

Macro, meso, micro: broadening the ‘social’ of social network analysis with a mixed methods approach

Mireia Bolívar¹

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Abstract The objective of the paper is to show the benefits of the use of mixed methods methodology in order to account for the complex and multidimensional nature of social networks. Through an empirical research on the gendered evolution of migrants’ personal networks over their settlement process, the article illustrates the depth and explanatory strength of a methodology that combines the algebraic and formalised reasoning of the analysis of networks’ matrixes with a comprehensive approach of the actors’ narratives. The paper identifies theoretical foundations and methodological approaches that enable to analyse social networks with deep sociological lens. It advocates for a “strong” integration in combining quantitative and qualitative methodologies that helps to abandon the realist premises of the classical tradition of SNA in order to integrate the interpretative tradition of social sciences. This approach enables taking into account the content of relationships and the situated interactions that create and maintain the networks; and to comprise the social and institutional context where they are produced in order to overcome implicit rational thinking about the behaviour of the individuals embedded in relational structures.

Keywords Social networks · Mixed methods · Qualitative networks · Micro–macro link · Social interaction · Agency

1 Introduction

Social network analysis is a conceptual and operational framework that conceives social life in terms of structures of relationships among actors (Carrington and Scott 2011, p. 6). Its object of study, therefore, are the interactions and relationships between social

✉ Mireia Bolívar
bolibar@uni-bremen.de

¹ Institute for Sociology, University of Bremen (Germany), Mary-Somerville-Str. 3 (Haus Turin), Room 2040, 28359 Bremen, Germany

organizations as well as the patterns and implications of these relationships (Wasserman and Faust 1994). Social network analysis is based on a theoretical framework (Wellman 1988) that observes social reality not as a sum of atomized individuals, but as a relational structure (Wasserman and Faust 1994; Wellman 1988). It also considers that the shape of network structures affects the development of interactive processes, the flow of exchange and the results produced through it (Borgatti and Everett 2006; Freeman 1979; Wellman 1988).

Most of the theoretical and empirical development of social network analysis (SNA) has ended up becoming a framework of explanation that tends to reify social relationships and to underestimate the role of individuals' agency (Emirbayer and Goodwin 1994). Alternatively this framework of explanation can consider social networks as the result of the psychological or rational predispositions and intentional actions of actors (Passy 2003; Small 2009). As a result, as Crossley points out, nowadays "one weakness of the SNA literature is that it tends to abstract network structures from the ongoing flux of social life and analyse them in isolation" (Crossley 2010b, p. 345).

This paper identifies some theoretical and methodological grounds that provide social networks with strong sociological content and treatment. It is argued in this paper that the methodological foundations of mixed methods (i.e., the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study—Johnson and Onwuegbuzie 2004) help to overcome the above-mentioned limitations of SNA. They help to avoid treating networks as an uncontextualized analytical construct that over-abstracts social relationships by providing the opportunity to show the cultural content of relationships and its link with broader categories and structures. By doing so, mixed methods not only bring the (inter)actors to the front, as the literature on mixed methods and qualitative networks has emphasized (Bellotti 2015; Bidart and Cacciuttolo 2012; Crossley 2010a, b; Dominguez et al. 2004; Edwards 2010; Fuhse and Mützel 2011; Hollstein 2011, among others), but also enable the presentation of the relevance of the contexts where networks are built.

The paper first briefly mentions theoretical developments within network research that have been developed in this direction, thus working on a more complex picture of the micro–macro link regarding networks and inter-personal relationships. Second, the paper shows how mixed methods research designs (and more specifically, an integration of qualitative and quantitative methods in the stages of analysis and interpretation of data) enable the translation of those theoretical premises into empirical research. Third, the paper shows an empirical study on the impact of gender on the evolution of migrants' egocentric networks. Based on this research project about personal networks and social integration of Ecuadoreans and Moroccan migrants in Catalonia (Spain), the paper builds the argument and illustrates empirically the explanatory strength of mixed methods empirical research.

2 Social networks and the micro–macro link

Social network analysis claims to be a unique way to capture and analyse social structure. Nevertheless, besides the theoretical foundations of 'structural analysis', classic debates in social theory are transferred to the field of social networks, outlining different ways of understanding the nature of networks and its emergence in the social context. This section identifies different positions and considers some elements necessary for understanding networks as an intermediate level of the social world between individuals and broader

social structures (Bidart et al. 2011). Thus, this section suggests a way to interpret social networks from an intermediate position between the individualistic and holistic perspectives, in line with the 'structural interactionism' postulates (Degenne and Forsé 1999; De Federico 2009; Lozares and López-Roldán 2012).¹

Considering social networks as an intermediate level of the social world between individuals and broader social structures, according to Lazega et al. (2004), emphasizes the centrality of social relations and the fact that they make up a 'mesosocial' level of social reality. It enables to think of three levels (micro ← → meso ← → macro), which leads to consider that in the constitution of networks and in the process by which they carry some consequences, four types of processes (shown by the four arrows above) take place: from the social structure to the networks and from the networks to other wider structures, as well as from the networks to the individuals and from the individuals to the networks.

2.1 Networks and the micro level

The most classical premises of SNA point to the fact that patterns of relationships, i.e. the structures and positions in the structure of relations, are what locate the resources in a social system and therefore what determines the behaviour of individuals and the performance of their actions (Burt 1995; Wellman 1988). That is, the formal properties of networks (not only dyadic relations, but the structure of the aggregate of dyadic social relations) bring constraints and opportunities to individuals involved in the interaction (Degenne and Forsé 1999). As presented in the introduction, this assumption underestimates the role of the action that shapes and transforms pre-given social structures; which led Emirbayer and Goodwin (1994) to define it as a model of explanation based on 'structuralist determinism'.

Different approaches discuss this holistic vision. Degenne and Forsé (1999) suggest that networks must be understood as a dynamic response to individual interactions: even if structures are considered to pre-exist relationships, the relationships that arise (or not) from their action and interactions will in turn also affect the structure (Degenne and Forsé 1999:7). It implies that social *interaction* is actually the most elementary unit of *social* belonging and dynamics, and thus that it is what generates social spaces and positions (Bottero and Crossley 2011; Lozares and López-Roldán 2012).

The way in which agency is taken into account, though, is also a matter of controversy. Two different ways of addressing networks can be identified. On the one hand, there is some literature which, in connection to Rational Action Theory, considers actors as utility maximizers, and thus networks as the result of purposive and instrumental actions.² From this standpoint, social interaction responds to potential strategic benefits that actors can draw on from it, and obviates the different types of un-purposive situations that can bring two agents to interact (see Passy 2003; or Small 2009). This is a model of explanation that Emirbayer and Goodwin (1994) defined as 'structuralist instrumentalism'.

¹ The labelling of this idea under the name of 'structural interactionism' comes from the French tradition of social network studies, but there are other authors who, although might not recognize themselves within this category, also outline an integrated view of social networks that takes into account both the structure and the agency in human relationships, which is ultimately what is presented in this section (see, for example, Bottero and Crossley 2011; or Small 2009; among others).

² This assumption, for example, is what made Wasserman and Galaskiewicz say that the alternative to considering actors as 'victims' of network structures is to look at them as 'network entrepreneurs' that exploit their network position to further their own interests (Wasserman and Galaskiewicz 1994, xiii).

On the other hand, symbolic interactionism challenges this rational framework of network building processes, pointing out that social relationships involve an empathic bond, both cognitive and emotional, as well as relations of interdependence and power. More specifically, Crossley (2011) states that social interactions are characterized by five interrelated and overlapping dimensions: in addition to the strategic dimension, the symbolic and affective dimensions and the dimensions of convention (vs. innovation) and exchange power. Similarly, the whole development around relational sociology has highlighted the cultural dimension of networks (Emirbayer and Goodwin 1994; Emirbayer 1997; Fuhse 2009; Mische 2011; Mützel 2009; White 1992).³ It emphasizes the fact that “social relationships are culturally patterned, and (...) very much depend on the social construction of meaning in expectations, relational frames, stories, identities and roles” (Fuhse 2009, p. 62).

It can be abstracted from those theoretical developments that a comprehensive perspective on the process of building networks must take into account the cognitive maps through which actors give meaning and categorize their social environment (Diani 2003, p. 4). That is, individuals bring into play processes of interpretation of the situation to the (inter)actions (Salvini 2010) and ascribe meanings and values to relationships (expectations, identities, obligations, frames or norms of reciprocity) in the process of interaction that create and recreate social networks (Crossley 2010b). As shown in the Sect. 3 of this paper, the literature reflecting on the usages of mixed methods in social network analysis claims that its translation at an empirical level is better achieved with a mixed-methods approach.

2.2 Networks and the macro level

It is largely assumed among social network analysts that SNA provides a ‘bridge’ between the micro- and macro-orders by considering the embeddedness of ties in networks; i.e., just by taking into account that individual (inter)actions create dyads; dyads are constituents of triads; triads are contained in higher order subgraphs, and that all are embedded in complete networks (Wasserman and Galaskiewicz 1994, xiii).

Nevertheless, there is a limitation in looking only at ‘network macro-order structures’. Beyond the examination of configurations of entire networks and the identification of structural positions and components of a network, SNA tends to overlook other institutional orders in which networks are being played. In this regard, some sociological developments in network analysis claim against considering networks as somewhat autonomous structures and argue for conceiving that networks are not built on a vacuum but are being played in the context of wider superordinate societal framework (Häussling 2014). As Molina points out, while (personal) networks are individuals’ spaces of creation (Molina et al. 2008, p. 1), they also carry the imprint of social forces such as cultural, social and economic institutional organization.

In particular, as noted by Small (2009), people interacts not only for the sake of interaction. Social relationships emerge and stand up in routine processes and actions that individuals develop in social environments. This means that dyadic interactions occur in specific settings, situational contexts or thematic sociability spheres⁴ (Degenne and Forsé

³ It has given rise to what Knox et al. (2006) call the ‘cultural turn’ in the relational perspective.

⁴ The concept of ‘sociability spheres’ refers to Simmel’s notion of circles of sociability, i.e., groups of varying degrees of organization (from informal groups to civic organizations) where individuals meet around a common interest (Degenne and Forsé 1999, p. 55). It also resembles to Feld’s notion of ‘foci’, defined as “any social, psychological, or physical entity around which joint activities of individuals are organized” (Feld 1982, p. 1025).

1999; Small 2009), which fall in turn within specific institutional frameworks (school, labour, family, etc.) (Bidart et al. 2011). They thus have their own set of constraints, established roles, rules and rituals (Degenne and Forsé 1999, p. 61), which produces specific opportunities and inducements to the interaction (Small 2009, p. 62). Rules and resources condition the situation where concrete interactions take place (Häussling 2014). This notion of relational dynamics calls for including the context of interactions within the focus of SNA and thus for dialoguing with the classical attributive approach in order to understand the differential patterns of association and interaction.

2.3 The debate at the methodological stance

Bringing the debate to the methodological dimension, this paper argues that a mixed methods approach helps to capture the articulated nature of the social reality in which networks are placed. Taking into account the multiple sides that constitute social facts requires an appropriate methodological treatment that does not “break” the phenomenon under study (Lozares et al. 1998). In this respect, a multistrategy approach builds the object of study from multiple analytical ‘cuts’ in order to reach a dense empirical and theoretical coverage of the research area (Layder 1993). Therefore, it enhances the explanatory power of the investigation, making possible a greater richness and depth in the resulting knowledge (Bryman 2008; Hollstein 2014; Verd 2008). That is the reason why, beyond methods’ triangulation to contrast and validate results, the most interesting and widely used foundation of mixed methods lies in its greater ability to capture social facts in a complex and multidimensional manner, expressed in different levels of social reality (Moran-Ellis et al. 2006; Verd 2008).

Using a mixed methods research design in SNA research, thus, means not only that research questions about the form, structure and composition of social relationships are better analysed using quantitative methods, while the inquiry related to perceptions and meanings of networks might require qualitative methodologies (Edwards 2010), for example. It is their conjunction or combination (thus more than the sum or addition) what allows to explain the connection between these different dimensions of social phenomena (Mason 2006).

3 Mixed methods in social network analysis

3.1 Approaches and ways of integrating qualitative and quantitative methods in social network analysis

Given the pre-eminence of sociometry and graph theory, based on the statistical treatment of relationships and its formalisation in matrix algebra, SNA is usually considered to belong to the domain of quantitative methods (Edwards 2010). Nevertheless, the use of qualitative methods is also part of the genesis of social network analysis. At present there is some research approaching SNA from a qualitative stance (Hollstein and Strauss 2006; Heath et al. 2009, p. 646),⁵ as well as a growing body of work that emphasise the potential strength of adding qualitative inputs in a mixed methods approach. There is a body of research that integrates quantitative and qualitative methods in SNA in a broad range of fields of inquiry and in many different and creative ways (see Edwards 2010 or Hollstein 2014, for a description and discussion of different mixed methods research designs). It

⁵ In addition to all the scientific production within the qualitative tradition of studying social relationships that is not identified as part of the SNA field.

made also arise a number of contributions that attempt to conceptualise this integration (Bellotti 2015; Bidart and Cacciuttolo 2012; Coviello 2005; Crossley 2010a, b; Dominguez et al. 2004; Edwards 2010; Fuhse and Mützel 2011; Hollstein 2011).

Besides the specific techniques used to access the field and collect data, regarding the analysis of network data two different ways of addressing the combination of quantitative and qualitative data can be identified. On one hand, the one that conducts a '*weak integration*'. It is characterized by the adoption of the classic approach of SNA based on the formalization of relational structures. In that case the use of quantitative methods for measuring the properties of networks, of the actors that compose them and of the changes in the positions and structures is the central pivotal point of its research design, while qualitative methods are used as a complement that enriches the information on the structure of the network. In this way of combining methods, qualitative methods play a peripheral role. They can be aimed at exploring the field, describing the practices of actors in the creation of the network, enhancing or validating information, or even observing the conditions for networks emergence and change, but without abandoning the traditional realistic premises of SNA.

On the other hand, a '*strong integration*' can be identified. In this way of combining methods, quantitative methods would also be oriented towards the study of structures of relations and the positions of actors within it, but qualitative methods would delve into the understanding of the meaning that individuals attach to those relationships and to the interactive processes by which they are created. This approach goes beyond the '*weak integration*', as it emphasizes the dual nature of social reality. It gathers and integrates ontological and epistemological premises that require a real dialogue between paradigms or traditions. In this type of research designs, the incorporation of qualitative methods enables, firstly, the description and exploration of the network from both an etic and emic point of view. Secondly, it allows researchers to delve into the agency of actors by inquiring about the perceived network (the value and meanings ascribed to networks from the point of view of the actors that constitute it) as well as by considering their role in taking decisions. And thirdly, it includes the particular contexts where those relational processes take place.

The '*strong integration*' is rooted not only on the classic tradition of SNA but also in the qualitative tradition in social sciences and the cultural school within SNA. This approach breaks with the notion of SNA as a consistent, coherent and closed construction (what the classics themselves defined as a "*paradigm*"—see Wellman 1988), closely tied to a realist and positivist ontology. Therefore, it integrates the interpretativist tradition and makes qualitative methods play a central role in research designs, role that is shared with formal and statistical methods.

The point of this paper is that this type of methodological integration is what enables the comprehensive view on social networks described in the first section to be translated into empirical research.

3.2 Dimensions of social networks that can be approached with a mixed methods methodology

The '*strong integration*' is particularly useful and relevant in the study of four dimensions of social networks: structures, contexts, meanings and dynamics. This section briefly reviews how mixed methods are being used with this purpose in the field of SNA.

3.2.1 *Structure, composition and positions within a network*

In this case, the introduction of qualitative methods is justified mainly by the possibility of delving into the type and content of relationships: qualitative methods can describe the practices that constitute a network in greater detail than names generators and name interpreters, thus reducing the simplification and abstraction of the same. Moreover, as pointed out by Crossley (2010b) and Maya-Jariego and Dominguez (2014), despite the qualitative approach provides a better access to the content of relationships, and the quantitative approach to the form of the structures that emerge from relationships, only mixed methods research designs enable looking at its interconnections and analysing them as two sides of the same coin.

3.2.2 *The network's context*

Mixed methods are a unique opportunity for linking network structures to the contexts where they are built. While the description of the position of members of a network within broader social or institutional structures as well as the contextualisation of specific relationships within spheres of sociability can be achieved using quantitative methods (with name interpreters or with contextual name generators, as the ones used by Bidart and Cacciuttolo 2012), qualitative methods facilitate contextual information at different stances. Qualitative methods describe the norms, preferences and identities that shape a specific 'social world' or sphere where individuals interact (Crossley 2010a). Thus they enable to incorporate, for instance, the political and discursive opportunity structure that frame an associative network (Morales and Giugni 2011) or the biographical events within which personal networks are built (Bidart and Cacciuttolo 2012).

Furthermore, regardless of the specific method, placing networks in their particular context in order to explain the network's structure matches with a qualitative logic of explanation that understands social processes and phenomena as elements "contingent upon or embedded within specific contexts" (Mason 2006, p. 17). Drawing on case study and comparative case analysis, this approach, instead of 'controlling' (in the sense of 'neutralising') or excluding the context, tries to introduce it in the explanation. Thus, that enables a 'cross-contextual explanation', i.e., a comparison across different contexts that enhances the scope and generalizability of the explanation (Mason 2006).

3.2.3 *The meaning of relationships*

The combination of quantitative data that informs about relational structures with qualitative data on the meaning attributed to the relationship is widely addressed in the literature on mixed methods applied to SNA. Despite the fact that subjective evaluations and attitudes towards relationships can also be measured quantitatively by means of questionnaire scales (Kirke 2010), the qualitative tradition and its comprehensive approach is especially suitable for it, given its emphasis on the identification of meanings through the narratives of the actors. In particular, the use of mixed methods has been used for understanding both (i) how the meanings attributed to relationships—e.g., friendship (Bellotti 2008)—set different types of network structures; and (ii) how the subjective evaluation of relationships (Keim et al. 2009; Bernardi et al. 2014), or the identities, feelings of belonging and loyalty demands (Crossley 2010b) make network structures have an influence on the individuals embedded on them.

In addition, this comprehensive approach can be understood as part of a dynamic analysis that studies how those meanings affect the development of a network. It leads us to the last dimension tackled in this paper, the study of network change.

3.2.4 *Network dynamics*

The study of the emergence and evolution of networks has gained attention over the last years. This has gone along with the development of models that allow to contrast hypothesis on the mechanisms, factors or ‘relational rules’ that explain the change between different time points (Snijders 2005). Agent-based models in which predictive probability models are based on, though, echo a rational understanding on the actors’ agency. In contrast, the inductive nature and the situated character of qualitative methods helps to observe the factors intervening in a networks’ change and the way it is changing in a more contextualized and situated manner. As Crossley (2010a) or Bidart and Lavenu (2005) point out, although those factors can be introduced as parameters of a general model, simulation models are unable to take into account the particular story of every relationship. Contrastingly, a qualitative approach allows to identify those meaningful factors in a specific ‘social world’ (Crossley 2010a, p. 28) and in the framework of a narrative story (Crossley 2010a, pp. 12–13), making possible to reveal the motivations behind the action of forging and ending relationships (Maya-Jariego and Dominguez 2014).

Mixed methods have proved to be a fruitful approach for researching the causes and the paces of network changes by looking at the interactive processes and dynamics that have an effect in the (re)creation of a social network. They facilitate the integration of research on the temporal dynamics of networks together with the content of the ties that sustain them, the specific contexts where they are produced and the meanings agents attribute to ties and to interactions; thus providing a way to avoid a kind of ‘relational econometrics’ with no empirical bases on concrete behaviours (Bidart and Lavenu 2005, p. 283).

This line of reasoning fits with the logic of the ‘process tracing’ method (Bennett and Elman 2006; Levy 2008). It introduces a processual conception of social phenomena that does not work with a notion of causality based on correlation and covariance but with the identification of mechanisms and processes that connect causes and effects (Bennett and Elman 2006, p. 461).

4 Empirical illustration

This section presents an empirical research that conducted a ‘strong integration’ of quantitative and qualitative methods, with the aim of showing the type of the knowledge obtained with mixed methods’ methodologies.

The example is taken from a research on migrants’ personal networks in Catalonia (Spain). It aims to understand the process by which migrants’ networks are created, maintained and transformed along their social integration process. More specifically, it aims to describe and explain gender effects on personal networks’ configurations.

4.1 Introduction

The theoretical approach of this research is founded on the contributions of several authors who have applied the relational perspective to their research on migrants’ integration

process. To begin with, it assumes that an individual's personal network reveals his or her 'personal community' (Wellman 1979). Therefore, they convey the form and the extent of migrants' fitting in, in their many instances of belonging to different types of relational settings (Maya-Jariego 2009), showing the topology of inter-group contact between the minority and majority communities (Maya-Jariego and Dominguez 2014). Those relational settings or environments are set in different time and space dimensions, that is, they are spatial in nature (local or transnational); temporal ("new" and "old", created before or after emigration); and also have a homophilic or heterophilic nature (Lubbers et al. 2010; Lozares et al. 1998; Maya-Jariego 2009; Molina et al. 2008; Pascual de Sans and De Miguel 2007). Therefore, the extent to which immigrants' personal networks change after emigration and the direction in which they change over the settlement process in the host society are indicative of migrants' social integration process. The networks are considered to express the patterns of social segregation that structure social relations, and therefore, the degree of permeability of ethnic boundaries and the strength, openness or closure of social groups.

Many researchers in the field of migration studies have emphasized the effect of gender on migrants' relationships, relational spheres and networks. Some have noted that migration networks are "gender-specific networks", since the patterns of informal social support follow gendered arrangements (Ishizawa and Stevens 2011). Hagan (1998) pointed out that, in their trajectory in the host country, male migrants tend to widen their networks, while women tend to contract them. She suggests that these differences are given by the segregation of occupational niches, residential patterns and participation in voluntary associations. The literature also notes the role of inegalitarian patriarchal family dynamics on the creation and mobilization of networks (Dominguez et al. 2004): Men have a greater presence in the public domain (Pedone 2010), while women are assigned to a greater extent the role of maintaining the cohesion of the family unit (Gold 2001; Hagan 1998; Parella 2012).

In this regards, using this background, the empirical example shown here wants to illustrate how qualitative methods can complement the quantitative ones leading results to explain not only what, but also *how* and *why* the different processes of integration occur among migrant men and women.

4.2 Methodological design

The methodological strategy employed in this research uses different methods and techniques that are combined, according to the model of Creswell et al. (2002) in a sequential explanatory design, with some features of the nested design. The sequential design in this research study refers to the sequential linkage between the different phases of different types of fieldwork. In this case, the findings of the analysis of a personal networks survey guided the selection of cases to interview, which enabled a better and more precise collection and analysis of the latter. The nested design (or 'integrated articulation', according to Callejo and Viedma 2006) occurred in the phase of analysis and interpretation of the findings: each technique was used to measure complementary aspects of the research questions, which were integrated into a joint interpretation of the information obtained. This methodological strategy facilitates the integration of quantitative and qualitative data and resolves the tension between depth and scope, providing a sufficiently large sample to make statistical comparisons between the cases, and sufficiently limited to analyse the data in an intensive manner.

The main research techniques used are as follows: Firstly, a personal networks survey. This survey identified and explored the ego-centred network of the interviewees (ego) with the closest 30 people (alters) with whom the interviewee had had contact with in the last

two years (see Lozares et al. 2011, for details on the questionnaire). The survey was conducted in 2009 and 2010. The stratification criteria for the quotas were the city of residence (three different cities of different sizes that represent the urban variability of Catalonia), gender, and the origin (understood as the birthplace). A total of 153 interviews were conducted with Moroccan and Ecuadorian immigrants.

Secondly, qualitative data was obtained by means of 18 semi-structured narrative biographical interviews. They were intentionally selected among the participants of the survey following criteria of origin, city of residence, gender, network type (obtained after a cluster analysis of the survey's results) and intensity of associative participation. The interviews had a "relational-narrative" content which enhanced the information concerning their personal network by delving into the biography of the interviewee. By commenting on the visualization of the network, the interview explored his or her life course. The interview provoked a narrative on the events, people and relationships that had marked stages and transitions on the interviewees' life course, linking it to the evolution of their personal network. Figure 1 illustrates a network visualised and commented during an interview.

4.3 Results

4.3.1 Quantitative analysis: migrants' network composition

After the analysis of the composition of migrants' personal networks, it can be said that there is a weak trend towards assimilation among the overall population. Moroccans and Ecuadorians' network of contacts are progressively transformed over the years, in the sense that the longer migrants have been in the host country, the more ties they have with the autochthonous population ($r = 0.228$; $p < 0.01$) and the fewer ties with people who have remained in the home country ($r = -0.208$; $p < 0.05$). This process has led to an average

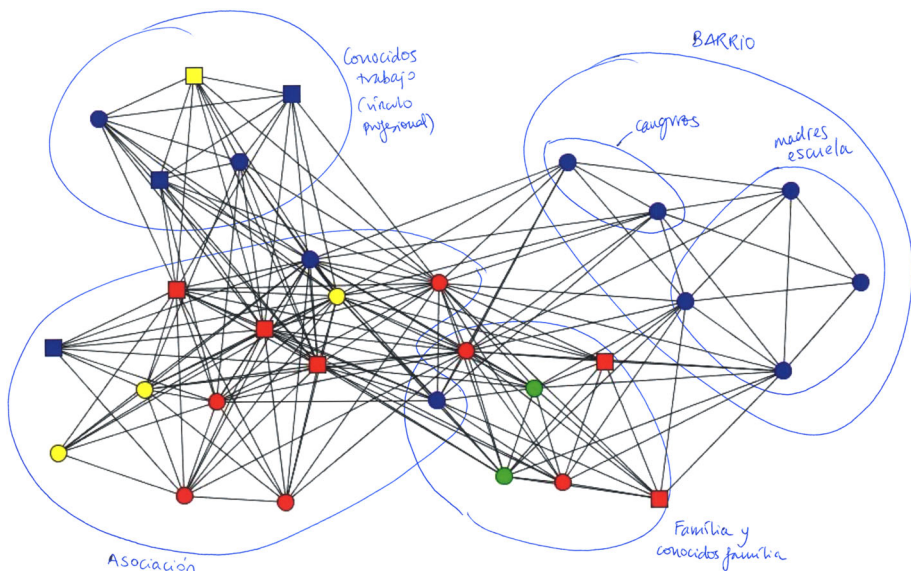


Fig. 1 Example of a network visualised and commented with pen and pencil during the interview (anonimized)

network composition defined mainly by homophilic ties but with a certain presence of the autochthonous population (19.75 %) and people from other origins (7.4 %). Yet this process, rather than being widespread, is weak and limited. Firstly, there is no general bipolarity in the configuration of the network between “before” and “after” the emigration. The population analysed maintains a large proportion of their contacts met prior to migration over the years of residence in the host country without a relevant loss of these type of acquaintances in their personal networks.

Secondly, the results show a diversity of integration patterns, pointing to the existence of divergent processes concerning the assimilation and the maintenance of transnational ties. In this regards, it is possible to identify several differences among male and female migrants. According to the results of the personal network survey, even if we exclude migrants that have just arrived (i.e., that have been living in Spain for less than 3 years) we can see that female migrants’ networks have a larger proportion of transnational contacts living in their home country, while males have a larger proportion of hosts (autochthonous born and living in the host country). Interestingly, there are no strong gender differences on the extent to which migrants develop networks with fellows in the host society (process that, besides the maintenance of transnational ties or the development of ties to hosts would set a third type of integration pattern—see Bolívar et al. 2015).

The regression analysis presented in Tables 1 and 2 looks more carefully at the context where new alters are met in the host society. It shows that relationships within the family sphere bring rigidity and stability to female migrants’ personal networks. As the change in the coefficients for ‘sex’ between models 1 and 2 suggest, men change their networks to a greater extent due to the fact that they have a bigger proportion of alters related to the labour and the communitarian sphere (neighbours or associative comrades) and a smaller proportion of kin ties.

The analysis of the specific direction of that change, by looking at what brings migrants to incorporate hosts in their networks (models 3 and 4 of Table 2), indicates that there is a logic of substitution between the workplace and the family in their effect on networks: It is in the labour sphere where relationships with hosts are created and maintained, while the maintenance of bonds with relatives is associated negatively with the incorporation of hosts in the personal network. In sum, this quantitative analysis suggests that the effect of gender in migrant’s relational integration is due to a different presence of men and women in the sociability spheres and to the resulting imprint of those spheres on migrants’ personal networks.

4.3.2 *Introducing the qualitative data and analysis of the cases and their circumstances: projects, meanings and processes in context*

In this research, the introduction of qualitative data and its joint interpretation with quantitative data enables to answer “how” and “why” the phenomenon shown so far with the use of quantitative methods occurs.

Table 1 Mean percentage of different types of alters in Moroccan and Ecuadorian migrants’ networks

	Hosts** (%)	Fellows in host country (%)	Other origins in host country (%)	Residents in the home country*** (%)
Male migrants	24.54	40.94	7.05	23.43
Female migrants	16.92	36.87	8.16	33.58

*** $p < 0.001$, ** $p < 0.05$, * $p < 0.1$

Table 2 Beta coefficients of logistic regressions with the variable “alter met after migration (vs. met prior to migration)” as a dependent variable (models 1 and 2); and the variable “autochthonous alter (vs. other alter met after migration)” (models 3 and 4) together with years of residence and other individual characteristics of ego

Sociability sphere (alter)	Postmigration alter (vs. premigr.) Model 1 β		Postmigration alter (vs. premigr.) Model 2 β		Autochthonous alter Model 3 β		Autochthonous alter Model 4 β	
Family								
Labour								
Community								
Others								
Years of residence in Spain (ego)								
3–5	0		0		0		0	
6–9	0.075		0.596***		0.464**		0.523***	
11–14	-0.100		0.477***		0.518***		0.608***	
15+	0.661***		1.467***		0.357**		0.447**	
Sex (ego)								
Male	0.292***		-0.168*		0.281**		0.239**	
Female	0		0		0		0	
Ethnic origin (ego)								
Ecuador	-0.063		-0.416***		0.136		0.095	
Morocco	0		0		0		0	
Residence (ego)								
Urban	0.455***		0.060		-0.361**		-0.418***	
Rural	0		0		0		0	
Age (ego)								
Occupational status (ego)								
Inactivity	-0.027		-0.014		0.009		0.006	
Unemployment	-0.603***		-0.697**		-1.158***		-0.995***	
Occ.status low	-0.625***		-0.659***		-1.139***		-1.000***	
Occ.status med.-low	-0.257*		-0.156		-1.331***		-1.253***	
Occ.status med.-high	-0.161		-0.024		-0.916***		-0.863***	
Constant	0		0		0		0	
R2 Nagelkerke	0.570**		2.252***		-0.083		-0.066	
	0.056***		0.565***		0.069***		0.109***	

*** p < 0.001, ** p < 0.05, * p < 0.1

To do so, in this section two particular cases are shown (Sofía and Eduardo). They illustrate the type of interactive processes identified in the in-depth analysis of the interviews that set gendered paths of changes in their personal networks along their settlement process in the host society, i.e., that lead male migrants to tend to develop more contacts with hosts while lead female to keep their original networks to a greater extent. After that the section moves to a more abstract level, concluding it with general remarks drawn from the qualitative part of the research.

Sofía is a 50 years old Ecuadorian woman that had been in Catalonia for about 11 years at the time of the interview. Following the traditional migratory pattern of many Ecuadorian women, she left her son with her parents and migrated to Spain alone to work in the domestic service, with the aim to earn enough to send remittances to her family living in Ecuador. Sofía, even if later on she regrouped her son, married an autochthonous man and had another son in Catalonia, still keeps lots of her contacts in the country of origin—which, at the time of the interview, constitute more than 80 % of her network.

Sofía: [Commenting on the visualization of her previously drawn network] This network is based in Ecuador (...). Specially the main ones; Paulina is in Spain, Francisco is in Spain, Cristian is in Ecuador, [pointing at the different nodes of her network], in Ecuador (silence), in Ecuador (silence), in Ecuador (silence) almost all of them... in Ecuador. My sister, my brother-in-law, and so on.⁶

Sofía attaches great importance to her (extended) family, most of whose members are in Ecuador. She maintains a strong emotional bond with her family and friends living there. During the interview she narrated, for instance, the suffering that supposes for her not being able to be in Ecuador in special family events (like the death of a close relative). She has a frequent, regular, and routine contact with her relatives and friends in Ecuador, to whom she turns to in order to discuss her personal problems, and she keeps up to date with the changes in the lives of her acquaintances there.

Sofía: Through Facebook I get in touch with my friends from there, for instance I send them pictures, and they send me pictures as well. Interviewer: And with the family?... Your brothers? Sofía: Mainly with my brothers, of course. (...) I send them pictures, they send me pictures. By e-mail as well, but Facebook is a pretty important social network. Interviewer: Aha. And then you know what are they doing... Sofía: Yes, what are they doing, I'd say, how are they doing now, because pictures is what you see, 'see how (he/she) looks like now, with the hair like that'... well, one can know everything because pictures are the faithful reflection of people. You can see if (he/she) has lost weight, how is (he/she) [laughs], that are the most fundamental things.

Note that although the Internet and social networking sites help to untie relationships from territory and space and facilitate transnational practices and links based on the daily presence in "there", it is not a process exempt from tensions. As Back (2013) suggests, it creates an illusion of closeness from the distance.

Sofía throughout her trajectory in Catalonia has worked primarily in the care of elderly people, mostly in private households. Due to her specific position on the labour market she

⁶ The quotes have been translated from Spanish by the author. The translation attempted to avoid potential heuristic losses by reproducing the meanings of the original wording, keeping the emphasis, hesitations and even mistakes in the order of sentences; in spite of its consequent loss of grammatical and linguistic correctness. See the original transcript data in the appendix.

has created some ties to hosts, but they are not relevant relationships, and they are quite unequal. They are not based on a horizontal peer exchange but follow a servile frame linked to her performance as a caregiver.

Sofía: Well I was going to the old people centre to assist them. I went there and I met the little old people. Once I was... in a memory workshop for old people... Interviewer: Yes. Sofía: Old people that are there... I went there and befriended them there. (...) So there I created a circle of friends with the ladies. I was helping them for instance in turning the pages so that they could do those exercises.

Moreover, she has long working journeys. Since the affective centrality of her network is placed in Ecuador, in the short free time she has Sofía gives priority to maintain her relationships in the country of origin instead of “investing” time in creating a local network. Thus, other ties she has created to alters of the communitarian sphere are mostly weak and superficial. She is in touch with a few disperse fellows, neighbours and mothers of her youngest son’s school mates, but they are not present in her everyday life, which reinforces her focus on “her people” in the country of origin.

Conversely, the presence of the family and labour spheres on Eduardo’s personal network evolution in the host country is very different.

Eduardo is a 60 years old man from Ecuador, who, at the time of the interview, had been living in Catalonia for 5 years. He traveled regrouped by his wife and daughters, who had emigrated earlier. Even if he migrated following the previous steps of his wife and daughters, he had a clear professional project: “I came here to work in a construction company.” Working is a very important part of his identity, to the extent that he describes the sequence of his life mostly in terms of the different jobs he has had. Once he arrived, the labor sphere was very important for him to get to know new people. He got immersed into the world of the construction machines drivers, who introduced him to many places and other circles of autochthonous people—who composed already the 40 % of his network at the time of the interview.

Eduardo: When I came here, you see... When I came here with my daughter, I wasn’t going out. I was at home. When I went to [work to] the machines, in that company, I was assigned to work with a Spaniard, who was in charge of the machines. We became good friends, she’d say “man, I’ll see you on Friday”. She’d come here to Balaguer, and she started bringing me to the pubs. And from there we started to befriend one, and another, and so on, and in the company also a driver, the machinist, the... the machinist of Alcarràs, machinists from everywhere, eh? So I arrived to the city and I got quite into it. The world of the machines.

This particular dynamics of the type of workplace in which he had been led him to naturalise intercultural contact, i.e., to see like a normal thing having a diverse set of contacts.

Interviewer: The other Ecuadorians you know, do they have Catalan acquaintances like you, or most of them know only Ecuadorians? Eduardo: No, yes... here you are in contact with everything. You can’t be here... for instance, in Ecuador it is different, because at the end you have... in there there are only Ecuadorians. Here as you are, you find people from all over the world. Catalan people, Moor people, Rumanian people... all kinds... and you have to interact with all of them. You need to know how to handle people. Then if you isolate yourself, it’s ugly. At work, you have to talk to one, to the other... here it’s different.

Even after having been fired from the company, Eduardo keeps maintaining a regular and trustful contact with his former autochthonous colleagues, which grants him an important source of social support. It's worth mentioning that it was the ability of transcending the specific spaces in which relationships were created what facilitated that they became part of his network; i.e., the fact that they were not mere volatile contacts but were part of his closest community is what ultimately made his network evolve to create a strong local network. Those insights are in line with the research of Bidart and Cacciuttolo (2012), who note that ties with an affective content that transcend the contexts where they were created are the most long-lasting over the years.

Eduardo: They all know each other because they all work in the same company, then... sometimes they invite each other... like us, they invite each other, they invite you to dinner... Interviewer: you also see each other out of the workplace? Eduardo: Yes, indeed, yes. Interviewer: Now you don't work in there you still see them? Eduardo: Yes, sure. I always support them. (...) we always talk. We always call each other...

To sum up, looking at the whole set of interviews, the findings show that the degree of rupture with the homeland, the desire to settle permanently in the host society and the location and family reunification processes are aspects of the migration plan that contribute to defining the type of network adopted. This is due to the fact that those plans galvanise different strategies for the provision of support, which encourage the forging and development of ties in different territories, while also give sense to the centrality attached to the different sociability spheres during the settlement process.

In addition to this, the empirical research addressed the meanings attached to relationships and sociability spheres, and its link to the normative and institutional context that frame them. It demonstrates the influence of the societal structural framework on actors' perceptions (meanings and definitions of the situation) when interacting in different contexts or sociability spheres, which in turn impacts on the patterns of development of personal networks. More specifically, the analysis shows the power of patriarchal norms and the consequent division of labour that structure family relationships. They are implicit in the way migration plans are defined, and orientate men and women towards a different position and availability in the productive and reproductive fields, in the origin and in the destination. That is, qualitative data shows how the sexual division of labour shapes the centrality of the different spheres of sociability (both regarding time dedicated and the symbolic value attributed to them, Miguélez et al. 1998), which reinforces the effect of gender in the evolution of migrants' personal networks.

Given the different nature or content of the relationships that are held in different sociability spheres, the spheres of sociability determine a certain functional specialisation of the type of ties that are created and maintained therein. Therefore, the fact that the responsibilities of the domestic work and dedication to the private and family space is mainly attributed to women, while work related to productive activity is attributed to men is what makes the sociability spheres consolidate gendered networks, guiding women to have more transnational ties and men to have a greater contact with hosts. Moreover, family-household arrangements change depending on the ethnic or national origin (that is, it is more pronounced among Moroccan migrants than among Ecuadorian migrants, since among the latter there is a more extensive tradition of women being employed in the service and care sectors). However, among those immigrant women who have a significant presence in the workplace, the combination of gender and ethnic segregation in the labour market also helps to rigidly keep them in an ethnic occupational niche with a weaker relational dimension, where the capacity to meet hosts is more limited.

In short, the results show that the process by which migration networks, migration plans and spheres of sociability affect the development of personal networks is influenced by the position of individuals in a specific context shaped by their position in the axis of inequality, mainly due to gender differences, which intersect with the ethnic origin and the occupational status.

5 Conclusions

This paper advocates that the use of mixed methods can help to broaden the scope of social network analysis. Both at the theoretical and the empirical stance, this paper has shown that a mixed methods methodology allows the challenge of covering and accounting for complex and multidimensional objects to be met. The paper has presented a piece of research aimed at explaining migrants' social integration processes, showing the need for a mixed methods research design in order to answer in this case "how" and "why" the networks of female and male immigrants tend to follow different paths, i.e., in order to explain the process that leads to the development of certain relational structures.

The research study illustrates the depth and explanatory strength of a methodology that combines the algebraic and formalised reasoning of analysis of personal networks with inductive and situated reasoning of analysis of its interpretation by the individuals. As Mason (2006) points out, this methodological approach allows the intersection between different dimensions of social phenomena to be explained, such as, in SNA, the structure, the composition and change of networks with the meanings the actors grant to the relationships, the plans that foster the interaction, and their embeddedness within institutionally moderated sociability spheres or contexts.

In order to articulate these different dimensions of the object of study, the "strong integration" of quantitative and qualitative methodologies was required. "Strong integration" is the name we have given to the methodological combination that includes both the classical tradition of SNA, on the one hand, and the contributions of the qualitative tradition of social sciences and the culturalist school of SNA, on the other. Thus, it abandons the purely realist premises of the former in order to integrate the interpretative tradition of the latter. It is a methodological approach that overcomes 'paradigmatic purism' (Pardo 2011) in order to use elements of the set of ontological, epistemological and methodological defining traits of every tradition. In this process, qualitative methods come to share the centrality with quantitative methods in order to complement the study of matrix structures with a comprehensive approach of the actors' narratives.

The bottom line, though, goes beyond the mere combination of methods. Beyond solving dichotomies such as quantitative/qualitative, structure/agency, etc., on the adequacy of the strategies and techniques used to answer research questions, a multistrategic approach is anchored on a view of social phenomena as a layered but irreducible and indivisible unit (Layder 1993).

In the field of social network analysis there is still a long way to run for developing and consolidating a comprehensive view of social networks. On the one hand, mixed methods research needs to overcome the concerns raised by issues such as commensurability and specialization (see Small 2011). On the other hand, mixed methods have to break with the inertia of consolidated practices in intellectual traditions established de facto in invisible colleges, which do not need "the other" in order to achieve or to maintain scientific legitimacy. Along this way, the scientific community should have no fear of blurring the hallmark or distinctive feature of SNA. The combination of multiple methodological

approaches and the use of hybrid methodologies, addressing networks and networked/networking actors from both the relational and attribute-based perspective, and articulated at the micro, meso and macro social levels, will only enrich the discipline.

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Appendix: Original transcript data of the quotes displayed

Quotes from the case of Sofía:

[Comentando la visualización de su red] Esta red está colocada en Ecuador (...). Si más que todo los principales; Paulina en España, Francisco en España, Cristian en Ecuador, [señalando diferentes nodos de la red] en Ecuador (silencio) en Ecuador (silencio) en Ecuador (silencio) casi la mayoría... en Ecuador mi hermana, mi cuñado y así, bueno.

Por el Facebook es que yo me contacto con mis amigos de allí, por ejemplo les mando fotos, ellos también a mí. E ¿Y con la familia? ¿Tus hermanos...? 1: Con mis hermanos eh, primordialmente claro, (silencio) con ellos más porque claro al ser así yo les envió fotos, ellos también a mí. Eeh, en el correo también, es un medio bastante importante el Facebook, es una red social bastante importante. E: Ajá. Y así sabes que es lo que están haciendo... 1 Que es lo que están haciendo, que, o sea como están actualmente porque las fotografías es lo que tú le ves le dices "mira como está ahora, con el pelo así", que... con bueno, es que se sabe de todo porque las fotos es el fiel reflejo de las personas. E Sí. 1 Te ves a ver si ha adelgazado, cómo está, (risas) eso es lo fundamental.

Bueno yo me iba donde la Gent Gran a hacer acompañamientos, me iba yo me conocí con las amistades de la Gent Grant, de los abuelitos y pues una vez me, en un cursillo que hubo para la memoria en el taller de la memoria para personas de gente gran... E Sí. 1 Gente gran que están, fui y yo me hice amigos ahí. (...) Y ahí hice un círculo de amistades con las señoras. Yo le ayudaba por ejemplo a pasarles las hojas para que ellas hagan esos ejercicios.

Quotes from the case of Eduardo:

Aquí vine a trabajar en una empresa de construcción

Cuando vine aquí, verás. Cuando vine aquí con mi hija, no salía. Llegaba a la casa. Cuando fui a [trabajar a] las máquinas, a esa empresa, me tocó con una española, que era encargada de las máquinas. Nos hicimos bien amigos, ella pásame, tío, me decía, te voy a ver el viernes. Me venía a ver aquí a Balaguer, y me empezó a llevar a los pubs. Y de ahí nos hicimos amigos de uno, amigos de otro y así, y en la empresa que un chofer, que el maquinista, que... que el maquinista de Alcarràs, maquinistas de todos lados, eh? Entonces he llegado a la ciudad me metí en bastante. El mundo de las máquinas.

Entrevistadora: y los otros ecuatorianos que usted conoce, también tienen conocidos catalanes o la mayoría conocen sólo ecuatorianos? Eduardo: no, si... aquí te relacionas con todo. No puedes estar aquí... por ejemplo en Ecuador es distinto, porqué al final tu tienes... allá son solo Ecuatorianos. Aquí como estás tu, encuentras a gente de todo el mundo. Gente catalana, gente moro, gente rumano... de todo... y te tienes que relacionar con todos. Y saber llevar a la gente nomás. Entonces, si te aíslas, es feo. En el trabajo, tienes que hablar con uno, con otro... aquí es otro, otra cosa.

Ellos se conocen todos porqué todos trabajan en la misma empresa, entonces... hay veces, se invitan... como nosotros, se invitan a un lado, que te invitan a cenar... E ¿os veis fuera del trabajo también? I si, también, si. E Tu, ahora que ya no trabajas ahí, todavía les ves? I si, claro. Siempre los apoyo. (...) nos hablamos siempre. Siempre nos llamamos...

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