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qualitative computing

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Qualitative computing refers to the ensemble of technology and methodology for qualitative data analysis. Its development is rooted in qualitative sociology and the tradition of symbolic interactionism and is embedded in the evolution of computers. It goes beyond simple data management, incorporating features such as criticism of traditional approaches to data analysis, searching for new logical strategies for theory building, and innovative ways to visually represent multiple realities. Some criteria to differentially assess the software programs, among others, are ease of integration of all research process stages, type of data, process of searching units of analysis to read and review, memo-writing managers, categorization and code book access, analysis inventory and assessment, capability to export and import quantitative data, and options to merge data from different projects.

At the beginning of the 1980s, researchers from the US, Australia, and Europe developed prototypes of different computer programs to work with qualitative data, called CAQDAS since 1989, which stands for Computer-Assisted Qualitative Data Analysis. Similar to computational sociology, it seeks to deal with data complexity but its aim is not to model an “artificial society” as the former does. Qualitatively driven strategies of handling digital data provide a relational and dynamic model for conceptually mapping all research project components. Qualitative data are analyzed in inductive, iterative, and recursive traditions. Therefore, qualitative computing is composed of epistemological assertions of using computational devices to study language and meanings; methodological claims about using Boolean tools and algorithms to

create new data; and ontological arguments on the computer’s role in interpretive inquiry. There is no more debate about the implications of “computer-aided methods” in qualitative analysis because qualitative social scientists know using software is not synonymous with incontestable research design, methodological rigor, validity, or objectivity.

Qualitative computing is very often recognized as a computerized tool for grounded theory. Beyond applying the constant comparative method linked to this qualitative approach, there is increasing interest in understanding analytical induction strategies to theory building, and the related cognitive process of abduction. As a consequence of this concern, there have been some attempts to apply artificial intelligence tools and machine learning strategies. Qualitative computing also has features useful in conducting ethnographies, narrative research, phenomenological inquiry, and case studies. Data mining, knowledge representation, and knowledge discovery databases are also related areas of computational investigation. The emerging interest on hypermedia ethnography, visual narratives, fuzzy logic and natural language, large-scale video projects and hypertextual analysis is moving qualitative computing in new directions in advanced technological sophistication, which demands more creativity and researchers’ imagination.

Qualitative computing is basically associated with the analysis of text, images, video, and audio. A seminal book on this field is Tesch’s *Qualitative Research: Analysis Types and Software Tools* (1990), but Weitzman and Miles’s *Computer Programs for Qualitative Data Analysis: A Software Sourcebook* (1995) is also important despite its now outdated format. As in other fields applying digital technology, any book attempting only to describe computational applications easily becomes useless as a result of the

constant updating of programs. Of historical interest are the special issues prepared by David Heise for *Sociological Methods and Research* (titled "Microcomputers in Social Research," 1981) and by Conrad and Reinhartz for *Qualitative Sociology* (titled "Computers and Qualitative Data," 1984). Another special issue by Mangabeira for *Current Sociology* (1996) portrays the worldwide diffusion of CAQDAS.

If the social sciences' "quantitative revolution" in the 1970s was associated with a technological transformation in the means of querying and handling numbers and statistical analysis, the increasing advance of qualitative computing in the ensuing "post-positivist" period has represented a kind of quiet revolution common to diverse social disciplines in the means of querying and handling words and qualitative data analysis as a consequence of the digital avalanche. A relevant impact on doing hybrid or mixed methods is noticeable in research design as a result of the application of qualitative computing strategies. In depicting the processes of qualitative data analysis by means of relationships among codes, categories, subcodes, textual, video, or audio files and memos, some metaphorical concepts have been built, hence there are analytical approaches from hierarchical trees, semantic networks, or case-based thinking. The promise and perils of the new frontiers in qualitative computing remain on the limits of researcher-computer integration given that such technological devices have superior abilities for processing patterns, although humans remain superior at interpreting meaning in patterns. Technology is a medium to transform traditional ways of inquiry and is a powerful tool to enhance our creative and qualitative thinking.

Even though qualitative computing has influenced fields and subfields of social and behavioral sciences such as psychology, education, nursing, public health, sociology, women's studies, anthropology, communication and market research, among others, its total integration into curricula and schooling practices is incomplete, just as qualitative methods are in the current state of the art over the world. The future of qualitative computing is connected to the deepest and most thoughtful analysis of the mathematical basis of qualitative inquiry and is related to the soft sociology legacy and reflection about soft data analysis. Computing with

words appears as a discipline in the neighborhood of qualitative computing, although in its present stage there is no large collaboration in progress; some skepticism is around, just as in the case of using artificial intelligence to improve some features of particular software programs.

SEE ALSO: Analytic Induction; Computational Sociology; Computer-Aided/Mediated Analysis; Grounded Theory; Methods, Mixed; Validity, Qualitative

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quantitative methods

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Quantitative methods are those that involve numerical data resulting in statistical analysis. The quantitative approach relies on the stance that an overall view of society (or the gathering of social facts) is preferable to in-depth information provided by a few individuals. In other words, data on social facts can be collected from a sample of individuals and applied to the