

The detailed steps to constructing a problem statement (continued)

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PART TWO: Research questions and hypotheses

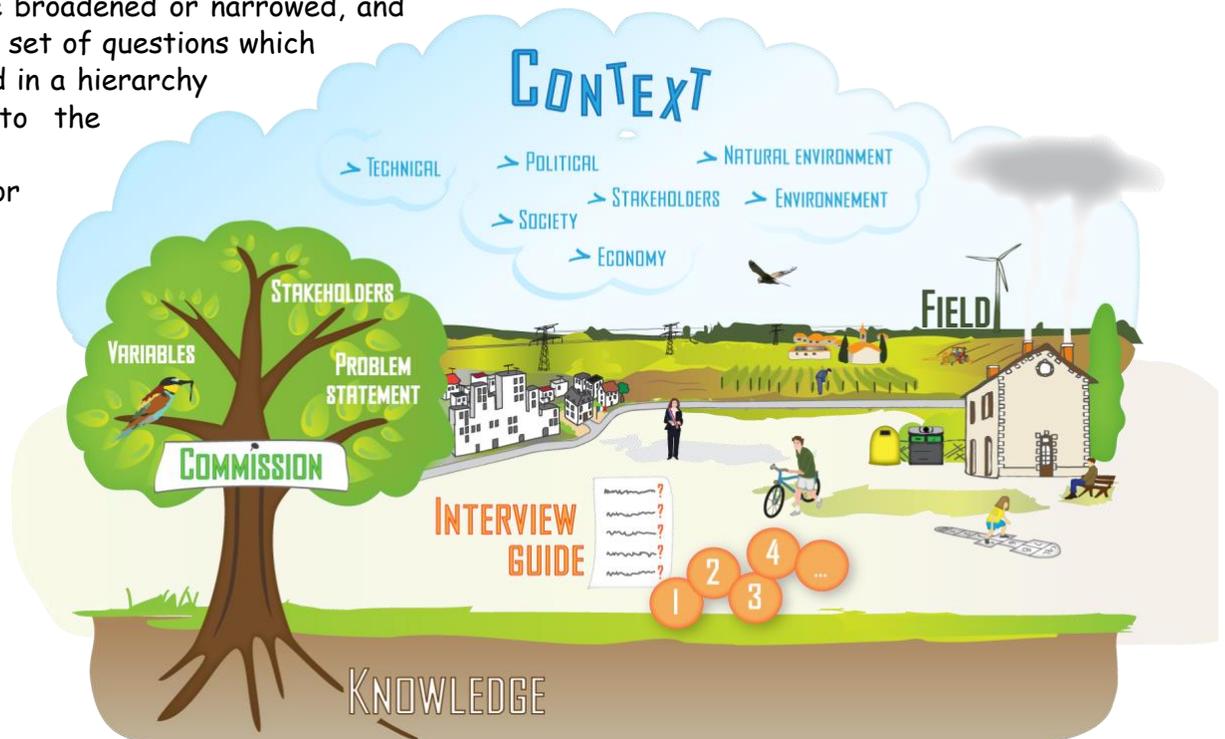
"Building on the analysis of the commission statement, the development of the problem statement is based on the identification of the dimensions of the topic."

I. Constructing the problem statement in a social science study or research

Constructing the problem statement is an indispensable step that takes place before the methodology for the research or scientific study is developed.

Constructing a problem statement consists of formulating conceptual research questions that are in a hierarchical order and related to each other. This set of questions orients the field observations and survey questions.

Working from the analysis of the commission, the development of the problem statement is based on the identification of the topic's dimensions. The study topics are reformulated in their technical, economic, social, legal, ideological, political, and ecological dimensions. The initial questions are broadened or narrowed, and now include a set of questions which are organized in a hierarchy in relation to the objectives of the study or research, and which are related to each other.



DEDUCTIVE APPROACH

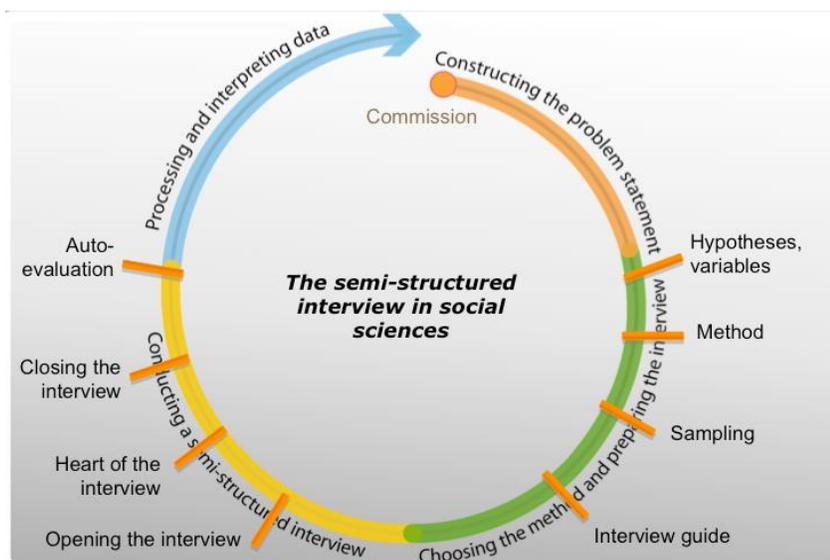
In a **deductive approach**, the construction of the **problem statement** is based on an **interpretative model of the phenomenon studied**. By working logically, this model generates hypotheses, concepts, and indicators for which correspondences must be sought in reality (variables to be informed through observation or survey). In these surveys, the model and its laws are formulated by the researcher - in the form of hypotheses to verify - then tested through statistically representative surveys that provide statistical proof of their validity/invalidity.

In a deductive approach, the formulation of hypotheses must meet two specific requirements:

- They must **be able to be verified** in an empirical manner or through a survey. For this, we move from the formulation of hypotheses to the identification of variables and indicators that must be informed to test each hypothesis.
- They must **be plausible**. They most often will be produced by already existing theories or observations made during preceding studies or in the stages preceding a research programme.

INDUCTIVE APPROACH

In an **inductive approach**, the construction of interpretative models is based on observations oriented by the research questions, which are themselves formulated through a literature review or a pre-survey. These observations allow the construction of new concepts, categories of analysis, and theoretical propositions, and in the process, a model that can be tested, this time in a deductive approach that will be the focus of a later research stage (Creswell, 2013). Starting from the specific with highly contextualized observations and results (for a given sociological and geographic space), the inductive approach then generalizes the knowledge to larger and more diversified spaces through comparisons with several study sites. It proceeds **from the specific towards the general**.



In an inductive approach, the stages involving fieldwork and reflection based on data analysis succeed each other. A survey advances knowledge, but also gives rise to new questions. This is the **survey cycle**, a spiral through which knowledge is produced in a gradual manner.

This research approach, which allows concepts, categories of analysis, and laws or models to be constructed based on a dialectic back-and-forth between field and theory, is characteristic of the **constructivist research approach**.

What then are the characteristics of the hypotheses of a problem statement constructed in an inductive approach?

The hypotheses:

- focus more on aspects that merit study (questions or sub-topics) than the possible answers to questions;
- estimate the diversity of the points of view and practices to be collected or observed in the field;
- state the diversity of the same terms used to designate a thing, fact, phenomenon, or the diversity of the meaning given to a same term according to the actors met;
- express a potential link between these diversities and certain characteristics of people who express them during surveys: profession, education, experience, social status, social network, membership in an interest group... They thus list the data relative to the people met that should be collected during the field work stages.

These hypotheses are provisional. Developed at the beginning of the research based on a literature review and/or pre-survey of key informants and the formulation of the dimensions of the study topic, they likely will be enriched, modified, or abandoned if the information collected indicates limits or a lack of value. This on-going reflexive attitude assumes that periods of reflection are alternated with periods of information collection. This **iterative, field-theory dialectic is characteristic of an exploratory study**.

II. The hypotheses

Whether the approach be inductive or deductive, the hypotheses formulated at the beginning or during the study **must not hold a value judgement**, but be based on concepts that can be qualified, characterized, put into a hierarchical order if they cannot be measured.

Example: To say, “poor management of natural resources” is to make a value judgement that is not operational in research. It would be better to say, management “benefitting such or such an actor”, management “favouring or not the conservation of such and such a resource”, or even “non-intervention” (laissez-faire) which also is a type of natural resource management.

Formulated with univocal terms, hypotheses must be based on explicit theoretical frameworks (this is a major part of the literature review work).

Example: The case of Mali:

Five study topics were identified:

- I. Comparison between the different approaches followed by projects
- II. Balance between associations/territory/market

- III. Species exploited and biodiversity
- IV. Field pattern, rotation
- V. Local trees cultivated

Given the very short time allotted for the study, and with the accord of the commissioner, only 2 of the initial 5 topics were retained: topic II, “Balance between associations/forest territories/markets”, and III, ‘Species exploited and biodiversity”, which itself was reduced to the sub-theme, ‘specific inventory: species, uses”.

Only topic II, “Balance between groups/forest territories/markets”, is described here as an example.

Comment for constructing hypothesis 1: Beyond the technical dimension, which has a high profile in the development of rules for a forestry management plan, other aspects should be studied: peoples’ perceptions of the forest (ideological dimension), how decisions regarding forest management are taken (political dimension), and codes guiding the behaviour of forest users (legal dimension).

Hypothesis 1: local populations manage the forest on a daily basis according to their professional and domestic needs.

Comment for constructing hypothesis 2: The technical development proposals must be constructed according to the institutions involved in forest management and their decision making systems. This implies that it is necessary to study these institutions and understand how they function.

Hypothesis 2:

The decision making systems of forest management institutions influence the technical plans of forest development.

To analyse the management practices and supervision of forest offtake, the theoretical framework presented below was used:

<i>values</i>	<i>rules</i>	<i>standards</i>
<i>always explicit</i>	<i>explicit</i>	<i>implicit</i>
<i>positive</i>	<i>for what is permitted for what is forbidden</i>	<i>for what is recommended for what is tolerated</i>
<i>no penalty system</i>	<i>explicit penalty system</i>	<i>no penalty other than exclusion from the group</i>

In Mali, national law requires people to buy a cutting permit before harvesting wood. In Banko, the law is in practice circumvented: the traders are the ones who buy the permits, and this is the standard practice. In Kassaro, the law, practice and standards correspond.

The fact that wood coming from the villages is moved essentially by train implies that the train station is a key observation point. In parallel, as the population uses firewood on a massive scale, two sub-topics are dedicated respectively to:

- domestic use offtake and
- commercial use offtake.

The literature provides different ways to **consider a marketing chain**. The choice was made to identify four entry points: the flows, the (direct and indirect) stakeholders, the technical actions, and the products. Technical graphs then are built by crossing the four entry points two by two.

By choosing a theoretical framework, the marketing chain could have been considered by dissecting the strategies of stakeholders and the relationships between them. The variables collected would have been different, as would have been the processing of the data.

An **analysis grid of institutional structures** was developed based on the following categories of analysis:

- 1/ Objectives
- 2/ Skills
- 3/ Area of action
- 4/ Resources (material and human)
- 5/ Date established
- 6/ Relations between institutions
- 7/ The institution's view of other institutions

If the stakes of the local institution study topic had been more important, a literature review of institutional theory would have provided a theory and more complete tools.



A discussion space "Formalize the commission: formulate the research hypotheses" (discussed in class or on a forum depending on the choice of the instructors).

Exercise "Formulate research questions": Based on information on a study area (Larzac, France), a commission and its analysis.

III. The literature review

At this stage, a literature review is indispensable. It serves to:

- Review what already is known and does not need to be re-studied. Delimit the study topic, redefine or define it more precisely, to eliminate certain avenues of investigation. It is to take stock of the question.
- Specify the local context of the study area.

The literature review can be organized around 4 axes:

- **Local axis:** regional and local, geographic, economic, social, political, climate related, ecological, historical information...
- **Thematic axis:** in relation with the other dimensions selected in the problem statement;
- **Theoretical axis:** models, variables relevant to respond to the diverse questions of the problem statement. Several theoretical axes can be explored if the study covers several dimensions...
- **Methodological axis:** methods for data collection, survey, sampling, and data processing that can be used to answer the diverse questions in the problem statement.

The literature review must include information recorded in special formats: maps, satellite images, aerial photos, survey forms, diverse files (cadastre, list of producer association members...), registers and reports of associations and firms, articles.

From the very beginning of the literature review, the citation and bibliographic reference requirements of a thesis, report, or scientific article must be kept in mind. The systematic recording of the complete references of works and their contributions to the development of the problem statement must be done carefully. The use of bibliographic management software is indispensable.¹

Afterwards, bibliographic references will only be cited if information drawn from them is used explicitly to deepen the topic, present the problem statement, or justify theoretical and methodological choices.

IV. The limits of the study must be well argued

The analysis of the local and temporal context allows one to characterize the topic of the study/research, and to specify the exact form the study or research will take contingent on the location. This is the definition of the scope of the study based on knowledge of a place derived from the bibliographic and cartographic research, preliminary interviews with the commissioner and key informants with knowledge of the study area. Three scopes of the study should be specified: geographic, social and historical.

- **Geographic scope of a study: the concrete area in which the study will be conducted.**
Example: the geographic area delimited by the contours of a district, a county, a watershed, a particular ecosystem...
- **Social scope: all of the people and social groups concerned by the study through at least one of its dimensions.**
Example: in everyday language, a village is a concrete geographic area containing houses and communal territory, sometimes coinciding with the communal boundaries, but in the social space, a village is the site of economic, social, and technical relationships that extend far beyond the geographic field. What would residents who work outside the village, or non-residents working "in the village", or natives of the village who no longer live there, working outside and providing the "village" financial support, information, a network of urban commercial contacts... say? Should they be included in the social scope of the study or not? This depends on the study topics and the problem statement.
- **Historical scope: the period studied, which may include the past, far or near, the present, the future (prospective studies).**
Example: The case of Mali:
Because the villagers of Banko harvest domestic firewood not only in the "Banko forest" but also in nearby reserved forests (outside of the communal territory), the geographic scope of the study

¹ Some are fee-based and others are *open source* such as: EndNote, Mendeley, Zotero

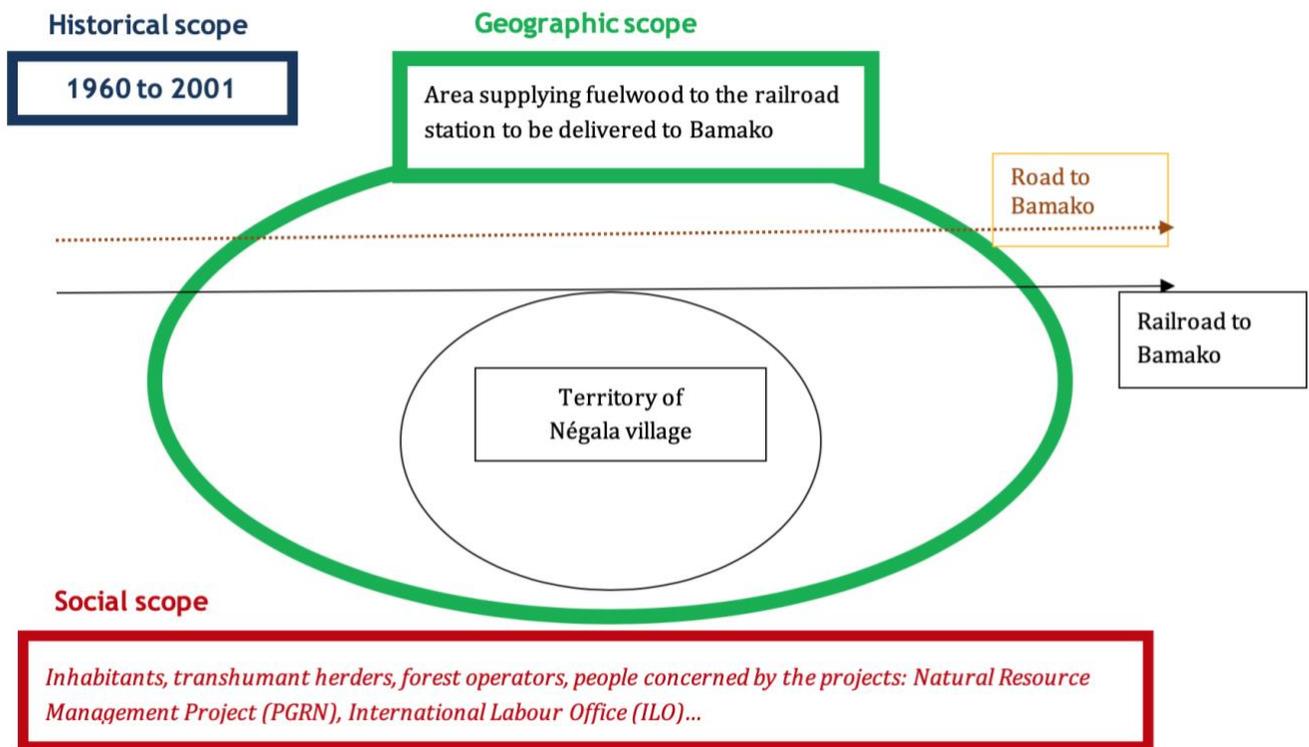
goes beyond simply the Banko forest mentioned in the commission. Because everything marketed passes through Négala station, the **geographic scope** is limited to the first sale of the wood, notably in Négala station.

Furthermore, in the Banko forest, wood is cut by people from neighbouring villages or other regions. The study's **social scope** therefore goes beyond the population of Banko to include the wood cutters and loggers active in the forest without being from the village.

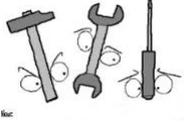
At this point of preparation of the research, in terms of the **historical scope**, the study extends from the time of the study (1999) to 2001 (forecasting the effects of paving the road). The evolution of the number of train cars available to transport the wood to Bamako led us to broaden the **historical scope** by starting in the 1960s (extensive exploitation of wood and availability of cars in this period up to the end of the 1980s).

The analysis of the topic and of information available on the region led us to a preliminary definition of the scopes of the study represented by the following schema:

Figure: Example of the delimitation of the three scopes (geographic, social and historical) of a study



In an inductive approach, the study's geographic, social, and historical scopes are, just like the hypotheses and concepts, provisional. They may be modified during the study if the information collected shows that part of the territory, social group, or historical period *a priori* excluded merit being included in order to broaden the diversity of viewpoints or improve understanding of the phenomena observed.



The exercise, “Dimensions and scopes of a study” invites you to define the scope of a study situated in the north of the Ivory Coast (corrected with a video).

► Bibliography cited:

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Peltier, R., K. Kokou, F. Mary, N. Sibelet, and G. Smektala. 1999. *Gestion locale et décentralisée des ressources forestières pour l'approvisionnement en bois: Le cas de deux villages du bassin d'approvisionnement de Bamako, Banko et Kassaro. Etude effectuée de 8 février au 8 mars 1999 au Mali, promotion FRT 1999*. Montpellier: ENGREF [Montpellier], 137 p.