

A mixed method approach - Visual data collection with the help of the software program VennMaker

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Networks provide ample scope for action by paving the way to information, emotional support or material resources. On the other hand, networks constrain one's room for manoeuvre, entailing obligations or conflict with others in the network (Kapferer, 1969; Emirbayer & Goodwin, 1994). For studying structures and social relations, two different approaches have been developed in the field. Collecting and analyzing network data (density, centrality measures) has so far been predominantly carried out by means of a highly standardized methodology requiring considerable effort and qualified research staff (Wasserman & Faust, 1994). Qualitative network analysis, on the other hand, has its roots in psychology (Moreno, 1934; Bott, 1957; Kahn & Antonucci, 1980) as well as in cultural anthropology (Davis et al., 1941; Barnes, 1954). In contrast to the quantitative approach, this methodology is more open, descriptive and flexible.

Despite the rapid development of mathematical and user-friendly computer programs for calculating and visualizing large data files (Freeman, 2004; Gamper & Reschke, 2010), the quantitative method suffers from limitations in terms of analysis and heuristic value. Fowler and Christakis (2008), for example, emphasize in their large-scale medical longitudinal “Framingham Heart Study”, that people who know each other are equally happy. At the same time, they notice that they do not have a significant explanation for the relationship between these two factors. In their own words the “[...] data do not allow us to identify the actual causal mechanisms of the spread of happiness, but [that] various mechanisms are possible” (Fowler & Christakis, 2008, p. 8). One reason is that there is no qualitative data that might give a deeper and qualitative explanation about the correlation between the two factors. Conversely, Padgett and Ansell in their famous network study would not have found any substantial evidence for the rise of the Medici in Florence after the failed weaver-revolt in the 15th century, if their study had only focussed on the description of relation and not on the structure as a whole (Padgett & Ansell 1993). Because of their simple structure and the selective way in which the data are collected, the models of qualitative data collection are limited in terms of informative value and empirical validity and are therefore not without controversy (Diaz-Bone, 2007). Against this background, there is a growing methodological debate about triangulation (Denzin 1970) in social network analysis (Coviello, 2005, Edwards, 2010). New studies are trying to take advantage of combining qualitative and quantitative approaches. So far, most researchers have combined the two approaches in succession (Crossley, 2008; Bidart & Lavenu, 2005).

In addition to the trend of triangulation, there is also a tendency to digitally collect data. Much of the data in social network analysis, qualitative and quantitative, is still collected by “traditional methods” such as participant observation (Moreno, 1934; Roethlisberger & Dickson, 1939, Davis et al., 1941; Barnes, 1954), qualitative interviews (Bott, 1957, Kahn & Antonucci, 1980) and standardized questionnaires (Laumann, 1973; Fischer et al., 1977; Wellmann, 1979), but for both methods, a trend towards computer-assisted data collection can be observed (Vehovar & Manfreda, 2008; Vehovar et al., 2008; Herz & Gamper, 2011).

In a joint interdisciplinary project, we (sociologists, anthropologists and software specialists) have tried to bridge this gap by combining qualitative and quantitative approaches with the help of the software VennMaker.ⁱ This software enables the user to interactively collect network relationship data from an actor's point of view and render them comparable and quantitatively analyzable by means of a graphical user interface that can be operated intuitively.ⁱⁱ Where complex questionnaire procedures or intense employment of staff have dominated so far, VennMaker allows users to draw actors and their relationships in an intuitive way on the computer. It is the act of drawing and commenting itself which creates data. Collecting data in this way has become more prominent since the 1980s (Kahn &

Antonucci, 1980) – at that time still haphazardly. The test person either draws the relationships maintained with the most important persons he or she feels attached to on paper by way of free drawing (network picture) or a network map is provided, often based on a pattern with concentric circles, in which contacts are placed depending on emotional closeness as felt by Ego. After conducting non-standardised interviews, these network maps/network pictures are communicatively assessed or narratively interpreted to obtain qualitative information which is created from the stories behind nodes and edges.

Our goal was to develop a tool that may prove efficiently applicable for practical purposes and at the same time be in keeping with academic standards in generating and processing social network data flexibly. Not only is the entire process of generating the network map documented digitally – as the choice, positioning, moving and spatial distribution of actors (nodes) and the drawing of different relation categories (ties) – also statements regarding content and importance of social relationships can be audio-recorded during the interview and evaluated later via content analysis methods. From the vantage point of the social sciences, the gap between quantitative and qualitative network research might be narrowed down this way. There have been many developments in the area of “mixed methods methodology”, as it has recently been termed (Coviello, 2005; Hollstein & Straus, 2006), but to our knowledge, however, there is no project which has solved the complexity problem in qualitative network maps and the issue of interlacing qualitative and quantitative data so far in a satisfying way. What makes VennMaker different combine to other software tools?

First, VennMaker allows two forms of data collection. It is possible to perform participatory, process-oriented interviews, where the client/interviewee and researcher/coach develop and discuss the network map together in a communicative process. But it also allows standardized interviews. Moreover, it is possible to combine these different kinds of research approaches. Second, VennMaker is suitable for jointly generating strategic network maps of organizational branches or projects (“strategic actor mapping”) in a group process. This form of application is suitable in situations where the elicitation and merging of different actor views for joint action is a goal. Finally, the software with its various already implemented features and the possibility of user defined amplification of graphical representations can also be applied as a user friendly drawing instrument to visualize network data that have been already surveyed with other analytical methods beforehand.

In this presentation we want to follow up recent developments by embedding this new digital tool in a broader discussion on the role of network maps in the quantitative/qualitative network analysis nexus. Following a brief outline of network forms (ego-networks/whole networks) and a section where a distinction is drawn between quantitative and qualitative network analysis, we shall discuss different types of network maps and their advantages and disadvantages respectively. A selected example from current research on migration will provide us with an opportunity to demonstrate a digital network survey with the help of VennMaker. We shall conclude with a discussion of the advantages and disadvantages of digital network maps.

References

- Barnes, J. A. (1954). Class and Committees in a Norwegian Island Parish. *Human Relations*, 39, 39–58.
- Bidart, C., & Lavenu, D. (2005). Evolutions of personal networks and life events. *Social Networks*, 359–376.
- Bott, E. (1957). *Family and social network*. London: Tavistock.
- Coviello, N. (2005). Integrating Qualitative and Quantitative Techniques in Network Analysis Qualitative Market Research 8(1): 39-60. *Qualitative Market Research*, 8, 39–60.
- Crossley, N. (2008). Pretty Connected: the Social Network of the Early UK Punk Movement. *Theory, Culture and Society*, 25, 89–116.
- Davis, A., Gardner, B. B., & Gardner, M. R. (1941). *Deep south. A social anthropological study of caste and class*. Chicago: University of Chicago Press.
- Denzin, N. K. (1970). *The Research Act*. Chicago: Aldine.
- Diaz-Bone, R. (2007). *Does Qualitative Network Analysis Exist?* Retrieved November 21, 2010, from <http://www.qualitative-research.net/index.php/fqs/article/viewArticle/224/493>
- Edwards, G. (2010). *Mixed-Method Approaches to Social Network Analysis*. Retrieved December 21, 2010, from http://eprints.ncrm.ac.uk/842/1/Social_Network_analysis_Edwards.pdf
- Emirbayer, M., & Goodwin, J. (1994). Network analysis, culture, and the problem of agency. *American Journal of Sociology*, 99, 1411–1451.
- Fischer, C. S., Jackson, R. M., Steuve, A. C., Gerson, K., Jones, L. M., & Baldassare, M. (1977). *Networks and places: Social relations in the urban setting*. New York: Free Press.
- Fowler, J. H., & Christakis, N. A. (2008). Dynamic spread of happiness in a large social network: longitudinal analysis over 20 years in the Framingham Heart Study. *British Medical Journal*, 337, 1–9.
- Freeman, L. C. (2004). *The development of social network analysis: A study in the sociology of science*. Vancouver, BC, North Charleston, S.C: Empirical Press; BookSurge.
- Gamper, M., & Reschke, L. (2010). Soziale Netzwerkanalyse. Eine interdisziplinäre Erfolgsgeschichte. In M. Gamper & L. Reschke (Eds.), *Sozialtheorie. Knoten und Kanten. Soziale Netzwerkanalyse in Wirtschafts- und Migrationsforschung* (pp. 13–51). Bielefeld: transcript.
- Herz, A., & Gamper, M. (2011). Möglichkeiten und Grenzen der Erhebung ego-zentrierter Netzwerke via Computer und Internet. In M. Gamper, L. Reschke, & M. Schönhuth (Eds.), *Knoten und Kanten 2.0: Soziale Netzwerkanalyse in Medien- und Kulturforschung*. Bielefeld: transcript. (forthcoming)
- Hollstein, B., & Straus, F. (Eds.) (2006). *Qualitative Netzwerkanalyse: Konzepte, Methoden, Anwendungen*. Wiesbaden: VS Verlag für Sozialwissenschaften.
- Kahn, R. L., & Antonucci, T. C. (1980). Convoys of life course: Attachment, roles, and social support. In D. L. Featherman, R. M. Lerner, & M. Perlmutter (Eds.), *Life-span development and behaviour* (pp. 253–286). Hillsdale, New Jersey, Hove, UK: Lawrence Erlbaum.
- Kapferer, B. (1969). Norms and the Manipulation of Relationships in a Work Context. In J. C. Mitchell (Ed.), *Social networks in urban situations. Analyses of personal relationships in Central African towns*; (pp. 181–244). Manchester: Published for the Institute for Social Research, University of Zambia, by Manchester U.P.
- Laumann, E. O. (1973). *Bonds of pluralism: The form and substance of urban social networks*. New York: J. Wiley.
- Moreno, J. L. (1934). *Who shall survive?* Washington: Nervous and Mental Disease Publishing Company.
- Padgett, J., & Ansell Christopher (1993). Robust action and the rise of the Medici, 1400-1434. *American Journal of Sociology*, 98, 1259–1319.
- Roethlisberger, F. J., & Dickson, W. J. (1939). *Management and the worker*. Cambridge: Harvard University Press.
- Schönhuth, M., & Kievelitz, U. (1995). *Participatory learning approaches: Rapid rural appraisal, participatory appraisal : an introductory guide*. Rossdorf: TZ-Verlagsgesellschaft.
- Vehovar, V., & Manfreda, K. L. (2008). Overview: Online Surveys. In N. Fielding, R. M. Lee, & G. Blank (Eds.), *The Sage handbook of online research methods* (pp. 177–194). Los Angeles [etc.]: SAGE.
- Wasserman, S., & Faust, K. (1994). *Social network analysis: Methods and applications*. New York: Cambridge University Press.
- Wellman, B. (1979). The community question: The intimate networks of East Yorkers. *American Journal of Sociology*, 84, 1201–1233.

i What does the name “VennMaker” stand for? “Venn”, first of all acts as a reverence for “Venn Diagram”, a tool, used with much success in the participatory appraisal of stakeholders in development contexts for the last 20 years (Schönhuth & Kievelitz, 1995). Its name giver was the English mathematician and philosopher John Venn (1834-1923).

ii The first presentation of VennMaker (beta-Version) took place at the Sunbelt Conference in Florida in 2008. Since then, we have been in contact with e.g. Christopher McCarty and other researchers in the field of egocentric network analysis. From this point on, we have been engineering the software simultaneously with researchers, non-academic users, and computer engineers (simultaneous Engineering). Therefore, we presented our first pre-study in the year of 2009. In the same year, the software was handed over to beta testers all around the world. In January 2010, the version 1.0 was released at the University of Trier. We held a workshop and some beta testers presented their first results at the Sunbelt XXX in Italy.