Chapter 2

The research problem

Opinions vary on what precisely constitutes a research problem. Most definitions share the idea, however, that the research problem describes: 1 the main subject or central question of study; and 2 what kind of answer or conclusion is sought. With respect to the latter, research can serve different purposes: it can aim to arrive at a description, an explanation, or a solution to a certain problem. The research problem therefore not only outlines the *subject* of study (the research question), but also what *purpose* the study is intended to serve (the research aim). In the research *design*, the researcher describes the way in which the study will actually be carried out (see Chapter 5).

2.1 CHOOSING AND FORMULATING A RESEARCH PROBLEM

The research problem lays the foundations for the rest of the research; it brings into focus what exactly will be studied and how. These initial choices influence all subsequent steps, such as the decision of which theoretical framework to apply, what methods and techniques to use for gathering and analysing the data, and what kind of conclusions can be drawn from the study. Formulating the research problem is a serious act of commitment, which has to properly founded and validated. Of course, this does not mean to say that adaptations cannot be made at a later stage. As the research is being carried out, it may turn out that the problem as originally formulated has to be revised in some way or other – for example, because the intended study is practically unfeasible, or there is less or more information available than initially thought. Such adjustments to the original design, too, must be well justified and carefully documented.

The process of arriving at a clearly delineated research problem is sometimes called 'problematizing'. Although in everyday speech the word 'problem' has negative connotations, denoting trouble or some kind of difficulty, in the scientific community it is merely used as a neutral term, designating a subject of study. A problem is a puzzle, a question, which need not always be some kind of stumbling block that has to be overcome. For example, reconstructing a plane crash can render insight into what has happened and why, but it does not provide any means of avoiding the calamity (it cannot, because the accident has already happened). In cases such as these, we employ the term 'knowledge problem'. Having said all this, it is certainly true that Public Administration is often applied in nature, concentrating on practical issues for which a certain solution is sought. To illustrate, reconstructing the plane crash can result in recommendations on how to prevent similar disasters in future or render suggestions for improving crisis management.

Problematizing requires preparatory research being done first (compare Verschuren & Doorewaard, 2010). By gathering information on a particular subject, the researcher can determine which aspects or dimensions will be suitable for study, and how relevant the research will be. Carrying out preparatory research involves tasks such as perusing scientific journals, consulting experts and others involved (such as sponsors), making an inventory of previously conducted studies, and so forth.

In the preparatory research stage, the researcher tries to ascertain what the central problem is (a knowledge problem or a practical issue), what sub-problems it consists of, what is already known on the subject, and what contribution the study could or should make. The information gained in this manner is used to select a relevant and feasible research problem. In principle, the thirst for knowledge is unquenchable and the number of questions we can ask is endless; however, it is important to choose just one research question and one research aim – if only to ensure that the study will be feasible and have sufficient focus.

Which particular research question and research aim are ultimately chosen depends on the following:

- The researcher's interests and background knowledge. Everyone has their own personal preferences and experiences, which will guide the choice of an interesting research problem. A concomitant risk of such partialities and unique individual knowledge is that a researcher may also turn out to be biased. For example, many people – including researchers – take the word 'government' to mean the national government rather than, say, the local council.
- The existing body of scientific knowledge. The scientific relevance of a study varies with the extent to which it will contribute to existing knowledge. Studying a subject about which only little is known (virgin territory) or about which the evidence is contradictory (puzzles) will make the biggest contribution to the body of scientific knowledge: this kind of research is scientifically most relevant. By reviewing the literature during the preparatory stage, the researcher gains insight into what is already known on a subject (for practical tips on this, see McMenamin, 2006).
- The sponsor's preferences. If a study is commissioned and subsidized by a sponsor, the researcher has to ensure that the research problem forms a satisfactory (and scientifically sound) translation of the sponsor's wishes and aims. This can turn out to be rather difficult in practice. Sponsors often lack the background knowledge to phrase their questions correctly; also, policymakers are hardly ever interested in theoretical depth. Moreover,

political volatility can cause the interest in a subject to wane whilst the research is still in the process of being carried out (see also Chapter 12). For more information and tips on how to convert a sponsor's requests into a scientifically sound research problem, see Verschuren and Doorewaard (2010).

- Practical issues. A study has to be feasible and workable. Practical matters such as the scope of the study, time and money constraints, the access needed to sources of information or people, and the expertise and creativity of the researcher are all crucial – though not always decisive – points, worthy of careful consideration.

As stated, a research problem must be well founded and properly formulated. In the research problem, the researcher describes what choices have been made on the basis of the preparatory research. When it comes to research in Public Administration and Public Management, it is important not just to give an indication of the scientific relevance of the study, but also of its public or societal relevance. What will the contribution of the study be to solving topical social issues or policy questions?

Mistakes often made

During the process of choosing and formulating a research problem, certain mistakes are sometimes made. Often the relation between the main research aim and central question remains unclear, because one of them has not been properly specified, or the two are incongruous with each other. Frequently, too, the research problem has not been delineated precisely enough. This can show, for example, in the researcher planning to study too many different things at once, or a focus on detail (symptoms) rather than on the real, underlying problem (the disease). To illustrate the latter, government policy is usually implemented by a chain of organizations. Consider the stance taken by the government on crime, for example: this will have a bearing on the police investigating criminal offences and arresting people, on the public prosecution bringing action against the accused and, finally, on a judge passing sentence. A study of the effects of government policy can concentrate on just a part or link of such a chain; however, this also means that the conclusions drawn on the effects of government policy will be limited to that particular link. For example, a study of police performance does not allow for inferences to be drawn about the functioning of the court. For all such reasons, it is vital to outline as precisely as possible what will form part of the study, and what will be left out, and why – with the annotation that the research has to be socially and scientifically relevant as well.

A mistake often made in applied research (and so particularly relevant to the field of Public Administration) is that the research problem does not give an adequate translation of the sponsor's requests. The researcher has to bear in mind that the sponsor is struggling with a practical problem, for which a

realistic solution is sought. The scientific interests and expertise of the researcher can be an aid in finding such a solution, but only if the final results of the study can be applied in an everyday context. This means that a balance must be struck between theory and practice. After all, a treatise on the inadvertent effects of performance rating in the police force is of little help to a chief officer hoping to learn how performance indicators can be developed or improved.

2.2 THE RESEARCH AIM

Research can fulfil several aims. Applied research is meant to solve a practical issue or problem, described by the sponsor who commissioned the study. Fundamental research, on the other hand, is geared in the first instance towards acquiring scientific knowledge. It is important for the researcher to give a precise indication of what purpose the study is meant to serve. Merely 'doing research' is not an aim in itself; neither is 'finding out what happened'. Such descriptions are not nearly detailed enough, and give no information on the contribution the study is expected to make.

Table 2.1 provides an overview of possible research aims. As the accompanying descriptions show, we can distinguish a hierarchy of aims. For example, the more knowledge already exists on a subject, the less relevant exploratory and descriptive research will be. Similarly, research aims such as diagnosis, design and evaluation can only be achieved if the problem under study has already been described and explained. I shall return to these points during the discussion on sub-questions (see below).

Table 2.1 *Research aims*

Aim	*Description*
Exploration	Research that *investigates* a subject about which little or no knowledge is available. Exploratory research results in detailed *empirical* descriptions. Exploration is also used in studies of how actors assign meaning, such as the way in which certain concepts are applied in practice.
Description	Research in which events or the characteristics of a certain subject are *described*. A description can be empirical (for example, events arranged in chronological order). However, *ordering* can also take place in terms of theoretical concepts, such as actors or factors. Descriptive research should not be confused with the reporting of results.
Explanation	Research in which the *causes* of a certain problem are sought or studied. Explanatory research can apply existing theories in the search for causes. Another option is to develop a new theory, based on the empirical findings (for more on this subject, see Chapter 3).

Table 2.1 *(continued)*

Aim	*Description*
Testing	Research in which – on the basis of theoretical knowledge – preliminary expectations (*hypotheses*) are formed regarding the problem under study. As a rule, such expectations concern problem characteristics or possible causes. In an empirical study, the researcher tries to ascertain whether these expectations meet reality. See also Box 2.3 on hypotheses.
Diagnosis	Research that is mainly applied in character. The researcher tries to establish what the problem is, and which factors or actors contribute to this problem in a positive or negative sense. The diagnosis helps to gain insight into possible keystones of a solution to the problem.
Design	Research that results in suggested solutions to a practical problem, or recommendations on how to improve a situation (*prescription*). A Public Administration design can vary from a new management model to a set of guidelines or a draft policy text, depending on the problem studied.
Evaluation	Research aimed at gauging whether a certain policy or arrangement has helped to realize the specified targets. The evaluation can concern policy development and implementation, or the desired effects (see Box 1.3). Evaluative research usually results in a normative judgement. If this is requested, recommendations can be made for improvement (prescription).

Do note that comparative research – that is, research comparing countries, policy sectors, organizations, or different groups of people with each other – is a means to an end: comparison helps to describe, explain, evaluate and so on. Comparison is not a separate research aim in itself.

The aim of a piece of research relates directly to its main research question; every research aim corresponds with a certain type of question (see below). The feasibility of a study is greatly enhanced if the researcher formulates a distinct, discrete research aim: the research problem comprises just one single aim, which applies to the entire study. It has to be added, though, that there are types of research that have several different aims (see Box 2.1 on action research).

BOX 2.1 ACTION RESEARCH

In action research, researchers are actively involved in the situation under study. Usually, the researcher is trying to devise a way to improve the situation, either because they work or live in this situation (or organization) themselves, or because they strive to create a better world – hoping, for example, to improve the position of disadvantaged social groups or other minorities.

What this basically means is that in action research, the researcher forms part of the research situation, and participates in events. Sometimes, too, researchers constitute their own subject, for example, because they want to assess and improve their own performance. Think of teachers' training courses, healthcare evaluations, and so on.

Action research comprises several phases, each of which has its own particular research aim:

1 *describing* and establishing what the initial problematic situation is, and outlining the study that will be conducted;
2 arriving at a *diagnosis* by gathering and analysing information;
3 *designing* a plan for improving the situation;
4 supervising the implementation of the plan (intervention); and
5 monitoring and *evaluating* progress, and making recommendations for further progress.

(For more information on action research, see Stringer, 1996.)

2.3 THE RESEARCH QUESTION

The research question does not just specify the subject under study, but also delineates the research in other respects. Amongst other things, the research question denotes the units of observation – that is, which persons, documents, organizations or countries will actually be examined or questioned. The researcher also has to give an indication of the time and place to which the study pertains. Such limits to the research territory always have to be borne in mind, as they influence the scope of the validity of one's conclusions (see Chapter 4 for more explanation). For example, results found in one situation will not necessarily be valid in another. Finally, in the research question a first indication can be given of which theories – if any – will be used. The application of such theories has to concur with the research aim and the intended use of theory (see Chapter 3 for further explanation).

Formulating the research question

The research question is directly related to the research aim: every specific type of research aim corresponds with a certain type of question. Exploratory and descriptive questions, for example, are often of the 'which' or 'what' variety. Questions geared at design or evaluation usually begin with phrases such as 'how' or 'in what manner'. Table 2.2 gives some examples to illustrate that different research aims concur with different types of question.

As the examples in Table 2.2 show, research questions can be formulated in many different ways. A single subject can inspire a wide array of questions,

Table 2.2 *Research questions*

Aim	*Question*
Exploration	Exploratory questions are open-ended, and presuppose there is as yet no knowledge on the subject of study. For example: *in what way* do public organizations A and B use indicators for measuring personnel performance?
Description	Descriptive questions often focus on characteristics of the subject of study. For example: *which* indicators do public organizations A and B use to measure personnel performance? A description can also be given in terms of theoretical notions. For example: what sort of input and output indicators do public organizations A and B use to measure personnel performance?
Explanation	Explanatory questions often start with the word 'why'. The researcher aims to establish the causes and circumstances that have led to certain behaviours or policy measures. For example: *under which conditions* does the use of performance indicators by public organizations A and B lead to a more productive personnel performance?
Testing	Testing questions are usually of the yes/no variety. Based on the theory, the researcher formulates certain expectations, which are subsequently translated into questions. For example: does the use of performance indicators by public organizations A and B lead to a more productive performance *if* employees have been actively involved in developing these indicators? Or (to see whether this is a proportionate effect): is it true that the more closely involved employees are in the initial stages, the more productive their performance will ultimately be?
Diagnosis	Diagnostic questions try to identify practical problems or stumbling blocks. For example: which organizational and financial *problems* do public organizations A and B encounter when trying to introduce indicators for measuring personnel performance? Diagnostic questions are often geared at ascertaining the success or failure of policies or organizational changes.
Design	Design questions are geared at finding a solution to a certain problem. They usually refer to measures for improvement, or norms such as 'better' or 'more efficiently'. For example: how can public organizations A and B introduce performance indicators without meeting with resistance from their personnel?
Evaluation	Evaluative questions often probe into the process and results of changes that have been made (interventions). For example: has the introduction of performance indicators by public organizations A and B led to more productive personnel performance?

which often diverge from each other in subtle but significant respects. Just one word can make a world of difference as to which question exactly the researcher is trying to answer. Formulating a clearly defined, proper research question takes a lot of practice and constant revision, and even experienced

researchers often have to go back and make adjustments to their original wording. This brings me to the criteria for formulating a good research question.

Criteria for formulating a good research question

A research question has to be workable. After all, it is no use asking a question that cannot be answered. A good and proper research question should therefore be (compare Verschuren & Doorewaard, 2010):

- Relevant – in a societal or a scientific sense (or both; see also above);
- Precise, meaning that it is singular (do not ask more than one main question), and well delineated in terms of the units of observation, time and place;
- Purposeful – that is, geared at arriving at a certain kind of answer (as specified in the accompanying research aim);
- Congruous with the theory and methodology: the study has to be relevant in the sense of linking up with existing knowledge. Also, the research question has to give a clear indication of how the knowledge that is being sought can best be acquired and analysed;
- Internally logical and consistent. The research question usually consists of a main or overarching question and a set of sub-questions. Sub-questions reflect the intermediate steps that the researcher has to take in order to reach the ultimate target of answering the main research question.

Regarding its *format*, it is important to put the research question explicitly in the text, usually in the introductory section to a report or article. Finally, a questioning form is to be preferred, so do use a question mark.

Sub-questions

Usually, the main research question cannot be answered in one go. For this reason, it is often necessary to formulate several sub-questions, each of which applies to a particular part of the study. *The sum of the answers to all sub-questions taken together forms the answer to the main research question.*

Arriving at relevant sub-questions requires logical thought and reasoning. How many and what kind of sub-questions can be derived depends entirely on the nature of the main research question, and general guidelines cannot be given. Having said this, there are two important rules of thumb (compare Verschuren & Doorewaard, 2010). First, the number of sub-questions increases with the amount of characteristics, conditions, actors, or norms specified in the main research question and, also, with the various relations between these that can be distinguished. Second, the higher up in the hierarchy of research aims the researcher wants to go (for example, explaining something rather than just giving a description), the more sub-questions will be needed. In Box 2.2, an example is given of how these rules of thumb work out in practice.

BOX 2.2 EXAMPLE: FORMULATING SUB-QUESTIONS

In Table 2.2, the following example was given of an explanatory main research question: Under which conditions does the use of performance indicators by public organizations A and B lead to a more productive personnel performance?

We can distinguish three key subjects here: 1 the conditions for more efficient performance; 2 the use of performance indicators; and 3 the public organizations A and B. This means that a minimum of three sub-questions is needed.

The first sub-question will concentrate on the use of performance indicators by public organizations A and B. This is a descriptive question, meant to investigate whether the two public organizations make use of performance indicators, and how these indicators are applied. The second sub-question concerns personnel performance in the two public organizations. This question must at least describe personnel performance in a way that shows how this can be influenced by using performance indicators. For example, performance can be compared over time (before and after indicators were introduced), or between organizations that do use performance indicators and organizations that do not. As to the third sub-question, it will centre on the general (theoretical) conditions under which performance indicators lead to a more productive personnel performance. Finally, to establish whether such theoretical conditions apply in organizations A and B, a fourth sub-question is needed. The answers to all four sub-questions taken together enable us to answer the main research question, which makes the main research question and the set of sub-questions internally consistent.

All in all, the research question will now read as follows:

Main, overarching question:

Under which conditions does the use of performance indicators by public organizations A and B lead to more productive personnel performance?

Sub-questions:

1 How do public organizations A and B use performance indicators to measure personnel performance?
2 Is personnel performance more productive in public organizations that do use performance indicators, as compared to organizations that do not use such indicators?
3 Which conditions enable (or disable) the use of performance indicators that lead to more productive personnel performance?
4 Are the conditions under which performance indicators lead to a more productive personnel performance actually met by public organizations A and B?

This example also shows that some sub-questions will have to be answered by means of empirical research, whilst other sub-questions demand a theoretical answer. Sometimes, too, a question can or has to be answered in both an empirical and a theoretical sense. Moreover, the logic of the research problem, reflected in the order of the sub-questions, is not the same as the logic of the study (as we will see in Chapter 3: in deductive research theory comes before empirical research); likewise, it need not follow the structural logic of the research report (compare Chapter 12).

Mistakes in the research question

Formulating the main research question and the accompanying sub-questions is not an exact science, and often mistakes creep in. The most commonly made mistakes are (Verschuren & Doorewaard, 2010):

- Insufficiently precise wording. Central concepts must be defined in plain and unambiguous language: if different interpretations are possible, it will be unclear what exactly the research is about (this is called insufficient conceptualization). For example, a research question in which the term 'the government' is used is not precise and exact enough: does the researcher mean the national government, a certain ministry, a municipal council, or a semi-public body?
- Wrong level of abstraction. Sometimes a study tries to answer a broadly phrased question by presenting knowledge about one particular example. In such cases, it is advisable to narrow down the main research question. For example, in a study on the civil service ethos of municipality X, the research question should be targeted at X, and not municipal councils in general, as this would refer to too high a level of abstraction. After all, the extent to which X can be said to be representative of other municipalities may be doubtful (see also Chapter 4). Frequently, too, the level of abstraction is too low, with sub-questions bearing more the character of items for an interview or a questionnaire. Such 'observation questions' have to be formulated at a later stage, after operationalization has taken place (see Chapter 4).
- Incompleteness. A research question has to be well delineated in terms of subject, place and time. For testing questions this is even of paramount importance, because a point of reference is needed for testing. For example, asking after an increase in election turnout is of little use if it is unclear

which elections exactly are meant, and against which base year the increase will be measured.

- Incorrect suppositions, or even prejudice, about the relationship between central concepts or about the notions employed. Suggestive and coloured language should be avoided at all times, as it reduces objectivity and therefore the credibility of the study. Prejudiced statements, such as 'bureaucracy is by definition a bad thing' or 'citizen involvement in decision making only slows the process down', are not just vague and incorrect, but can also harm the chances of successfully carrying out the study and finding a good solution to a social problem.

BOX 2.3 HYPOTHESES

Instead of phrasing a testing research question, it is also possible to formulate a hypothesis. A hypothesis is a testable proposition (so not a question, but a statement). The research findings can either support the hypothesis or cause it to be rejected.

A hypothesis is derived from theory, and consists of the following four elements: (1) the circumstances or conditions under which (2) a certain factor, called the independent variable, creates a certain change or effect by way of (3) a certain mechanism in the (4) dependent variable. In Chapter 3, the process of deducing a hypothesis and its constituent elements from the theory is explained further.

Examples of possible hypotheses are the following:

- The more women there are employed in high political functions, the more often the issue of female emancipation will be placed on the political agenda.
- The higher the number of floating voters, the more frequently election programmes will be consulted.

A good hypothesis is one-directional, explicit in terms of the predicted effect, and does not allow for ambiguity. Instead of a hypothesis, the researcher can also formulate *expectations* or make *predictions*, which are not subject to such strict requirements.

FURTHER READING

Verschuren, P., & Doorewaard, H. (2010). *Designing a Research Project*. Schiedam: Boom Juridische Uitgevers.

EXERCISES

1 Consider the following (main) research questions, and give the accompanying research aim. Justify your answer with appropriate arguments. If you think that a certain research question is inadequately formulated, explain why this would be so, and suggest a better wording.

   a. How is the Ministry of Environment organized?
   b. Under which circumstances will the Ministry of Environment have to make changes to its organizational structure?
   c. How does the body of senior civil servants at the Ministry of Environment deal with the internally conflicting interests of economy and ecology?
   d. Does the Ministry of Environment still have a future?

2 Formulate a hypothesis about the effect of the participation of leaders of national political parties in local election campaigns on the turnout in local elections. Explain how you have arrived at your hypothesis (see also Box 2.3).

3 How many and which sub-questions will result from the following testing main research question: 'Which theoretical model can best explain the decision-making process on the privatization of the national airport: the barrier model or the flow model?' Specify the way in which you have derived the sub-questions.