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Alessio D'angelo, Louise Ryan and Paola Tubaro (2016), 'Visualization in mixed-methods research on social networks', *Sociological Research Online*, 21:2, 1-3.

Introduction

1.1 Research on social networks is experiencing unprecedented growth, driven by its promise to uncover new, still unknown dimensions of today's connected society. Quantitative approaches have largely underpinned this development, as state-of-the-art statistical and computational techniques get to grips with increasingly large and complex network structures. Visual tools have played a leading role in this process (Freeman 2000), from the ingenious, hand-drawn 'sociograms' of pioneers such as Jakob L. Moreno (1934) to the unprecedented development of algorithmic visualization today (Brandes *et al.* 2006, Brandes *et al.* 2013, Krempel 2011). Increasing availability of specialized software has given visualization an increasingly prominent place: it can not only assist with presentation of results but also support exploratory data analysis and help check robustness of results (Robins 2015: 172).

1.2 Critics, though, have expressed the fear that this plethora of technical advances may imperfectly capture the meanings, feelings, attractions and dependencies that are attached to social networks, the way individuals intimately construe and experience their relationships, and the personal life trajectories that accompany changes in their social ties (Crossley 2010, Edwards 2010, Heath *et al.* 2009). These dimensions seem best suited for qualitative research and indeed in recent years, more and more voices have advocated the need for mixing methods in the study of social networks (Bellotti 2014, Dominguez & Hollstein 2014). It has also become clearer that visual tools to represent and investigate networks are not the exclusive prerogative of quantitative approaches and can accompany different research designs and methodologies (Hogan *et al.* 2007, Ryan *et al.* 2014, Tubaro *et al.* 2014).

1.3 This special section aims to explore this potential and to foster further research using mixed methods and network visualization, thereby contributing to the more general development of data visualization in sociology (Healy & Moody 2014). It draws on the experience of a one-day workshop, organised by Alessio D'Angelo, Louise Ryan and Paola Tubaro as part of the activities of the Social Networks Analysis Group of British Sociological Association (BSA-SNAG) at Middlesex University in May 2014. While the workshop had invited contributions in the broader area of mixed-methods studies of social networks, visualization spontaneously emerged as a unifying theme. Many participants used visual tools, whether it was at data collection, analysis or presentation stages; whether they used computer-based tools or hand-made drawings; and whether they combined visuals with interviews, questionnaires, simulations or other data.

1.4 This special section features some of the papers originally presented at that workshop, by authors at different career stages, who all mix more conceptual and more applied elements, and use examples from their own research to illustrate their arguments. Although all contributions have a main methodological focus, they draw on empirical studies of substantive topics as diverse as social movements, migration, health-oriented online communities, and friendship – thereby demonstrating the wide applicability of the approaches presented.

1.5 The first two articles are primarily conceptual and provide a broad overview of the 'state of the art' in visualization and mixed-methods research on social networks – so much so that they could serve as a reference for the field and even as a teaching aid, potentially very useful to students. They cover both the area of personal networks research – focusing on an individual to reconstitute their

social environment – and of complete networks research – mapping a given set of relationships, such as friendship or advice, in a given social context, such as a school or an office. Nick Crossley and Gemma Edwards open the discussion by making a methodological case for what they call ‘mixed method social network analysis’ (MMSNA), suggesting a theoretical framework for it and arguing for the importance of mechanisms in relational-sociological research. Paola Tubaro, Louise Ryan and Alessio D'Angelo extend this methodological reflection to the place of visual tools in mixed-method research on social networks, showcasing examples in which visuals have accompanied not only communication of final results, but also data gathering and analysis; they also discuss the use of visual tools as an interface between researchers and other stakeholders.

1.6 The next three articles specifically develop the discussion on personal networks. Elisa Bellotti explores the methodological advantages of using network visualizations together with qualitative interviews in the collection, analysis and interpretation of personal friendship networks; she shows that the mix of methods overcomes the limitations of qualitative-only and quantitative-only approaches by producing rich results that bring to light both formal and contextual aspects of social structures.

1.7 Within this broad approach, the final two papers propose variants: Alice Altissimo discusses how unstructured network pictures elicited during interviews, and analysed separately from narratives, may provide further insight into people's representations of their social environment; and Neil Armitage proposes a biographical approach that aims to integrate life story interviews into more classical maps of the structures of personal networks.

1.8 These experiences differ, but all provide convincing evidence that visual tools can be easily integrated into qualitative and mixed-method research on social networks. All authors share the goal to understand jointly network contents and network structures, and all their uses of visualizations, however diverse, participate in their efforts to achieve this goal.

1.9 Generally speaking, visual tools contain a wealth of additional information that enriches the data and helps the researchers make the most of the knowledge they can extract from those data. The intuitive, sensible dimension of visuals allows using them not only as a support of the analysis, but also to interact with study participants and to communicate with the general public: in particular, visualizations can become a very important part of the data collection process and help mediate the relationship of the researcher with the population under study and other stakeholders. A wide variety of solutions can then be used: paper-based or computer-based, participant-drawn or algorithmically optimised, unstructured or structured, ego-centred or context-centred, geo-localised or abstracting from space, built in the field or in the lab, static or animated. None of these solutions primes over the others; they convey different social representations and involve different interpretations of visual codes, so that the choice will depend on the specific needs of each research. In particular, sophisticated computing tools are often helpful, but are not always needed. Mixing methods will probably increasingly involve mixing visuals, with major potential gains still to reap.

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