

Introduction to data processing

Madeleine Mutel, Nicole Sibelet

I. Preamble:

Processing and interpreting data are two different and complementary operations:

- Processing pertains to organizing data to constitute a corpus
- Interpreting involves developing meaning.

This document addresses data processing, the question of their interpretation is treated in section that follows.

II. Data processing:

This involves putting together a **corpus of data** (a structured set of data that may take different forms: statements, images, observations, field surveys,...) regarding the study topic, sorting the data, searching through this content for "thematic" similarities, grouping these elements in categories of analysis, studying the relations between these elements and providing a comprehensive description of the study topic (Silverman, 2000; Weitzman, 2000).

The study topic is the central notion of the study subject or theme that will be clarified and examined through the survey.

Example: In the Larzac case study,¹ the subject of the study initially was "local actors' perception of the future of agropastoralism" (Sibelet *et al.* 2010b, 2010a). After an analysis of the commission, the study topic retained was "the evolution of the landscape" and the approach adopted was to study actors' perception of this evolution.

The processing of data precedes and allows their interpretation.

This twin task calls upon several intellectual processes "of comparing, generalizing, linking, and the corresponding construction of a form and meaning through the use of other processes" (Mucchielli, 2006). See also (Ryan and Bernard, 2000).

Two main types of processing and analysing data produced through semi-structured interviews are possible: content analysis (Berg, 2010) and thematic analysis (Silverman, 2000).

¹ This case study is used in activities throughout the training, from constructing the problem statement to data processing; videos illustrate this last step in this module. The case study may be found in the Annexes.

Content analysis

In this course, we do not address **content analysis**, which consists of focusing on words and their meaning. Content analysis uses an **objectivist** approach: words, phrases, fragments of speech taken out of context are subjects that can be analysed relatively objectively by the researcher. This approach counts the frequency of terms and logical links to identify the important, significant, and recurrent or absent elements in the data corpus. Specialized software is available for content analysis (Weitzman, 2000).

Thematic analysis

This serves to highlight themes present in a corpus that will require analysis. This is a **subjectivist** approach that aims to reformulate, interpret, and propose theories regarding phenomena. It is part of an ensemble of qualitative research methods that are characterized by the use of methods and techniques to directly approach the meaning of human and social phenomena without measurements or quantification.

In this approach, data processing and interpreting follows **two special rationales**:

- the **thematization of the corpus** following a classification logic: this involves organizing data through the "segmentation" of interviews;
- the study of themes and categories that emerge from the corpus using an interpretive logic. The objective is to give meaning to the information collected.

Example: For the question, "Are you happy and why?" numerous responses are possible because the idea of happiness is complex. Several ways to process the responses are possible.

→ A content analysis may highlight words such as stress, pressure, relation, colleagues, children, household, couple, friends, hobbies, interests, and statistically analyze them. The approach may be inductive if the words to be counted are produced through interviews and not a pre-existing data processing theory.

→ An inductive thematic analysis would work from the contents of the responses. The themes addressed are listed: happiness within a family, friendship, work, personal life, etc... and for each of these themes, the elements contributing to the feeling of happiness/unhappiness are identified. On the theme of "happiness at work", the responsiveness of superiors, interest of tasks, salary level, quality of relations with colleagues, independence in carrying out tasks, are some of the sub-themes to be analysed. With regard to the quality of relations at work, categories such as friendship, solidarity, interactions, jealousy, domination, and backbiting could be used if they are relevant to develop a typology of ideas of happiness.

The interpretation of data may lead to a comprehensive, inductive analysis that brings out the lines of reasoning that link several ingredients of happiness: balance between work and family life, or maximization of one element regardless of the domain (material means, level of consumption, liberty, relations, tranquility...). What is involved in this approach is to understand how people construct their idea of happiness and apply it to themselves.

► **Bibliography cited:**

Berg, B.L. 2010. An Introduction to Content Analysis. *In: Qualitative research methods for the social sciences*. Boston: Allyn & Bacon, pp. 238-67.

Mucchielli, A. 2006. Les processus intellectuels fondamentaux sous-jacents aux techniques et méthodes qualitatives. *Bilan et perspectives de la recherche qualitative en sciences humaines et sociales*, Hors Série (numéro 3), 27.

Ryan, G.W. and H.R. Bernard. 2000. Data management and analysis methods. *In: N.K. Denzin and Y.S. Lincoln, eds. Handbook of Qualitative Research*. Thousand Oaks: Sage Publications, pp. 769-802.

Sibelet, N., M. Mutel, M. Dulcire, and R. Peltier. 2010b. *Landscape evolution of Southern Causses: Perceptions of inhabitants and socioprofessional stakeholders. Study report Thematic school CIRAD/Agropolis-Fundation, October 2009: 'Formation to human sciences applied to agroforestry' from the 5th to 17th of October 2009*. Montpellier: CIRAD-ES, 25 p.

Sibelet, N., M. Mutel, M. Montzieux, and S. Nguyen Ba. 2010a. *Allier attractivité et authenticité du territoire : un défi pour les Causses méridionaux. Etude menée du 5 au 17 octobre 2009*. Montpellier: CIRAD, 50 p.

Silverman, D. 2000. Analyzing Talk and Text. *In: N.K. Denzin and Y.S. Lincoln, eds. The SAGE handbook of qualitative research*. Thousand Oaks: Sage Publications, pp. 821-34.

Weitzman, E.A. 2000. Software and Qualitative Research. *In: N.K. Denzin and Y.S. Lincoln, eds. The SAGE handbook of qualitative research*. Thousand Oaks: Sage Publications, pp. 803-20.