research objective, the research framework and the research questions. If this appears to be the case, please make these adjustments and repeat Steps 1 to 10.
Please note as well that Step 9 is a most important step. If you do not verify at face value, whether there are variables that may cause a spurious relationship between the variables in the conceptual model, there is a fair chance that the research will lead to invalid conclusions. This is because the conceptual model is still an *open* model, whereas it should be *closed.*

Example 'Are we taking care of our environment?'

Project context
The Minister of the Environment is worried. During the past decennia much attention has been paid to the fact that every single citizen should contribute with all his or her might to taking care of *our* environment. If not, 'the end is at hand . ..'Y e t it seems as though people have become indifferent to this message, since their so-called environmentally friendly behaviour has not improved. The Minister decides to start a new campaign. A taskforcc 'Our Environment' will develop new ideas to improve the citizens' environmentally friendly behaviour. One of the first decisions made by the taskforce was to start a research project in order to learn more about the background to environmental behaviour. Previous research suggests that a number of factors are relevant, such as the *level of interest* citizens attach to a healthy environment, citizens' *knowledge of* what constitutes a healthy environment, *attitudes* towards the environment, as well as the availability of environmentally friendly *facilities.* In addition, prior research indicated that citizens of smaller communities are more likely to be environmentally friendly than citizens of larger communities.

Research objective

The research aims at making recommendations to the chairperson of the task-force 'Our Environment' concerning the national environment policy aiming at improving the so-called environmentally friendly behaviour of citizens *by* providing insight into those factors which influence behaviour of citizens towards the environment in large and in small communities.

Research framework

Figure A.17 Research framework 'Are we taking care of our environment?'

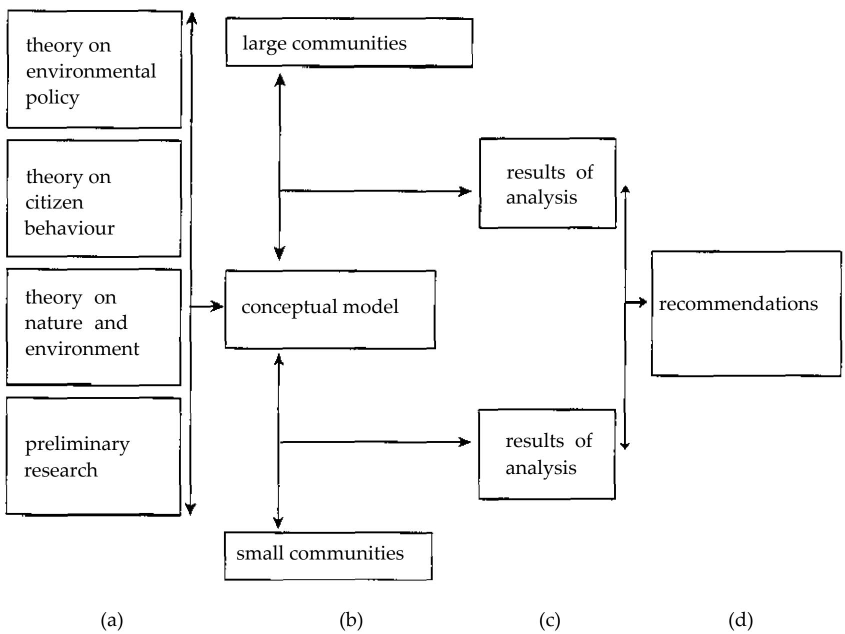


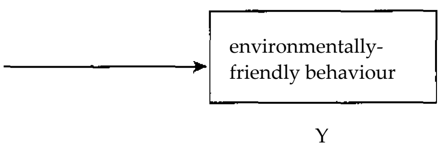
Figure A.17 reads as follows. A meticulous study of relevant theories concerning environmental policy, citizen behaviour, and nature and environment, and preliminary research, has resulted in a conceptual model (a). This conceptual model enables the researcher to analyse information regarding the behaviour of citizens towards the environment in both large and small communities (b). A comparison of the results obtained of both analyses (c) leads to the formulation of recommendations for improving the national environmental policy.

Let us apply the step-by-step plan to develop a conceptual model

Step 1: Determine the dependent variable(s) Y

A close reading of both the project context and the research objective indicates the variable that needs to be explained (theory-oriented research) or that needs to change (practice-oriented research). If there is no such variable, then a causal conceptual model is not useful. In this research project, the dependent variable is the citizens' 'environmentally-friendly behaviour' (Y).

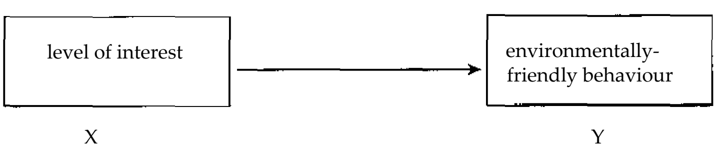
Figure A.18 Dependent variable Y: environmentally-friendly behaviour



Step 2; *Determine which core concept is the most important independent variable X*

Of all the influencing factors mentioned in the project context, the researcher chooses the *'level of interest'* a citizen attaches to a healthy environment as the independent variable (X). This decision is based upon previous research.

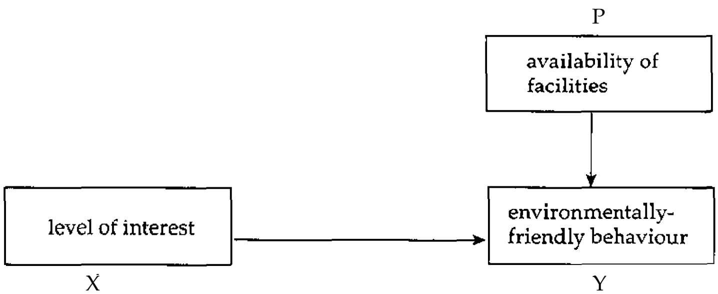
Figure A.19 Independent variable X: level of interest



Step 3: Determine - when appropriate - which core concepts are additional independent variables

Recent theories of environmentally-friendly behaviour indicate the importance of the *availability* of environmentally-friendly *facilities*, such as bottle banks and storage places for chemical waste, in the immediate vicinity of the house. The researcher decides that the availability of these facilities is an additional independent variable (P).

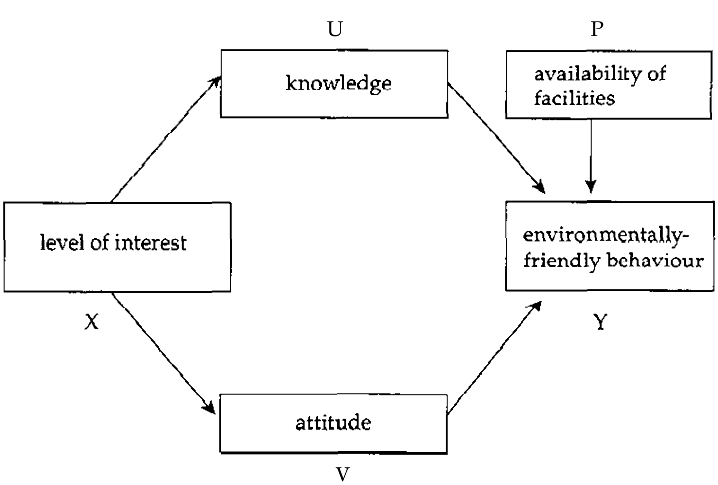
Figure A.20 Additional independent variable P: availability of facilities



Step 4: Determine - when appropriate - which core concept(s) is/are intervening or mediating variable(s)

Research suggests that 'the level of interest' (X) is likely to have an indirect instead of a direct effect, on 'people's behaviour' (Y). There seems to be a relationship between the level of interest' (X) a citizen attaches to the environment on the one hand, and his or her 'knowledge of the environment' (U) on the other. The literature indicates that a growing level of interest will induce people to learn more about the different aspects of a healthy environment (U) and that more knowledge of the environment supports environmentally-friendly behaviour (Y). The same line of reasoning can be found with regard to the relationship between the 'level of interest' (X), 'attitudes towards the environment' (V) and the independent variable Y. Hence, the researcher decides to include the variables U and V as intervening variables. This step results in the *generic conceptual model* (Figure A.21).

Figure A.21 Generic conceptual model



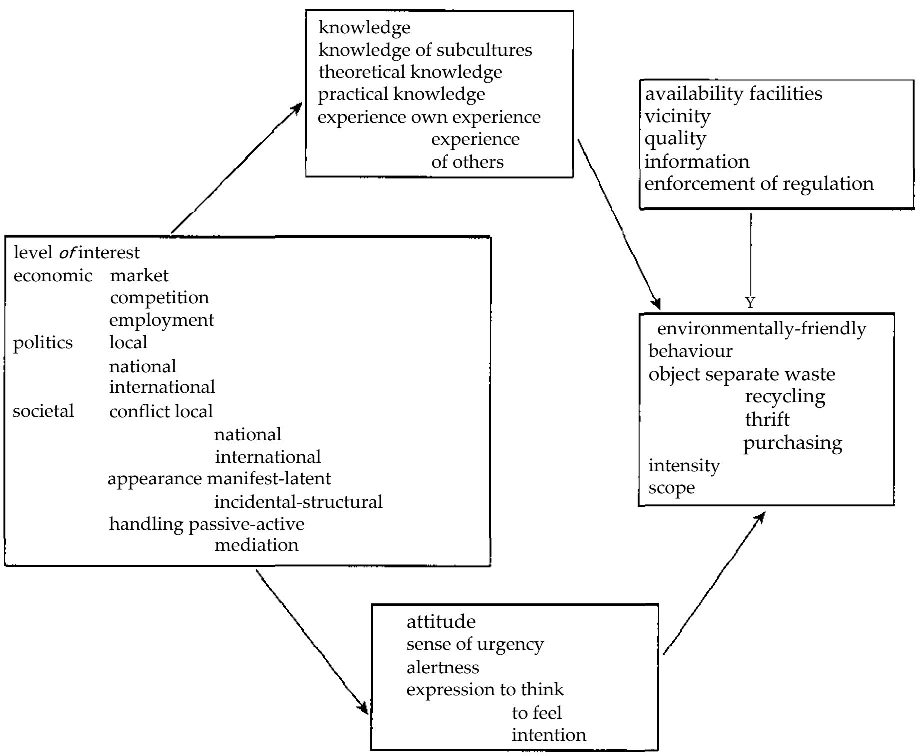
Step 5: Carry out a literature study in order to unravel each of the core concepts of the generic conceptual model in dimensions, parts and subcategories.

After an extensive literature search during, which the researcher consulted several scientific libraries, electronic search engines and the Internet, she has decided which literature she wants to study in order to unravel the variables 'level of interest' (X), 'knowledge' (U), 'attitude' (V), 'availability of facilities' (F) and 'environmentally-friendly behaviour' (Y). Meticulous reading of the texts leads to the following unravelling of these five core concepts. Please note that even this extensive list is not complete!

Variable	Dimension	Aspect	Sub-aspect
environmentally-friendly behaviour	subject:	• separate processing of waste	
		• recycling	
		• thrift	
		• shopping behaviour	
	intensity (active-passive)		
	scope (individual-collective)		
level of interest	economic	• market	
		• competition	
		• employment	
	politics	• local	
		• national	
		• international	
	societal	conflicts	• local
			• national
		appearance	• international
			• manifest-latent
			• incidental
		conflict handling	« structural
			• passive-active
			• mediation
knowledge	knowledge of (sub)cultures		
	theoretical knowledge		
	practical knowledge		
	skills		
	experience	• own experiences	
		• experiences of others	
attitude	sense of urgency		
	alertness (active-passive)		
	expression	• to thmk	
		• to feel	
		• intention	
availability facilities	vicinity		
	quality		
	information		
	enforcement of regulation		

Each of these dimensions, aspects and sub-aspects will be included as variables in the generic conceptual model (see Figure A.22).

Figure A.22 Dimensions and variables in the generic conceptual model



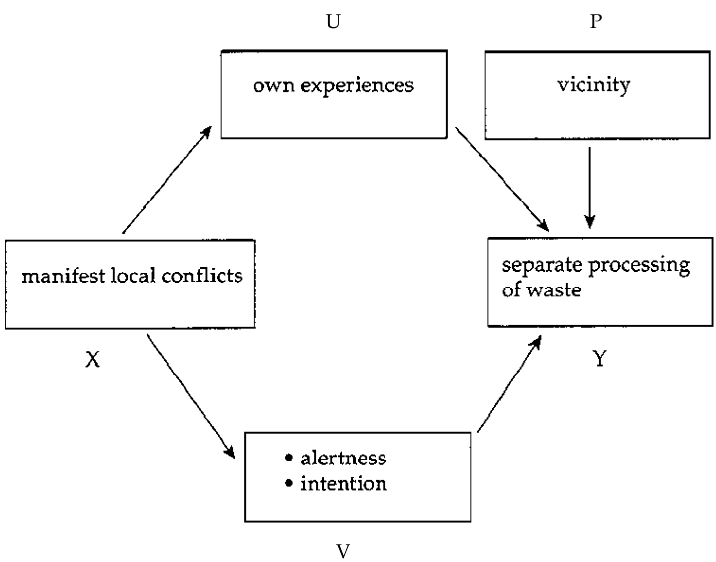
Step 6: Carry out preliminary research in order to determine which of the variables that resulted from Step 5 will be included in your research.

Based upon the results of preliminary research (expert consultation, further exploration of the research background), the researcher selects the following variables. The demarcation is needed in order to improve the feasibility of the research project. These variables will take the place of the original core concepts in the conceptual model.

Core concepts	Variables
Environmentally-friendly behaviour	Separate processing of waste
Level of interest	Manifest, local conflicts
Availability of facilities	Vicinity
Knowledge	Own experience
Attitude	• alertness • intention

This results in the *specific* conceptual model.

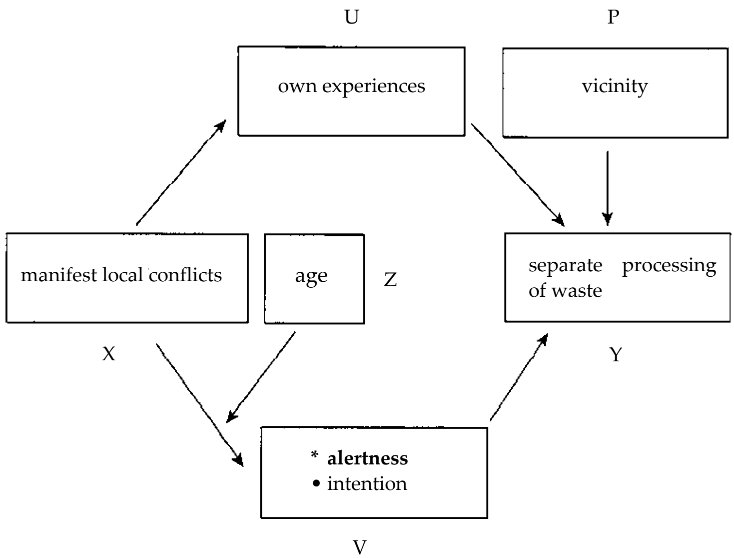
Figure A.23 Specific conceptual model



Step 1: Determine - when appropriate - which core concepts Z etc. should be added to the model because they have an interaction effect. Add these variables and the appropriate arrows to the model.

Previous research confirms the effect of the variable manifest local conflicts (X) on the variables (V) 'Alertness' and 'Intention'. However, there is evidence that such a relationship is stronger for older people. In other words, there is a variable, Age[7] (Z), which moderates the relationship between variables X and Y. The researcher decides to include this variable Z into the conceptual model (Figure A.24).

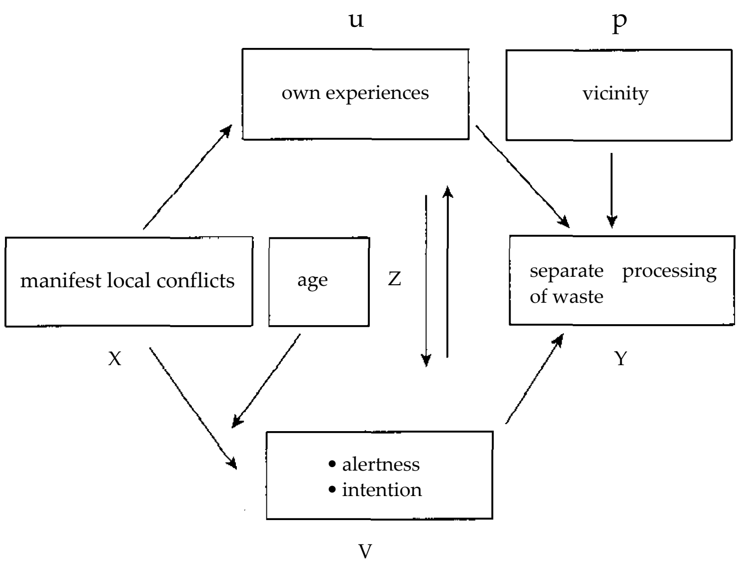
Figure A.24 Interaction variable Z: age



Step 8: Determine - when appropriate - which core concept(s) should be added to the model, having a direct and/or indirect feedback effect. Add these variables and the appropriate arrows to the model.

The researcher is aware of the fact that prior research of social behaviour suggests that a mutual relationship exists between variable 'Own experience' (U) and the variables 'Alertness[7] and 'Intention' (V). If people know more about a healthy environment based on their own experiences, their alertness to the possible dangers of environmentally-unfriendly behaviour and their intentions of taking care of the environment personally will change their attitude towards a healthy environment. The same goes for the inverse line of reasoning. A higher level of alertness and more intensive behavioural intention will broaden their experiences, which in turn will affect their attitude towards the health of the environment. Hence, the researcher inserts this direct feedback effect into the conceptual model (Figure A.25).

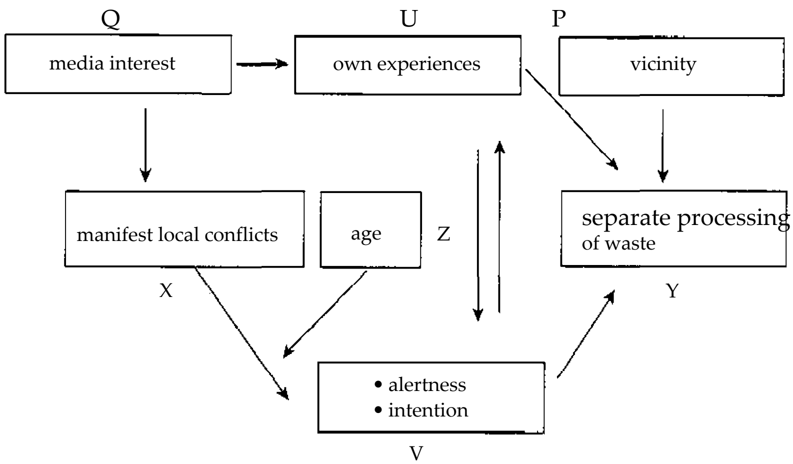
Figure A.25 Feedback effect between U and V



Step 9: Verify - when appropriate - whether confounding factors exist which may cause a spurious correlation. The proper way to do this is to verify, for each relationship in the conceptual model between two variables X and Y, whether there is another variable Z which has a strong effect on both variables X and Y. Add this confounding factor Z to the model.

Step 9 helps the researcher to monitor the conceptual model for spurious relationships. The researcher reconsiders the relationships presented in the conceptual model and checks the literature in order to identify possible spurious relationships. In this example, the relationship between 'Manifest local conflicts' (X) and 'Own experience' (U) appears to be spurious. One can imagine that a third variable 'Media interest' (Q) affects both the variable 'Manifest local conflicts' (X) and 'Own experience (U). If this assumption is correct, the relationship between X and U is a spurious one and needs to be replaced by the effects of Q (Figure A.26).

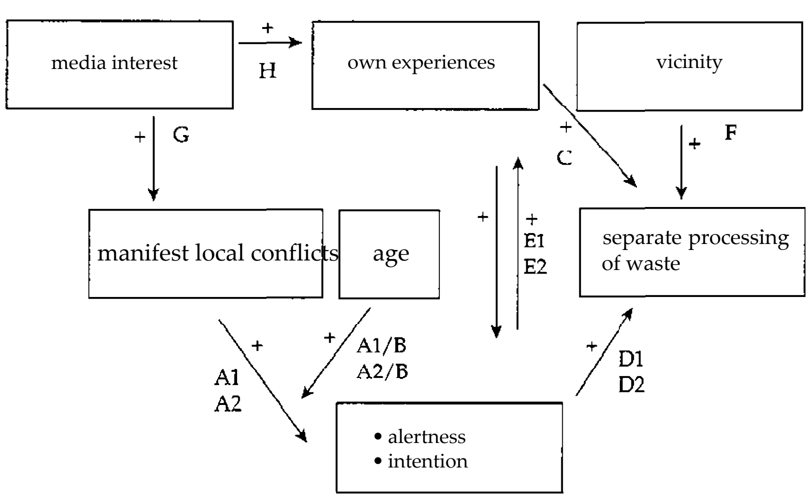
Figure A.26 Including a confounding variable Q: media interest



Step 10: Formulate the assumed causal relationships (= hypotheses andjor expectations) between the variables in the model, and add the symbol [+] or [-] to each individual arrow in the specific conceptual model. Note that if one or both of the variables involved in a particular relationship is of a nominal order, one cannot indicate the direction of this relationship.

Since all the relationships of the model in Figure A.26 are positive, we add the symbol [+] to all the arrows in the conceptual model. In addition, we label the relationships with the characters A to H. The result of these steps is *the final conceptual model* (Figure A.27).

Figure A.27 Final conceptual model



The researcher formulates the assumed relationships, presented in Figure A.27, as follows:

Relationships	Assumption
Al	There is a positive effect of 'manifest local conflicts' on 'alertness'
A2	There is a positive effect of 'manifest local conflicts' on 'intention'
Al/B	The positive effect of 'manifest local conflicts' on 'alertness' is stronger for older people
A2/B	The positive effect of 'manifest local conflicts' on 'intention' is stronger for older people
C	There is a positive effect of 'own experience' on 'separate processing of waste'
D1	There is a positive effect of 'alertness' on 'separate processing of waste'
D2	There is a positive effect of 'alertness' on 'separate processing of waste'
El	There a mutual feedback effect between 'own experience' and 'alertness'
E2	There a mutual feedback effect between 'own experience' and 'alertness'
F	There is a positive effect of 'vicinity' on 'separate *processing* of waste'
G	There is a positive effect of 'media interest' on 'manifest local conflicts'
H	There is a positive effect of 'media interest' on 'own experience'

Iteration

The final conceptual model will not require any adjustments to be made to the research objective, the research framework and the set of core research questions.

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INDEX

The primary goal of *Designing a Research Project* is to assist graduate students, PhD candidates and research fellows in developing an effective research design. In addition this book offers supervisors and tutors an opportunity to tighten their grip on their counseling roles while enabling them to perfect their student's progress and help them to achieve better research results. Both practice-oriented and theory-oriented research can benefit from applying the methodology used when designing a research project.

Designing a Research Project provides insights, guiding principles and methodology for developing a transparent *conceptual* and *technical* design for a research. The guiding principles for the conceptual design or research issue help to formulate an attainable and effective research objective, to outline a clear research framework and to determine relevant research issues. The technical design concerns the selection of an adequate research strategy, the different ways of collecting data or information required and the making of a research plan.
On the basis of various examples the reader is introduced into the creative process of designing a research project. At the end of each chapter a step-by-step plan of action is presented which can be used by the readers when designing their project.

Piet Verschuren is a professor of Research Methodology and Hans Doorewaard is a professor of Organisation Development, both employed by the Radboud University Nijmegen, the Netherlands.
The authors are experienced in designing all kinds of theory-oriented and practice-oriented research projects.

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