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**METHODOLOGICAL REFLECTIONS ABOUT TEACHING COMPUTER-ASSISTED  
TOOLS FOR THE ANALYSIS OF QUALITATIVE DATA**

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**Introduction**

The aim of this paper is to approach critically several pedagogical aspects related to the increasing demand of computational tools for the analysis of qualitative data. This is based on our own teaching experience in the academic and research community over the last years.

More specifically, we have taught different training courses of qualitative analysis assisted by the software ATLAS.ti in different universities and research institutions in Argentina. Attendants usually are junior and senior researchers, undergraduate and graduate students belonging to different disciplines (sociology, anthropology, psychology, education, history, political sciences, architecture, etcetera ).

Why do we choose to teach training courses in the use of this software in particular? Is it because we consider that is “the best” in the market? Is it because it’s fashionable? Is it because it’s attractive and easy to operate by the users? Is it because we understand that the tools that it provides are fruitfully related with the methodological strategies used by the majority of qualitative researchers during the development of their projects?

We will answer these questions by making explicit the main methodological and pedagogical criteria with which we have conceived our teaching practice. We try to expose some problems we have faced and the attempts to solve them and finally we try to establish some critical reflections related to our pedagogical experience and its influence in qualitative research.

### **“Historical-methodological” matters in the use of computational tools for the qualitative research**

The use of computational tools for the analysis of qualitative data (Computer Assisted Qualitative Data Analysis Software, CAQDAS) is, nowadays in our country, still a patrimony of a reduced number of researchers in human and social sciences. According to the classification proposed by Cisneros Puebla (2003), as in other Latin American countries, we can observe today the coexistence of three kinds of qualitative researchers:

- 1) those who prefer handicraft techniques of work (color pencils, scissors, cards, glue, etcetera); they are the most “romantic” of the manual work who consider that this is the real way of “touching” data and making interpretative analysis; they categorically reject the use of computational techniques, frequently due to the poor kinship with computers or due to the lack of experience with them;
- 2) those who privilege the use of general programs or “multipurpose programs” (word processor,

data bases, spreadsheet, etcetera); they are researchers who are satisfied with the use and results obtained with some technique and do not want to try other means, due to the fear of confronting with more complex software, due to the lack of time to learn them; and

3) those who use programs specifically designed for the analysis of qualitative data; they are the great CAQDAS` defenders, that pronounce that they don't want to go back to any of the earlier phases and the researchers that go to the field with their lap top, their digital video camera or their digital recorder, or those that have technical support for digital transcription of qualitative material that had been originally stored in analogical format.

However, it is clear that the use of this kind of computational tools is awakening increasing interest in our academic and research community. Demonstrations of such situations are the increment of training CAQDAS courses and the progressive use on specific research projects.

### **“Pedagogical-methodological” matters in the use of computational tools for qualitative analysis**

The authors of this paper are, with a few other colleagues, responsible for the diffusion in Argentina of the use of these computational tools designed specifically as qualitative analysis` assistants. Based on our recent experience, we will point out some problems of “pedagogical methodological” nature. In no way, it can be generalized to the entire group of students of our courses, but its significant recurrence alerts us about the several mistakes that can be considered a real obstacle for the correct use of these tools, in operative and theoretical -methodological terms, as auxiliaries of the social research. Specifically we refer to:

1. The expectation of a great number of qualitative researchers is that the software could analyze the information. This means that it doesn't work as a functional assistant of the subjective

interpretation of the analyst, but that “in some way”, not clearly defined, it can make a great part of the analytic work. This is one of the first matters that we have brought into discussion in our courses, as part of a more general methodological discussion about the specificities of the qualitative social investigation’s design and the analysis of the principal characteristics, advantages and challenges of the computational resources available for assisting social researcher in the analysis of qualitative data. It should remain clear that these programs help the analyst to organize their empiric material, to categorize it and to recover fragments and categories or codes (coding and retrieval), to attach memos to codes and/or data fragments, to define links between codes, to establish hyper textual systems, to create conceptual networks between several contents of the analysis, etcetera (which is not few), but they can not analyze by themselves the information. The interpretation and results formulation process is a task that corresponds by the moment exclusively to the human mind. As we pointed out in a previous work (Chernobilsky and D’Onofrio 2001), “the programs should be apprehended like they are, very useful resources but slightly powerful without the intellectual and creative capacities of the researchers that guide them”.

2. The expectation that the use of the computational tool allows to reduce time of analysis. This belief, significantly recurrent within the beginner users of CAQDAS, is related to one of the advantages offered by these tools: the speed of processing data in the exploration of analytic interrogations formulated by the researcher. However, taking in consideration the entire qualitative analysis process, the use of CAQDAS is much more limited in what “saving” time refers. The time of analysis will depend on the amount and complexity of the data corpus to analyze, on the analytic strategy that is going to be used and on the researcher experience on qualitative data processing and the specific software handling. In qualitative research, the

interpretative analysis is a complex process in continuous progress whose subjective nature is not entirely compatible with the information and communication technology philosophy. Meanwhile computational technology is based on algorithmical, logical, quantifiable and objective procedures, qualitative analysis requires an interpretative glance in order to explore subjectively and creatively the meaning of data to built theoretical conclusions. The human perception can not be explained throughout rules explicitly formulated (Dreyfus and Dreyfus 1986). Therefore, computational technology can only assist qualitative analyst in the systematic execution of tasks such as organization, storing, categorization and recovering of data.

3. The belief that the use of one CAQDAS will generate results that can be included directly in the final report or in publications over research's partial findings. This relative confusion, in our experience, is usually expressed when the course and knowledge on several components and functions of the software are advanced. We suppose that, or the attraction produced by the tool makes researchers loose the sight of the software final objective, at least momentarily, or there is a distortion from its use in the learning process that will end by limiting it to the utilities set production that the program offers and to the presentation, as valid results, of partial reports of the analytic process in a computational format.

4. A great number of attendants to our courses ignore the basic assumptions, strategies and analytical procedures of the grounded theory's method and/or they have a concrete inexperience in data analysis in qualitative research and in the construction of theoretical concepts empirically founded.

To deal with these matters and offer training that, before reinforcing the "misunderstandings"

puts them into discussion showing at every step the relationship between qualitative methodology and software, a CAQDAS course must fulfill, in our own criteria, the following fundamental requisites:

1. Establishing a reasonable relationship between students/computer/teacher. Besides the budgetary or organizational restrictions under which we work at the present in our academic institutions, our teaching experience has showed us that under simultaneous permanent coordination of two teachers, this type of courses must be prepared for, at the most, 40 students. Likewise, the work should be done under the assumption of a computation cabinet equipped with 20 PC (a rate of two students per computer at the most) and a LCD projector that allows the teachers the development of a more intelligible interactive exposition. The smaller the group is and the bigger the computational equipment density per student is, the greater the possibilities of following the advances and difficulties of each student in class.

2. Establishing basic understanding of qualitative methodologies in social research and basic computation knowledge as important registration requisites (sufficient operation knowledge of Windows environment and the MS-Word program). Not taking these aspects for granted as graduate or undergraduate students and/or the researchers evident attributes interested in these kind of courses.

3. Offer a general panorama of the different kind of existing software, their advantages and limitations. Provide and discuss "classic" and updated bibliography that analyzes, both methodologically and operatively, the relationships between qualitative research and CAQDAS; reflect about principal advantages and limitations of different kinds of software, including a technical demonstration of the principal matters to have in mind (data entering and storing

characteristics, codifying possibilities, possibilities of entering analyst's notes, possibilities of querying and recovering data and links that can be established between the several elements of the data base, utilities for team working and through the web) in order to choose the appropriate computational tool. In other words, provide basic elements that allow the participants to have a critical view of this specifically software.

4. Establishing as average duration of the course 30 hours (plus other more of individual homework) is a duration sufficiently adequate so as to secure the development of a critical thinking about the relationship between the qualitative methodology/CAQDAS and an advanced knowledge of the tool. Brief courses can not be planned; it is necessary to think that graduate or undergraduate students and/or researchers should initiate during the course the analysis of their own data with the assistance of the specific software.

5. Promote the use in class of significant empiric material for the student. In the first part of the course and only with didactical aims is convenient that every participant handles the same text offered by the teacher. But averaging the course, it is fundamental that each attendant analyzes his own empiric information. This allows to understand much more clearly how the software works and how to use it in accordance to the chosen methodology. In case that the students do not have a qualitative research "in mind", the selection of significant information for them (because of conceptual or thematic affinity, for example) and their focalized analysis as a way of application practice proved out to be a productive alternative in terms of apprenticeship.

## **Conclusion**

Going back to the initial questions, it fits to point out that our decision of teaching these training

courses in qualitative analysis with the assistance of the software ATLAS.ti was based, in particular, on the evaluation that is one of the best software available nowadays; basically because it responds with a reasonable flexibility to the inductive logic of analysis used by the majority of qualitative researchers in the development of their projects, since it is based in the code and retrieve strategy (general for the analysis of qualitative data). It allows the use of several auxiliary tools for the interpretative task in case the researcher is carrying out an investigation design focused on the grounded theory method.

Our teaching experience has confronted us with some obstacles caused by “aprioristical” mistakes (due to simple ignorance) and others that we understand are more related with the particular characteristics of the object of study. From the beginning we understood that these kind of courses should combine the discussion of pertinent methodological bibliography, the development of experiences of practices of analysis assisted by computers and the critical reflection about it's production. During the courses, we have been updating the bibliography and adding more texts of methodological discussion about the grounded theory, we developed an exercise guide of the software's functions in a concrete practice of investigation (which we have been progressively improving) and we have reinforced the emphasis in training the users in a permanent theoretical-methodological reflection. We consider that this is a previous step to the application of each component and function of the program as well as illustrating with concrete examples of investigations done and in progress of different social and human disciplines. The idea is to show that the computational tool doesn't command the analysis process assisted by computer; the analysis is conducted by the particular decisions of each investigation design.

It is worthily to consider two remarkable matters under debate: one, the risk of “methodological

homogenization” established for the generalized use of the software developed from the grounded theory (Coffey, Holbrook and Atkinson 1996); the other, the risk of “analytic reductionism” that implicates that implicates the emphasis that had been done in the process of codifying information, one of the specific aspects of this methodology (Lonkila 1995, quoted in Carvajal 2002).

We hope that, when it stops being fashionable, a correct theoretical and methodological use of the CAQDAS, besides the operative, will persist. This means, a use that starts with the recognition of how theoretical-methodological design that guides the investigations is related with the tools that the software provides. Nowadays, the computational programs available are extremely complete in terms of functions, which most of the time are much more than the needs of the qualitative researcher are. Responsible users of CAQDAS should not think that the more functions they use, the more complete or “better” their analysis will be. Nor that they will limit their analytical work to the functions that the software provides or to the ones they learned to use. But if they use several of these programs carefully and creatively, they would be able to strengthen the execution of their qualitative investigation projects.

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