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SOCIAL NETWORKS AND TRANSNATIONAL SOCIAL FIELDS: A REVIEW OF QUANTITATIVE AND MIXED-METHODS APPROACHES

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Abstract

Scholars of transnationalism have argued that migrants create transnational social fields or spaces that connect their place of origin to destination areas. Despite the centrality that social networks have in the definition of these concepts, quantitative and mixed-methods social network research is rare in research on transnationalism. This situation, however, has changed over the last decade, and the transnational social networks of migrants have been studied with multiple methodologies. So far, this literature has not been systematically evaluated. With the aim of taking stock of this research, we classify the literature into four types of approaches (individual, household, dyad/small set, and community) and review their distinct contributions regarding the functioning of immigrants' transnational networks, as well as the relative strengths and limitations of each approach. On the basis of our analysis, we discuss pathways for future investigation.

Keywords: Transnationalism, transnational social field, social networks

1. Introduction

Migration scholars (Glick Schiller 2005; Guarnizo 1997; Vertovec 1999; Wimmer and Glick Schiller 2002) have argued persuasively against "methodological nationalism," the tendency to take the nation-state as the natural setting in which to conceptualize and investigate social phenomena. The case against methodological nationalism begins from the premise that international migration is by definition *transnational* and that the lived realities of international

migrants can only be fully understood through studies that transcend national boundaries. A transnational perspective, in contrast to methodological nationalism, emphasizes how participation in multiple places gives migrants a dual frame of reference (Guarnizo 1997), or *bifocality* (Rouse 1992), that is, a constant awareness of and responsiveness to events occurring in multiple places (where they have been and are) and the ability to interpret those events using different cultural models.

The growing popularity of a transnational perspective has led to an increasing number of studies about migrants' transnational practices (e.g., Levitt and Jaworsky 2007; Faist 2012; Vertovec 1999). Early transnationalism scholarship focused particularly on so-called *transmigrants* that regularly engaged in cross-border activities (Glick Schiller, Basch, and Blanc-Szanton 1992; Guarnizo et al. 2003), but more recent scholarship casts a wider net around "the pervasive nature of the everyday cross-border activities entailed in travel, communication and remittance-sending" (Soehl and Waldinger 2010, 1490). Nowadays, scholars acknowledge that migrants *and non-migrants* are located on a continuum of *transnationality* by dint of their engagement in cross-border activities and relationships (Faist, Fauser, and Reisenauer 2013). The recognition of a continuum of transnationality has led to increasing calls for research that works to identify the *social structures* in which such transnational activities take place (Levitt and Jaworsky 2007).

To identify transnational social structures, scholars have proposed several related concepts, most prominent of which is the idea of a *transnational social field* (hereafter TSF). Drawing on Barnes's (1954) and Bourdieu's (1977) classic definitions of social fields, a transnational social field is defined as

> an unbounded terrain of interlocking *egocentric networks* [italics added] that extends across the borders of two or more nation-states and that incorporates its participants in the day-to-day activities of social reproduction in these various locations. (Fouron and Glick Schiller 2001, 544)

Transnational social fields and related concepts that define space socially (see Section 3), rather than geographically, allow scholars to move away from methodological nationalism by examining transnational processes unfolding in social networks rather than ones circumscribed within national boundaries. Put simply, TSFs offer a framework for understanding transnationality as embedded in social relationships (Levitt and Glick Schiller 2004).

Although social networks are central to the concept of a TSF, research into transnationalism was initially disconnected from the social networks literature (Krissmann

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2005; Herz and Olivier 2012; Vertovec 2001). Qualitative research based on interviews (e.g., Glick Schiller and Fouron 1999) and multi-sited (e.g., Marcus 1995; Hannerz 2003; Fog Olwig 2007) and mobile ethnography (e.g., Schapendonk 2015; Tarrius 2002) has analyzed the narratives individuals use to describe local and/or transnational relationships. Such narratives, however, tend to disregard the size and structure of transnational networks (e.g., Ryan, Mulholland, and Agoston 2014), which often can only be captured with quantitative approaches (Barglowski, Amelina, and Bilecen 2015).

In recent years, the volume of research on transnationalism using quantitative and mixed-methods approaches that rely on the tools of *social network analysis* (e.g., Wasserman and Faust 1994) has grown rapidly (Bilecen, Gamper, and Lubbers 2018). This research systematically collects, analyzes, and visualizes data about migrants' interpersonal relationships and aggregates them into social networks. With these data, researchers can probe relational issues and produce detailed knowledge of network characteristics that cannot be gained otherwise (McCarty et al. 2007; Ryan 2016; Mazzucato, Dankyi, and Poeze 2017; Ryan, Mulholland, and Agoston 2014). The use of social network analysis complements other approaches in studies of transnationalism and has spawned new theoretical interest in the relational, instead of distributional (c.f., Bruch 2017), elements of transnationality (Barglowski, Amelina, and Bilecen 2015).

To date, the growing literature using quantitative and mixed-methods network approaches to migrant transnationalism has not been systematically reviewed. Such a review is important, however, to clarify the distinct methodologies, contributions, strengths, and limitations of the different approaches in use. This article classifies this literature into four network-based approaches on the basis of primary analytic focus: individuals, households, dyads/small sets, and communities. To develop this typology, our article is structured as follows. Section 2 introduces social network analysis. Section 3 links the tools of social network analysis to the concept of TSFs and highlights the network elements in the theory that need to be accounted for in methodological designs. Section 4 presents the four quantitative and mixed-methods approaches to social network studies of migrant transnationalism identified in the literature, reviewing key methodological features and substantive results obtained with each. Section 5 compares the approaches and evaluates their fidelity to the theoretical concept of TSFs. Finally, on the basis of this review, Section 6 suggests pathways for future research.

2. Social Network Analysis

Social network analysis is "especially well-suited to describe patterns of interactions in open social fields" (Wimmer 2004, 5). Networks are typically represented as a set of actors (*nodes*) and the relationships or ties between them (*edges*). Most approaches to migrants' social networks measure *egocentric* or *personal network*s, which are defined as the set of social relationships surrounding a focal individual (*ego*) embedded in different formal and informal contexts (family, neighborhood, workplace, school, etc.) (c.f., Marsden 1990). In theory, personal networks can involve anyone a person knows, including both so-called *strong* (intimate) and *weak* (superficial) ties (Granovetter 1973). Strong ties are thought to be essential for the provision of social support (Kahn and Antonucci 1980), whereas weak ties are important sources of information about topics like job opportunities or housing (Granovetter 1973). A person's strong ties tend to form dense structures, facilitating the mobilization of support (Wellman and Wortley 1990), greater social control, and a certain redundancy of information. Weak ties, in contrast, tend to have fewer relations to a person's other ties and to connect persons to groups of people beyond their core network, potentially introducing more novel information (Granovetter 1973).

To quantify personal networks, researchers typically use *name generators*, a (set of) question(s) designed to elicit nominations of people ("alters") that satisfy certain relationship condition(s) (e.g., Perry, Pescosolido, and Borgatti 2018). The most famous example of a name generator is the General Social Survey's "important matters" item, which asks respondents: "Looking back over the last six months - who are the people with whom you discussed matters important to you?" (c.f., Burt 1984). The relationships queried are often based on emotional closeness (e.g., "please name the people you feel close with"), roles ("name your family members"), exchanges of social support ("from whom could you borrow a large sum of money?"), or interactions ("who do you frequently speak to on the phone?"). Alternate approaches to name generators, such as the *position generator* that asks about ties to people with different occupations of varying prestige (Lin and Dumin 1986), come from the literature on *social capital* (Lin 2001) and often elicit weaker ties than do name generators. With either approach, it is not uncommon to require a minimum or disallow more than a maximum number of nominations (c.f., McCarty 2002). After eliciting alters, respondents then answer questions about alter attributes (e.g., sex, nationality, place of residence) and/or relationship features (e.g., emotional closeness, duration, exchanged resources) that reveal network composition. In addition, some researchers ask respondents to report on alters' relationships with one another.

The measured personal networks are bounded by the definition of a "social relationship" that a researcher uses. Some relationships, such as "knowing by name or sight," can yield

reported ties to hundreds of people with diverse backgrounds, whereas a focus on more intimate relationships garners responses about only a handful of people, most of whom tend to be similar to the respondent and connected to one another (McPherson, Smith-Lovin, and Cook 2001). Consequently, personal networks are not always comparable in size, composition, or structure across studies using different definitions of relationships.

3. Social networks in the concept of transnational social fields

We now return to the concept of TSFs to explore its relationship to social network analysis. As indicated in the introduction, *social fields* are defined as "multiple interlocking egocentric networks" (Levitt and Glick Schiller 2004, 1009) where egocentric networks comprise "chains of social relationships specific to each person" (Glick Schiller and Fouron 1999, 344). Social fields have fluid geographical boundaries and are transnational when the actors constituting a field reside in two or more nation-states. A similar concept is that of *transnational social spaces*, defined as

> combinations of social and symbolic ties, positions in networks and organizations, and networks of organizations that can be found in at least two geographically and internationally distinct places. (Faist 1998, 216)

Other related concepts are *transnational migrant circuits* (Rouse 1992) and *transnational social formations* (Guarnizo 1997; Vertovec 2001). This article draws directly on the concept of TSFs, rather than these other concepts, because TSFs more explicitly define space socially (rather than symbolically), which affords natural linkages to the theory and methods of social network analysis (Levitt and Jaworsky 2007). The concept of transnational social spaces is, for example, closer to Actor Network Theory, as it incorporates "human, non-human, symbolic and discursive elements" (Vertovec 2001, 25).

To identify the relevant networks for TSFs, it is necessary to clarify who are members of the TSF (the *nodes* in networks terms) and what constitutes a social relationship (*edges*). Questions of temporal delineation (*time*) and contextual setting (*context*) are also important. We anchor our discussion around these four elements because they serve as points of reference for evaluating the fidelity of network-based approaches to the theoretical concept of TSFs, an evaluation we provide in Sections 4 and 5.

With regard to *nodes*, Glick Schiller and Fouron (1999) put individuals at the center of a TSF because studies of transnationalism investigate migrants' daily lives. Many types of individuals are relevant because a TSF will "encompass immigrants, persons born in the country

of origin who never migrated, and persons born in the country of settlement of many different ethnic backgrounds" (Glick Schiller and Fouron 1999, 344). Implicit in this definition is an *a priori* selection of a focal group of migrants on the basis of a flow between a geographically defined origin and place(s) of destination. In practice, return migrants and non-migrants in origin and destination(s) are often only indirectly included if they are connected to migrants by a relevant social relationship (see below). Although acknowledging TSFs as centered on individuals, scholars also recognize the role of formal and informal entities in TSFs (e.g., Levitt and Glick Schiller 2004), such as voluntary associations or religious communities, because such entities can contribute to or hinder migrants' resource mobilization and social participation. In social networks terms, TSFs are "multi-level" (c.f., Lazega and Snijders 2016) because they contain nodes with at least two levels of agency (individuals and entities) and intra- and inter-level ties (e.g., interpersonal ties and ties between individuals and entities).

With regard to *edges*, Glick Schiller and Fouron (1999, 344) proposed to focus on "human interaction and situations of personal social relationships" and to include both formal and informal, horizontal and vertical, relationships. Others have emphasized the roles of strong and weak ties in the migration process (Ryan 2016) and the often-neglected roles of employers, smugglers, and others who are not family or friends (Krissmann 2005). Apart from these general considerations about roles, however, the transnationalism literature does not specify what specific *relationships* to focus on. This is problematic for a social network approach because failure to include relevant relationships will constrain membership in the TSF (i.e., non-migrants are typically only included in a TSF on the basis of their relationships to migrants) and because network structures tend to vary by type of relationship studied (i.e., kinship is structurally distinct from friendship). In practice, researchers have studied a variety of relationships, focusing on friends and family, "people you know," or people tied by resource exchanges (see Section 4). However, defining ties on the basis of exchanging resources (or other items like information) runs the risk of conflating social structure with its effects on outcomes, which Guarnizo and Smith (1998) have argued is a common transgression of transnationalism scholarship. Therefore, Mouw et al. (2014, 6) suggest to differentiate between:

> the structure of the field itself, composed of the intertwined social networks of the members of the transnational community, and what flows through or is expressed in the field — the ideas, cultural practices, social norms, and economic remittances.

In light of these concerns, some scholars measure relationships both structurally and as conduits

for flows (e.g., Kornienko et al., 2018).

Time is another important dimension in defining TSFs. As Levitt and Glick Schiller (2004, 1012-13) argue,

> Transnational migration is a process rather than an event. Transnational practices ebb and flow in response to particular incidents or crises. A one-time snap shot misses the many ways in which migrants periodically engage with their home countries.

These authors refer to transnational practices, but the networks themselves are also in constant flux, both affecting and affected by migration decisions, trajectories, and outcomes (Bilecen, Gamper, and Lubbers 2018). Relationships are created, strengthened, weakened, dissolved, and reactivated and change in complex and interactive ways (Ryan and D'Angelo 2018). As an aggregated result, networks change over time in community size and composition, geographical dispersion, density, fragmentation, and/or social inequality (e.g., Lubbers et al. 2010), revealing the functioning of TSFs. Ignoring this inherent dynamism is a form of network determinism (Schapendonk 2015). Unfortunately, the transnationalism literature gives little guidance on how to account for time when studying TSFs.

Last, *context* is critical to defining the relevant networks for TSFs. Although social networks can be conceived as "infrastructure" for a TSF (Krzyżanowski 2016), a focus on networks should not ignore their embeddedness within (multiple) legal, cultural, economic, and political frameworks. As Dahinden (2017, 1481) argues:

> the endeavour to "measure" transnationalism… runs the risk of essentializing social processes (like transnationalisation) by severing them from broader social dynamics, historical trajectories, specific multi-scalar historical conjunctures and concomitant power relations.

To capture the intersection of TSFs and these contextual elements, scholars can, for example, turn to the concept of migrants' *mode of emplacement* (Glick Schiller and Çağlar 2013), which describes migrants' multi-scalar and dynamic engagement with regional, national, and global phenomena. Scholars can also contextualize networks with qualitative or quantitative data. Such contextual data can help interpret social networks and their functions for transnational lives.

4. A classification of network approaches to transnationalism

Having identified the relevant network elements in TSFs, we now present our classification of quantitative and mixed-methods networks approaches to migrants' transnationality in TSFs. To construct the classification, we performed a review of the literature published in English and indexed in the Web of Science about social networks and migrant transnationalism. Other migration studies were added if the study contributed information about migrants' transnational social relationships. From this literature, we selected empirical works adopting a quantitative or mixed-methods social networks approach.

We classified studies based on their primary analytical focus: individuals, households, dyads/small sets, and communities (although many studies have secondary foci at different levels of analysis). As we review, differences in primary analytical focus lead to differences in approaches to measurement, including practical decisions, sampling, and the temporality of the research design. We started with the simplest focus, individuals, which uses personal networks approaches. We then moved to more aggregate foci measured with more demanding approaches, such as household surveys, simultaneous matched samples methodologies, or binational link-tracing designs.

Individuals: The personal network approach

With a focus on individuals, the personal network approach builds on Glick Schiller and Fouron's definition of TSFs (1999) by analyzing the personal networks of a sample of individuals in the TSF (Molina et al. 2015). A key measure in this approach is *network transnationalism* (Dahinden 2009), which tallies the proportion of transnational ties in individuals' networks to quantify embeddedness in transnational social relations. To measure network transnationalism, respondents are asked a name generator that solicits nominations of alters irrespective of where those alters reside (i.e., place of residence or origin). Subsequently, respondents report about each alter's attributes, including location. Location is commonly measured using categorical variables (e.g., name of place and country; Dahinden 2005), but measures of network spatial dispersion can also be calculated with geolocation techniques (Viry et al. 2017; Molina, Petermann, and Herz 2015). Additional questions about each alter's attributes, characteristics of each ego-alter relationship, and whether each alter knows each other alter are also able to quantify different aspects of transnationality, such as frequency of communication with transnational alters (e.g., Dahinden 2005).

-- Table 1 about here --

Studies focusing on individuals that adopt the personal networks approaches vary in the definition of the population and in the name generators they use. With regard to the population,

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such studies usually concentrate on immigrants from a selected origin country residing in a selected destination (see Table 1), although some focus on return migrants (Fazito and Soares 2015) or include "natives" of the destination country (Dahinden 2009; Viry et al. 2017; Andersson, Edling, and Rydgren 2018). Some investigate specific migrant flows from a single origin to a single destination (e.g., Bojarczuk and Mühlau 2017; Herz 2015; Hosnedlová 2017; Lubbers et al. 2010), while others compare multiple flows to or from the same country (e.g. Bilecen and Sienkiewicz 2015; Cachia and Maya Jariego 2018; Kornienko et al. 2018; Vacca et al. 2018). Some rely on random samples (e.g., Dahinden 2009), but unavailable sampling frames typically necessitate using non-probability samples (e.g., Kornienko et al. 2018). If researchers use snowball sampling techniques, they usually do not keep track of the precise reference chains, in contrast to the other three approaches (although see Kornienko et al. 2018).

With regard to the name generators used (see Table 1), some studies enquire about people with whom the respondent has contact (e.g., Wimmer 2004; Lubbers et al. 2010) or is friends (e.g., Bilecen and Faist 2015), others about specific supportive exchanges (e.g., Cachia and Maya Jariego 2018; Dahinden 2005). Name generators that elicit individuals' most intimate or supportive relationships (Herz 2015; Kornienko et al. 2018; Viry et al. 2017) are valuable for understanding the core network's transnational dimensions but may misrepresent levels of network transnationality in broader circles, which typically also contain weaker ties and vertical power relationships. Several approaches have been used to get at a broader range of relationships that extend beyond the core network. One study used a position generator to measure weaker ties (Andersson, Edling, and Rydgren 2018), while others fix requested network size to a high number (e.g., "please tell me about 45 people"; e.g., Bojarczuk and Mühlau 2018; Bolíbar, Martí, and Verd 2015; Cachia and Maya Jariego 2018; Hosnedlová 2017; Vacca et al. 2018; Fazito and Soares 2015). Other methodological aspects in which these individual-focused studies vary are the temporality of the research design, which is usually cross-sectional but sometimes longitudinal (Lubbers et al. 2010; Hosnedlová 2017), and the weight that qualitative methods have in the design. Semi-structured questions are often embedded in personal network studies to understand the meaning of relationships or contextualize networks (Bilecen 2016).

Studies of individuals using personal network approaches have led to several insights about migrant transnationality. First, such work has shown that migrants tend to maintain relatively high numbers of cross-border relationships, irrespective of time of residence. On average, roughly one third of relationships that migrants report are cross-border in both core (Herz 2015; Kornienko et al. 2018; Bilecen and Sienkiewicz 2015; Bilecen and Faist 2015) and

extended networks (Bojarczuk and Mühlau 2018; Bolíbar, Martí, and Verd 2015; Cachia and Maya Jariego 2018; Lubbers et al. 2010; Vacca et al. 2018). Despite this consistency, the considerable heterogeneity between individuals and between migrant flows in the number of cross-border relationships (e.g., Bilecen and Sienkiewicz 2015; Vacca et al. 2018; Cachia and Maya Jariego 2018) suggests that individual and contextual features (e.g., legal status, access to the local labor market, proximity of the origin country) affect network transnationality.

Second, this research finds that migrants' cross-border contacts are typically strongly connected to one another but that migrants vary in the ways their local and cross-border contacts are connected. Some are truly part of a TSF, with many alter-alter relationships spanning the two places, whereas for others, local and cross-border relationships are disconnected (Vacca et al. 2018). Third, studies of individuals using personal network approaches have clarified the function of transnational ties within migrant networks. In general, transnational ties offer ongoing social support but cannot be mobilized easily during emergencies, which is when weak ties to local contacts are rallied (Bojarczuk and Mühlau 2018). Fourth, longitudinal studies have shown how network transnationality changes over time. The percentage of cross-border relationships fluctuates due to life events, traveling, or cyclically (Lubbers et al. 2010; Hosnedlová 2017), and these fluctuations seem to be associated with senses of belonging and remigration decisions-making (Hosnedlová 2017). Together, these results increase our understanding of individual transnationality.

Households: (Binational) household surveys
The second quantitative and mixed-methods approach to measuring TSFs focuses not on individuals but on households using household surveys. This approach mostly captures within-household relations but also addresses ties between the household and migrants of the same origin country residing abroad. Although household surveys are often cross-sectional, they frequently obtain temporal information, particularly about household members' migration histories, retrospectively via biographical questionnaires or event grids (e.g, Massey 1987; Beauchemin and González-Ferrer 2011). Furthermore, contextual databases have been constructed to collect macro- and community-level indicators, such as agricultural land availability in an origin village (e.g., Beauchemin et al. 2014). Studies that combine this information with the network data collected on current and former household members can make valuable contributions to the study of TSFs.

In contrast to the individual-focused, personal networks approach, sampling in the household survey approach is usually based in the origin countries (e.g., Massey 1987),

although some investigations use informal snowballing techniques to track migrants in different destinations in a second stage of research (e.g., Beauchemin and González-Ferrer 2011). Following migrants in destination(s) leads to binational or multinational samples, which is why we refer to this approach as (binational) household surveys. Various large-scale projects adopt the (binational) household survey approach and start in origin countries, such as the *Mexican Migration Project* (MMP; e.g., Massey, Goldring, and Durand 1994), the *Latin American Migration Project* (LAMP; e.g., Amuedo-Dorantes, Georges, and Pozo 2010; Davis 2011), and the *Migrations between Africa and Europe Project* (MAFE; e.g. Beauchemin 2015; Beauchemin and González-Ferrer 2011; see Liu et al. 2016 for an overview of migrant household surveys). For instance, the *Mexican Migration Project* (MMP) [1] uses the "ethnosurvey" (Massey 1987), which combines qualitative and quantitative techniques to gather information. It starts with households selected in Mexican origin communities and then surveys a few households of migrants from each origin community living in the United States. The *Latin American Migration Project*[2] has a similar design. The *Migrations between Africa to Europe* (MAFE) project[3] (Beauchemin 2015; Beauchemin and González-Ferrer 2011) is also similar, but it focuses on multiple origin (Senegal, Congo, and Ghana) and destination countries (France, Spain, Italy, Belgium, the UK, and the Netherlands). Still other studies using this approach have relied on nationally representative household surveys in origin societies, such as the survey *Effects of Migration on Children and the Elderly Left Behind in Moldova and Georgia* (CELB-MDA), that contain information about the migration histories of all household members and can be used to study aspects of TSFs (Vanore, Mazzucato, and Siegel 2015).

In the (binational) household survey approach, network data are collected on coresident household members and usually also on non-coresident family and former household members living in destination countries (and sometimes in the origin country as well). For instance, the MMP asks respondents to list information about household members and up to 20 children who no longer live in the household, regardless of location. It also asks about the counts and characteristics of other family members and friends with migratory experience in the United States. As in the MMP, MAFE collects network data on all household members, as well as on other relatives of the household head or his/her spouse who live abroad and remain in contact. Among others, information of these persons' sociodemographic attributes, migration histories, and social support is collected.

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[1] http://mmp.opr.princeton.edu/
[2] http://lamp.opr.princeton.edu/
[3] http://mafeproject.site.ined.fr/

Studies that use (binational) household surveys have led to better understandings of the operation of TSFs in facilitating migration. First, they have broadly confirmed that social networks factor into migration decisions (e.g., Baizán and González-Ferrer 2016; Toma 2016; Garip and Asad 2016; Côté et al. 2015). For example, Garip and Asad (2016) combined analysis of MMP data with qualitative interviews to understand the relative importance of various causal mechanisms of network effects, finding that social facilitation, normative influence, and network externalities mattered in different degrees for different types of migrants. Second, this research shows that network effects tend to vary with individual attributes such as gender (Curran and Rivero-Fuentes 2003; Toma and Vause 2014; Côté et al. 2015; Toma 2016), age, and education level (Garip and Asad, 2016). Third, household surveys demonstrate that the role of networks in migration is sensitive to macro-level contextual differences (Côté et al. 2015; Toma 2016). For instance, Toma and Vause (2014) found that the migration probabilities of Senegalese, but not Congolese, women were influenced by the migration of close family members, a feature they attributed to contextual variation in the strength of patriarchal norms (stronger in Senegal than in the Congo), while men's migration probabilities were influenced by the migration of more weakly tied contacts. To summarize, (binational) household surveys are particularly valuable for understanding migration decisions and transnational practices from the point of view of origin countries, especially in the context of close network ties.

Dyads/small sets: The simultaneous matched samples methodology

The third quantitative and mixed-methods approach to studying TSFs focuses on dyads/small sets of actors. It adopts the simultaneous matched samples methodology, which Mazzucato (2009) developed to capture transnational social relationships between migrants and people in their origin community from a multi-actor perspective. The simultaneous matched samples approach is a fully integrated mixed-methods design (Bilecen 2016), combining participant observation, interviews, and survey questionnaires that record monthly exchanges of money, goods, information, and services between network members. Timing also plays an important role in this approach, as we review below, both because research is conducted in multiple sites simultaneously and because it uses an expressly longitudinal design wherein interviewers visit respondents multiple times. These features make this approach especially useful for studying the concept of *simultaneity* (Mazzucato 2008a), the idea that actions occurring in geographically distinct areas of the TSF are not isolated but coordinated.

The simultaneous matched samples methodology starts by interviewing migrants from a specific origin place who are currently living in a specific place of residence, much like the

personal networks approach described above. However, the simultaneous matched samples methodology goes beyond what is done in the individual-focused, personal networks approach by also soliciting the participation of one or more network members per primary respondent living in the origin country. This approach is similar to the collection of data from nominated alters in multi-sited versions of the (binational) household survey approach, except that it occurs in the reverse direction (secondary participants are in the origin, not the destination). Interviews are conducted simultaneously in both sites as the survey grows.

The network data collected in the simultaneous matched samples methodology are rich, informed by quantitative measurements, participant observation, and interviews. On the quantitative side, it is typical to use multiple name generators (Mazzucato (2009) used 16) that elicit information about different types of ties (communication, the exchange of emotional or material support, etc.). Primary and secondary respondents are encouraged to name as many alters as fit each name generator. Reports of ties between nominated alters are not typically solicited from respondents, although the existence of such ties can be observed during participant observation or from the ties nominated by secondary respondents. Network data collected with the simultaneous matched samples methodology are used in ways that differ substantially from the first two approaches. After the interviews, the network data of the linked individuals are combined into *transnational network sets*, where each set contains the primary and secondary respondents and their (shared and non-shared) alters, who are all linked by different types of reported relationships. Such sets are then used as the unit of analysis. In social network terminology, networks of two related individuals (e.g., husband and wife) are referred to as duo-centered (Coromina et al. 2008; Kennedy et al. 2015).

The simultaneous matched samples methodology allows researchers to investigate simultaneity (Mazzucato 2008a). In doing so, it has highlighted how migrants are "doubly engaged" in the economies of both sending and receiving countries (Mazzucato 2008b), with their actions affecting both (Mazzucato and Kabki 2009). It has also revealed the bidirectional and transitive nature of remittances, other exchanges, and obligations, which flow not only from migrants to their origin country but also in reverse, as origin-country network members invest considerable time in fostering migrants' children, supervising housing construction, and lending other services (Mazzucato 2011). Studies using the simultaneous matched samples methodology have also illustrated the nature of transnational caregiving. For instance, a study of transnational child-raising arrangements found that numerous formal and informal

arrangements underpin transnational "kin work" (Mazzucato, Dankyi, and Poeze 2017)[4] and that migrated parents, children and caregivers often diverge in their perceptions of such arrangements (Poeze, Dankyi, and Mazzucato 2017).

The simultaneous matched samples methodology is time and labor intensive. It requires coordinated teams to collect data, and sample sizes are typically small. For instance, the *Ghana TransNet* research program[5] (Mazzucato 2009), surveyed 115 respondents in Amsterdam and Ghana who were embedded in 33 transnational network sets. The depth of information obtained from this methodology's mixed-methods approach, however, is an advantage over the more limited measures collected in the other approaches we review.

Communities: Binational link-tracing design

The last approach we identify focuses on communities and uses a binational link-tracing design*,* pioneered by Mouw et al. (2014). This approach is ideally suited for constructing partial representations of the whole TSF and is achieved by linking respondents together, as described below. The link-traced sample (Mouw and Verdery 2012; Merli et al. 2016), drawn within a small, well-connected, and well-researched migrant community, guarantees that respondents ultimately form part of a single larger network.

This sequentially multi-sited method starts with a small number of "seeds" in a well-connected migrant community. During interviews, respondents are asked to list a number of family members, friends, and acquaintances in their community of residence, as well as in their origin community, using name generators specific to different locations and types of alters (non-migrants in the origin, return migrants in the origin, individuals in destination). If they consent, a selection of their alters in the community of *residence* is also approached for interviews so that the sample grows gradually through chain referrals. From these interviews in the community of residence, a number of alters who live in the origin community are sampled, and in a second stage, the research moves to the origin community itself, where sampled alters are also asked to list friends and family members in the community in which they live, as well as in the focal migrant community. This technique was used in the 2010 *Network Survey of Immigration and Transnationalism* (NSIT), which surveyed approximately 600 members of a migrant community that spanned three regions: the Raleigh-Durham-Chapel Hill area of North Carolina; Houston, Texas; and Guanajuato, Mexico (Verdery et al. 2018; Mouw et al. 2014).

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[4] http://fasos-research.nl/tcra/home_nieuw/

[5] http://www.ghanatransnet.org/index.html

Starting from 17 "seed" migrants with diverse backgrounds in the two US sites, the researchers used a link-tracing approach to recruit approximately 200 other migrants from the same Mexican town living in Houston or North Carolina. In the second stage, they used respondent referrals to sample residents of the origin community in Mexico, ultimately recruiting approximately 400 there.

Respondents were asked to provide further information on their network members using a combination of household rosters and questions about alter attributes (e.g., sex, age, frequency of communication). Reports of ties between nominated alters were not solicited because this information was partly obtained by interconnecting the networks of all respondents. For each alter, respondents gave minimally identifying information (including the first four letters of the first and family names) used to uniquely identify alters nominated by different respondents, as well as nominations *between* sampled respondents, without reducing respondent compliance because of privacy concerns. In later projects, the authors successfully used an alternative approach drawing on the last four digits of nominees' phone numbers instead of name information (Merli et al. 2016). These data enabled the researchers to construct a partially observed network among all respondents and their alters.

Research using the binational link-tracing design has shown that migrants and non-migrants form a large transnational community, where the majority of individuals are connected via a giant component, elucidating the potential circulation of information and resources at the community level (Verdery et al. 2018). These authors also show how individual and network variables shape transnational communication flows. Furthermore, the TSF remained remarkably durable when taking into account years of residence. Mouw et al. (2014) show that TSFs are an important vehicle affecting opinions about emigration and assimilation, with suggestive evidence of peer effects and diffusion. These findings all highlight the binational link-tracing design's distinct strength: it allows researchers to investigate the operation of the TSF as a whole.

5. The four approaches compared

Differences

If we conceive of a TSF as a "network of networks" (Levitt and Glick Schiller 2004, 1009), which is probably too large to measure in its entirety, we can see that each approach discussed above samples differently from that theoretical entity. Table 2 summarizes the four approaches

and visualizes the structural differences between them.

-- Table 2 about here --

Personal networks measure focal respondents' immediate social environments, the "first-order zone" (Barnes 1969) within the larger TSF. Concentration on the first-order zone makes the personal network approach appropriate for examining the extent to which the *individual* environment is transnational and the effect of network transnationality on *individual outcomes* such as identities. As the place/country of residence of alters does not need to be defined *a priori*, variation in geographic network dispersion can also be studied. Furthermore, as the approach centers on individuals instead of communities, it avoids ethnic essentialization (Nowicka and Cieslik 2013; Faist 2012; Wimmer and Glick Schiller 2002). For these reasons, the personal networks approach complements the concept of *networked individualism* (Rainie and Wellman 2012)*,* which assumes that relationships are personal rather than group-defined in modern societies, and it is especially valuable for investigating the transnationality of persons with individualized migration trajectories, such as international students (e.g., Bilecen and Faist 2015).

Individual designs may be inappropriate, however, when focusing on outcomes for which the household is a focal actor as both "an economic unit and a unit of solidarity" (Faist 2006, 4), such as migration decisions and livelihood strategies. In those cases, household surveys tend to be used. Like personal network studies, household surveys also sample from the larger "network of networks," but their primary focus is kin and co-ethnic ties within and in close relation with households. Ties with people of other nationalities and non-kin in the countries of origin and residence are only partially captured by this methodology, which is a limitation. Transnationalism studies using (binational) household surveys have been especially useful for studying contextual variation and the moderating influences of personal or household attributes because they tend to recruit large samples across several communities, which permits analyses of subsets.

Both personal network studies and household surveys typically only collect data from one side of the relationship, usually cross-sectionally, so they are less able to examine transnational connectivity and processes. The simultaneous matched samples methodology, by contrast, centers upon small sets of linked respondents, with representation in both sending and receiving countries. The small, matched constellation is longitudinally studied within the context of all other reported supportive ties, increasing the ability to study micro-level transnational processes, such as dyadic transactions and simultaneity, from a multi-actor perspective. However, a challenge for all three methodologies –personal networks, household

surveys, and simultaneous matched samples– is that they do not track connections between primary respondents. In a sense, all three approaches provide a myopic view on the TSF that proscribes detecting and distinguishing key and peripheral actors. Although network data of a sample of respondents from a community can be aggregated without link-tracing (Molina et al. 2015), researchers must be cautious not to inadvertently aggregate unrelated social fields.

In contrast, the binational link-tracing design allows researchers to construct a whole network that integrates all informants and their contacts in the specified places of origin and residence. This design is therefore closest to the description of a TSF as "a network of networks" (Glick Schiller 2004, 442) and as "interlocking egocentric networks" (Glick Schiller and Fouron 1999). The method is particularly suitable for understanding a TSF's community level, such as its structural properties like density and connectedness, and the micro-level processes (type, flow, and intensity of interactions) that produce and sustain this overall structure. It allows for testing whether there is a single transnational community (instead of assuming there is), thereby avoiding the risk that we "reify and essentialize these communities in a similar way that previous approaches reified national communities" (Wimmer and Glick Schiller 2002, 324). It detects central and peripheral actors and subgroups in a TSF (c.f., hub-and-spokes model, Bashi 2007) and can be used to predict flows of communication or resources on the basis of individual, dyadic, or network characteristics. Last, it allows us to test whether network positions and indirectly connected individuals in the TSF (e.g., a friend of a friend) affect individual outcomes.

However, the binational link-tracing design also has limitations. First, obtaining contact information for link-tracing referrals is a slow, costly, and ethically complex process (Beauchemin and González-Ferrer 2011). Second, this approach relies on location-based inclusion criteria and does not gather information on compatriots who migrated to non-studied locations, which makes it better suited for studying established, network-driven migration streams than individualized migration trajectories. Furthermore, unless the field is small, the resulting data still represent a sample of the total field (Mouw and Verdery 2012; Verdery et al. 2018; Merli et al. 2016). Recent developments in the inference of whole networks on the basis of network samples (Smith 2012; Verdery et al. 2017) may be useful for obtaining a more complete view of a TSF.

In sum, the four approaches sample differently from the TSF, making them appropriate for different levels of analysis. An individual approach may suffice for studying individual levels of network transnationality and their consequences; a household approach is more appropriate if the study wishes to focus on outcomes that go beyond individual decision-

making; a dyadic/small sets approach is best for investigating transactions or simultaneity; and a community approach is needed for investigating the structural or functional properties of the overall TSF. There are also practical differences. Personal networks studies can be performed in a single location and even by a single researcher (c.f., Herz and Olivier 2012). In contrast, the multi-sited and/or longitudinal designs of the other approaches are more complex and demanding, in terms of budget, personnel, travel time, and team coordination.

Commonalities

The studies reviewed in this article also have commonalities. First, all the studies center on migrants' interpersonal ties. There are two primary limitations to this emphasis. First, it is remarkable that none of the approaches (but see Bojarczuk and Mühlau 2018) measure institutions or other corporate actors, even though theories view them as complementary agents in TSFs. Second, the emphasis on existing, positive, informal, and durable interpersonal ties neglects relationships that are absent, negative, formal, and/or transitory (c.f., Mazzucato, Dankyi, and Poeze 2017). These latter relationships can affect migrants' decisions and outcomes (e.g., Menjívar 2000; Gladkova and Mazzucato 2017; Hosnedlová 2017); thus, future research should find ways to include them.

To compensate for such limitations (see Section 4) and to flesh out and contextualize the quantitative measures, most investigations incorporate *qualitative* investigation (Schapendonk 2015; Sommer and Gamper 2018; Ryan 2016; Richter and Nollert 2014). This is another commonality of the reviewed literature. Ethnographic fieldwork is often used in a preliminary stage to explore the field and its levels and sites of sociality, to detect and select study participants, or to gain trust. Gaining trust is especially important when working with vulnerable populations (as many migrant populations are) and for obtaining consent to contact respondents' family and friends. Furthermore, qualitative components are often embedded in the research to interpret the meaning of relationships, capture their dynamic nature, or enquire about networking processes (Schapendonk 2015). In our experience, these qualitative components are essential for understanding network transnationality.

6. Conclusion and suggestions for future research

In this review, we evaluated the quantitative and mixed-methods social network literature on transnational social fields that has emerged in the past few decades. We identified four approaches, described their analytical focus in light of the theoretical concept of TSFs, and

highlighted their unique advantages and limitations. This review can serve as a guide for other researchers to make informed choices for future research designs on this topic.

For future research, we first recommend improved reporting standards around network measurement. Through our literature review, we observed that researchers typically describe larger measurement issues like the name generators used but often do not describe smaller decisions like whether they required respondents to provide a minimum or maximum number of alters. We recommend making these decisions explicit because they affect the resulting networks and our conclusions about TSFs.

Second, given that each approach has strengths at different analytical levels, we recommend that researchers consider combining aspects of the different approaches. For instance, researchers could complement a binational link-tracing design with a name generator enquiring about relationships with people who do not necessarily reside in the indicated geographical areas. This combination could inform researchers about the geographical span of individual networks, complementing community-level data.

As indicated before, future research must be careful not to ignore that social networks are embedded within legal, cultural, economic, and political multiscalar frameworks, which require contextualization and attention to internal heterogeneity. Likewise, future research should pay more attention to the role of institutional actors in TSFs, which are entirely absent from the approaches we reviewed. Qualitative work can help here. For example, in our current research on intra-European migrants (e.g., Molina, Martínez-Cháfer, Molina-Morales and Lubbers 2018), ethnographic fieldwork revealed that all sorts of entities (e.g., mobile phone companies giving special advantages to transnational users) sustain a TSF's emergence, maintenance, and decay. Quantitative work will also be important for understanding the role of institutional entities in TSFs, especially for measuring individual participation in entities that affect the formation of personal relationships. Such work will require engagement with recently developed methods for analyzing multilevel networks (Lazega and Snijders 2016).

Last, we call for more studies into TSFs' dynamic character (c.f., Ryan 2016; Ryan and D'Angelo 2018; Wissink and Mazzucato 2018). As our review shows, only a few studies have measured networks longitudinally, but those that do offer particularly insightful views of transnational processes. Retrospective studies, while less ideal than prospective studies, may help capture aspects of network dynamism, as would building in time-related questions in cross-sectional studies, such as about lost ties or the duration of existing ties.

While the migration literature has long recognized social networks' important role in migration, it has not fully engaged the theories, concepts, and tools of social network analysis

(Barglowski, Amelina, and Bilecen 2015; Bilecen, Gamper, and Lubbers 2018). As we have shown, there have been numerous developments in the quantitative and mixed-methods measurement of social network-based conceptualizations of TSFs in the last few decades, and these advances have provided new insights into TSFs' geographical dimensions, functionality, and fluidity, as well as a new impulse to research into transnationalism. By comparing the approaches to one another and reflecting on areas for continued improvement, this review contributes to further developments in this emerging literature.

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References

Amuedo-Dorantes, C., A. Georges, and S. Pozo. 2010. "Migration, Remittances, and Children's Schooling in Haiti." *Annals of the American Academy of Political and Social Sciences* 630(1): 224–44.

Andersson, A., C. Edling, and J. Rydgren. 2018. "The Intersection of Class Origin and Immigration Background in Structuring Social Capital: The Role of Transnational Ties." *British Journal of Sociology* 69(1): 99–123.

Baizán, Pau, and A. González-Ferrer. 2016. "What Drives Senegalese Migration to Europe? The Role of Economic Restructuring, Labor Demand, and the Multiplier Effect of Networks." *Demographic Research* 35(1): 339–80.

Barglowski, K., A. Amelina, and B. Bilecen. 2015. "Approaching Transnational Social Protection: Methodological Challenges and Empirical Applications." *Population, Space and Place* 21(3): 215–26.

Barnes, J. A. 1954. "Class and Committees in a Norwegian Island Parish." *Human Relations* 7: 39–58.

———. 1969. "Networks and Political Processes." In *Social Networks in Urban Situations: Analysis of Personal Relationships in Central African Towns*, edited by J. C. Mitchell, 51–76. Manchester: Manchester University Press.

Bashi, V. F. 2007. *Survival of the Knitted: Immigrant Social Networks in a Stratified World*. Stanford: Stanford University Press.

Beauchemin, C., F. Amétépé, A. Bringe, A. Caporali, T. Lejbowicz, A. Morisset, M. Thevenin, and B. Schoumaker, B. 2014. "Introduction to the MAFE datasets." MAFE Methodological Note. https://www.ined.fr/fichier/s_rubrique/21396/telechargement_fichier_fr_note_7_mafe_presentation.of.the.dataset.fr.pdf.

Beauchemin, C. 2015. "Migration between Africa and Europe (MAFE): Looking beyond Immigration to Understand International Migration." *Population-E* 70(1): 7–12.

Beauchemin, C, and A. González-Ferrer. 2011. "Sampling International Migrants with Origin-Based Snowballing Method: New Evidence on Biases and Limitations." *Demographic Research* 25: 103–34.

Bilecen, B. 2016. "A Personal Network Approach in Mixed-Methods Design to Investigate Transnational Social Protection." *International Review of Social Research* 6(4): 233–44.

Bilecen, B., and T. Faist. 2015. "International Doctoral Students as Knowledge Brokers: Reciprocity, Trust and Solidarity in Transnational Networks." *Global Networks* 15(2): 217–35.

Bilecen, B., M.Gamper, and M. J. Lubbers. 2018. "The Missing Link: Social Network Analysis in Migration and Transnationalism." *Social Networks* 53(1): 1-3.

Bilecen, B., and J. J. Sienkiewicz. 2015. "Informal Social Protection Networks of Migrants: Typical Patterns in Different Transnational Social Spaces." *Population, Space and Place* 21: 227–43.

Bojarczuk, S., and P. Mühlau. 2018. "Mobilising Social Network Support for Childcare: The Case of Polish Migrant Mothers in Dublin." *Social Networks* 53: 101–10.

Bolíbar, M., J. Martí, and J. M. Verd. 2015. "Just a Question of Time? The Composition and Evolution of Immigrants' Personal Networks in Catalonia." *International Sociology* 30(6): 579–98.

Bourdieu, P. 1977. *Outline of a Theory of Practice*. Cambridge: Cambridge University Press.

Bruch, S. 2017. "A Relational Lens for the Study of Inequality – Items." *Items: Insights from the Social Sciences (SSRC)*. http://items.ssrc.org/a-relational-lens-for-the-study-of-inequality/.

Burt, R. S. 1984. "Network Items and the General Social Survey." *Social Networks* 6(4): 293–

339.

Cachia, R., and I. Maya Jariego. 2018. "Mobility Types, Transnational Ties and Personal Networks in Four Highly Skilled Immigrant Communities in Seville (Spain)." *Social Networks* 53: 111–24.

Coromina, L., J. Guia, G. Coenders, and A. Ferligoj. 2008. "Duocentered Networks." *Social Networks* 30(1): 49–59.

Côté, R. R., J. E. Jensen, L. M. Roth, and S. M. Way. 2015. "The Effects of Gendered Social Capital on U.S. Migration: A Comparison of Four Latin American Countries." *Demography* 52(3): 989–1015.

Curran, S. R., and E. Rivero-Fuentes. 2003. "Engendering Migrant Networks: The Case of Mexican Migration." *Demography* 40(2): 289–307.

Dahinden, J. 2005. "Contesting Transnationalism? Lessons from the Study of Albanian Migration Networks from Former Yugoslavia." *Global Networks* 5(2): 191–208.

———. 2009. "Are We All Transnationals Now? Network Transnationalism and Transnational Subjectivity: The Differing Impacts of Globalization on the Inhabitants of a Small Swiss City." *Ethnic and Racial Studies* 32: 1365–86.

———. 2017. "Transnationalism Reloaded: The Historical Trajectory of a Concept." *Ethnic and Racial Studies* 40(9): 1474–85.

Davis, J. 2011. "Decoupling Migration Effects from Income Effects on Reproduction in Central American Migrant-Sending Households." *International Migration Review* 45(2): 325–47.

Faist, T. 1998. "Transnational Social Spaces out of International Migration: Evolution, Significance and Future Prospects." *European Journal of Sociology* 39(2): 213–47.

———. 2006. "The Transnational Social Spaces of Migration." *Working Papers - Center on Migration, Citizenship and Development*, 10: 3–8.

———. 2012. "Toward a Transnational Methodology: Methods to Address Methodological

Nationalism, Essentialism, and Positionality." *Revue Européenne Des Migrations Internationales* 28(1): 51–70.

Faist, T., M. Fauser, and E. Reisenauer. 2013. *Transnational Migration*. Cambridge, UK: Polity Press.

Fazito, D., and W. Soares. 2015. "The Industry of Illegal Migration: Social Network Analysis of the Brazil-US Migration System." *International Migration* 53(6): 183–204.

Fog Olwig, K. 2007. *Caribbean Journeys: An Ethnography of Migration and Home in Three Family Networks*. Duke University Press.

Fouron, G., and N. Glick Schiller. 2001. "All in the Family: Gender, Transnational Migration, and the Nation-State." *Identities* 7(4): 539–82.

Garip, F., and Asad, A. L. 2016. Network Effects in Mexico–U.S. Migration: Disentangling the Underlying Social Mechanisms. *American Behavioral Scientist* 60(10): 1168-1193.

Gladkova, N., and V. Mazzucato. 2017. "Theorising Chance: Capturing the Role of Ad Hoc Social Interactions in Migrants' Trajectories." *Population, Space and Place* 23(2): p.e1988.

Glick Schiller, N. 2004. "Transnationality." In *A Companion to the Anthropology of Politics*, edited by Nugent, D. and Vincent, J. Malden MA: Blackwell.

———. 2005. "Transnational Social Fields and Imperialism. Bringing a Theory of Power to Transnational Studies." *Anthropological Theory* 5: 439–61.

Glick Schiller, N., L. Basch, and C. Blanc-Szanton. 1992. *Towards a Transnational Perspective on Migration: Race, Class, Ethnicity and Nationalism Reconsidered*. New York: New York Academy of Sciences.

Glick Schiller, N., and A. Çağlar. 2013. "Locating Migrant Pathways of Economic Emplacement: Thinking beyond the Ethnic Lens." *Ethnicities* 13(4): 494-514.

Glick Schiller, N., and G. E. Fouron. 1999. "Terrains of Blood and Nation: Haitian

Transnational Social Fields." *Ethnic and Racial Studies* 22(2): 340–66.

Granovetter, M. S. 1973. "The Strength of Weak Ties." *The American Journal of Sociology* 78(6): 1360–80.

Guarnizo, L. E. 1997. "The Emergence of a Transnational Social Formation and The Mirage of Return Migration Among Dominican Transmigrants." *Identities* 4(2): 281–322.

Guarnizo, L. E., A. Portes, and W. Haller. 2003. "Assimilation and Transnationalism: Determinants of Transnational Political Action among Contemporary Migrants." *American Journal of Sociology* 108(6): 1211–48.

Guarnizo, L. E., and M. P. Smith. 1998. "The Locations of Transnationalism." In *Transnationalism From Below*. London and New York: Routledge.

Hannerz, U. 2003. "Being There... and There... and There!" *Ethnography* 4(2): 201–16.

Herz, A. 2015. "Relational Constitution of Social Support in Migrants' Transnational Personal Communities." *Social Networks* 40: 64–74.

Herz, A., and C. Olivier. 2012. "Transnational Social Network Analysis." *Transnational Social Review* 2(1): 11–29.

Hosnedlová, R. 2017. "Embedded Settlement Intentions: The Case of Ukrainians in Madrid." *Social Networks* 49: 48–66.

Kahn, R. L., and T. C. Antonucci. 1980. "Convoys over the Life Course: Attachment, Roles, and Social Support." *Life-Span Development and Behavior* 3: 253–86.

Kennedy, D. P., Grace L. J., H. D. Green, T. N. Bradbury, and B. R. Karney. 2015. "The Analysis of Duocentric Social Networks: A Primer." *Journal of Marriage and Family* 77(1): 295–311.

Kornienko, O., V. Agadjanian, C. Menjívar, and N. Zotova. 2018. "Financial and Emotional Support in Close Personal Ties among Central Asian Migrant Women in Russia." *Social Networks* 53: 125–35.

Krissmann, F. 2005. "Sin Coyote Ni Patrón: Why the 'Migrant Network' Fails to Explain International Migration." *International Migration Review* 39(1): 4–44.

Krzyżanowski, Ł. 2016. "Structuring Social Remittances: Transnational Networks of Polish Migrants." In *Migration and Social Remittances in a Global Europe*, edited by M. Nowicka and V. Šerbedžija. London: Palgrave Macmillan.

Lazega, E, and T. A. B. Snijders. 2016. *Multilevel Network Analysis for the Social Sciences : Theory, Methods and Applications*. Paris: Springer.

Levitt, P., and N. Glick Schiller. 2004. "Conceptualizing Simultaneity: A Transnational Social Field Perspective on Society." *International Migration Review* 38(3): 1002–39.

Levitt, P., and B. N. Jaworsky. 2007. "Transnational Migration Studies: Past Developments and Future Trends." *Annual Review of Sociology* 33(1): 129–56.

Lin, N. 2001. *Social Capital: A Theory of Social Structure and Action*. Cambridge: Cambridge University Press.

Lin, N., and M. Dumin. 1986. "Access to Occupations through Social Ties." *Social Networks* 8(4): 365–85.

Liu, M.-M., M. J. Creighton, F. Riosmena, and P. Baizán Muñoz. 2016. "Prospects for the Comparative Study of International Migration Using Quasi-Longitudinal Micro-Data." *Demographic Research* 35: 745–82.

Lubbers, M. J., J. L. Molina, J. Lerner, U. Brandes, J. Ávila, and C. McCarty. 2010.a. "Longitudinal Analysis of Personal Networks. The Case of Argentinean Migrants in Spain." *Social Networks* 32: 91–104.

Marcus, G. E. 1995. "Ethnography In/Of the World System: The Emergence of Multi-Sited Ethnography." *Annual Review of Anthropology* 24(1): 95–117.

Marsden, P. V. 1990. "Network Data and Measurement." *American Review of Sociology* 16: 435–63.

Massey, D. S. 1987. "The Ethnosurvey in Theory and Practice." *International Migration Review* 21(4): 1498–1522.

Massey, D. S., L. Goldring, and J. Durand. 1994. "Continuities in Transnational Migration: An Analysis of Nineteen Mexican Communities on JSTOR." *American Journal of Sociology* 99(6): 1492–1533.

Mazzucato, V. 2008a. "Simultaneity and Networks in Transnational Migration: Lessons Learned from an SMS Methodology." In *Migration and Development within and across Borders: Research and Policy Perspectives on Internal and International Migration*, edited by J. DeWind and J. Holdaway. Geneva: International Organization for Migration.

———. 2008b. "The Double Engagement: Transnationalism and Integration. Ghanaian Migrants' Lives Between Ghana and The Netherlands." *Journal of Ethnic and Migration Studies* 34(2): 199-216.

———. 2009. "Bridging Boundaries with a Transnational Research Approach: A Simultaneous Matched Sample Methodology." In *Multi-Sited Ethnography: Theory, Praxis and Locality in Contemporary Research*, edited by M. A. Falzon, 215–32. Burlington: Ashgate.

———. 2011. "Reverse Remittances in the Migration-Development Nexus: Two-Way Flows between Ghana and the Netherlands." *Population, Space and Place* 17(5): 454–68.

Mazzucato, V., E. Dankyi, and M. Poeze. 2017. "Mapping Transnational Networks of Care from a Multi-Actor and Multi-Sited Perspective." In *Situating Children of Migrants across Borders and Origins: A Methodological Overview*, edited by C. Bolzman, L. Bernardi, and J.-M. Le Goff, 269–84. Dordrecht: Springer.

Mazzucato, V., and M. Kabki. 2009. "Small Is Beautiful: The Micro-Politics of Transnational Relationships between Ghanaian Hometown Associations and Communities Back Home." *Global Networks* 9(2): 227–51.

McCarty, C. 2002. "Measuring Structure in Personal Networks." *Journal of Social Structure* 3:

1–29.

McCarty, C., J. L. Molina, C. Aguilar, and L. Rota. 2007. "A Comparison of Social Network Mapping and Personal Network Visualization." *Field Methods* 19(2): 145–62.

McPherson, M., L. Smith-Lovin, and J. M. Cook. 2001. "Birds of a Feather: Homophily in Social Networks." *Annual Review of Sociology* 27: 415–44.

Menjívar, C. 2000. *Fragmented Ties: Salvadoran Immigrant Networks in America*. University of California Press.

Merli, M. G., A. Verdery, T. Mouw, and J. Li. 2016. "Sampling Migrants from Their Social Networks : The Demography and Social Organization of Chinese Migrants in Dar Es Salaam, Tanzania." *Migration Studies* 4(2): 181–214.

Molina, J. L., L. Martínez-Cháfer, F. X. Molina-Morales, and M. J. Lubbers. 2018. "Industrial Districts and Migrant Enclaves: A Model of Interaction." *European Planning Studies* 26(6): 1160-1180.

Molina, J. L., S. Petermann, and A. Herz. 2015. "Defining and Measuring Transnational Social Structures." *Field Methods* 27(3): 223–43.

Mouw, T., S. Chavez, H. Edelblute, and A. Verdery. 2014. "Binational Social Networks and Assimilation : A Test of the Importance of Transnationalism." *Social Problems* 61(3): 329–59.

Mouw, T., and A. M. Verdery. 2012. "Network Sampling with Memory: A Proposal for More Efficient Sampling from Social Networks." *Sociological Methodology* 42(1): 206–56.

Nowicka, M., and A. Cieslik. 2013. "Beyond Methodological Nationalism in Insider Research with Migrants." *Migration Studies* 2(1): 1–15.

Perry, B. L., B. A. Pescosolido, and S. P. Borgatti. 2018. *Egocentric Network Analysis: Foundations, Methods, and Models*. Cambridge, UK: Cambridge University Press.

Poeze, M., E. K. Dankyi, and V. Mazzucato. 2017. "Navigating Transnational Childcare

Relationships: Migrant Parents and Their Children's Caregivers in the Origin Country." *Global Networks* 17(1): 111–29.

Rainie, L., and B. Wellman. 2012. *Networked: The New Social Operating System*. Cambridge, MA: MIT Press.

Richter, M., and M. Nollert. 2014. "Transnational Networks and Transcultural Belonging: A Study of the Spanish Second Generation in Switzerland." *Global Networks* 14(4): 458-476.

Rouse, R. 1992. "Making Sense of Settlement: Class Transformation, Cultural Struggle, and Transnationalism among Mexican Migrants in the United States." *Annals of the New York Academy of Sciences* 645: 25–52.

Ryan, L. 2016. "Looking for Weak Ties: Using a Mixed Methods Approach to Capture Elusive Connections." *Sociological Review* 4: 951- 969.

Ryan, L, and A D'Angelo. 2018. "Changing Times: Migrants' Social Network Analysis and the Challenges of Longitudinal Research." *Social Networks* 53: 148–58.

Ryan, L, J Mulholland, and A Agoston. 2014. "Talking Ties: Reflecting on Network Visualisation and Qualitative Interviewing." *Sociological Research Online* 19(2): 1–12.

Schapendonk, J. 2015. "What If Networks Move ? Dynamic Social Networking in the Context of African Migration to Europe." *Population, Space and Place* 8: 809–19.

Smith, J. A. 2012. "Macrostructure from Microstructure: Generating Whole Systems from Ego Networks." *Sociological Methodology* 42(1): 155–205.

Soehl, T, and R. Waldinger. 2010. "Making the Connection: Latino Immigrants and Their Cross-Border Ties." *Ethnic and Racial Studies* 33(9): 1489–1510.

Sommer, E., and M. Gamper. 2018. "Transnational Entrepreneurial Activities: A Qualitative Network Study of Self-Employed Migrants from the Former Soviet Union in Germany." *Social Networks* 53: 136–47.

Tarrius, A. 2002. *La Mondialisation Par Le Bas Les Nouveaux Nomades de l'économie Souterraine*. Paris: Balland.

Toma, S. 2016. "The Role of Migrant Networks in the Labour Market Outcomes of Senegalese Men: How Destination Contexts Matter." *Ethnic and Racial Studies* 39(4): 593–613.

Toma, S., and S. Vause. 2014. "Gender Differences in the Role of Migrant Networks: Comparing Congolese and Senegalese Migration Flows." *International Migration Review* 48(4): 972–97.

Vacca, R., G. Solano, M. J. Lubbers, J. L. Molina, and C. McCarty. 2018. "A Personal Network Approach to the Study of Immigrant Structural Assimilation and Transnationalism." *Social Networks* 53: 72–89.

Vanore, M., V. Mazzucato, and M. Siegel. 2015. "'Left behind' but Not Left Alone: Parental Migration and the Psychosocial Health of Children in Moldova." *Social Science and Medicine* 132: 252–60.

Verdery, A. M., J. C. Fisher, N. Siripong, K. Abdesselam, and S. Bauldry. 2017. "New Survey Questions and Estimators for Network Clustering with Respondent-Driven Sampling Data." *Sociological Methodology* 47(1): 274–306.

Verdery, A. M., T. Mouw, H. Edelblute, and S. Chavez. 2018. "Communication Flows and the Durability of a Transnational Social Field." *Social Networks* 53: 57–71.

Vertovec, S. 1999. "Conceiving and Researching Transnationalism." *Ethnic and Racial Studies* 22(2): 447–62.

———. 2001. "Transnational Social Formations: Towards Conceptual Cross-Fertilization." *Paper Presented at Workshop "Transnational Migration: Comparative Perspectives", June 30-July 1, 2001, Princeton University*, 1–37.

Viry, G., O. Ganjour, J.-A. Gauthier, E. Ravalet, E. D. Widmer, and J. Stanley. 2017. "Analysing the Role of Social Visits on Migrants' Social Capital: A Personal Network

Approach." *Social Inclusion* 5(4): 2183–2803.

Wasserman, S., and K. Faust. 1994. *Social Network Analysis: Methods and Applications*. Cambridge, UK: Cambridge University Press.

Wellman, B., and S. Wortley. 1990. "Different Strokes from Different Folks: Community Ties and Social Support." *American Journal of Sociology* 96(3): 558–88.

Wimmer, A. 2004. "Does Ethnicity Matter? Everyday Group Formation in Three Swiss Immigrant Neighbourhoods Andreas." *Ethnic and Racial Studies* 27(1): 1–36.

Wimmer, A., and N. Glick Schiller. 2002. "Methodological Nationalism and beyond: Nation-State Building, Migration and the Social Sciences." *Global Networks* 2(4): 301–34.

Wissink, M., and V. Mazzucato. 2018. "In Transit: Changing Social Networks of Sub-Saharan African Migrants in Turkey and Greece." *Social Networks* 53: 30–41.

Table 1. Publications using a personal network approach to measure transnationalism

Author(s)	Publication year	Type of sample[a]	N^b	Type of name generator	Average network size	Temporality of research design	Average % transnational relations in networks
Wimmer	2004	* →B	77	Regular contact	10.6	Cross-sectional	4% overall *→B 3 and 6% B→B 2%
Dahinden	2005	A→B A→B→A	40& 11	Exchange	7.9 for A→ B	Cross-sectional	13% for A→ B
Dahinden	2009	* →B B →B	250	Exchange	12.1	Cross-sectional	30% overall *→B 39% B→B 16%
Lubbers, Molina, Lerner, Brandes, Avila, McCarty	2010	A→B	25	Contact	45 (fixed)	Longitudinal	34% (t1), 33% (t2) (relations in country of origin)
Fazito & Soares	2013	A→B→A	50	Contact	60 (fixed)	Cross-sectional	18%
Bilecen & Faist	2015	*→B	37	Friendship	5 (fixed)	Cross-sectional	32%
Bilecen & Sienkiewicz	2015	*→B	300	Exchange	8.7	Cross-sectional	29%
Bolibar, Marti, Verd	2015	*→B	153	Contact	30 (fixed)	Cross-sectional	29% in country of origin
Herz	2015	A→B	234	Exchange	6.3	Cross-sectional	43%
Molina, Petermann, Herz	2015	*→B	75	Contact	30 (fixed)	Cross-sectional	Not mentioned
Hosnedlová	2017	A→B	55	Contact	30 (fixed)	Longitudinal	Not mentioned
Viry, Ganjour, Gauthier, Ravalet, Widmer, Stanley	2017	* →B B →B	803	Closeness	3.7	Cross-sectional	Not mentioned
Andersson, Edling, Rydgren	2018	B→B (second generation migrants & non-migrants)	894	Position	17.9	Cross-sectional	1.4% for non-migrants 4.9-9.6% for second gen. groups
Bojarczuk & Mühlau	2018	A→B	23	Closeness	20.0 (plus institutional)	Cross-sectional	33%
Cachia & Maya Jariego	2018	*→B	95	Exchange	30 (fixed)	Cross-sectional	40%
Kornienko, Agadjanian, Menjívar, & Zotova	2018	*→B	607	Closeness	4.8	Cross-sectional	26%
Vacca, Solano, Lubbers, Molina & McCarty	2018	A→B *→C (two study sites)	241	Contact	45 (fixed)	Cross-sectional	37%

Note: We have selected articles published in English and indexed in the Web of Science that use a quantitative or mixed personal (egocentric) network approach regarding migration (only when including a focus or information about transnational relationships) or migrant transnationalism. In case of multiple publications about partially the same data, we used the article about the most inclusive set. Publications are ordered by publication year. [a]Type of sample: A→B: migrants who moved from a single country/place of origin (A) to a single country/place of residence (B); B→B: non-migrants; *→B (or C): migrants who moved from two or more countries/places of origin to a single country/place of residence; A→B→A: return migrants; [b]*N*: sample size for network data.

Table 2. Structural differences between the four approaches

Approach		Individual: Personal network approach	Household: (Binational) household survey	Dyad/small set of nodes: Simultaneous matched samples methodology	Community: Binational link-tracing design
Structural differences	Stylized visuali-zation of two cases *simplified to convey structural differen-ces*				
	Network elicitation	Respondents (blue nodes) are asked to name a list of people independent of their place of residence	Respondents, usually heads of household (blue), are asked to name list of household members (in red circle) and related others	Seed respondents (blue) are asked to name a list of people independent of their place of residence	Seed respondents (blue) are asked to name a list of people in designated places of residence (their place of origin/residence)
	Network structure *Alter-alter edges*	Perceived relationships among alters are often measured (dotted edges)	Not measured. Within- household ties can be assumed (grey edges). Exchange between outmembers and household measured (red edges)	No information available about the relationships among non-interviewed alters	
	Link-tracing	Alters are usually not interviewed, although some studies employ snowball sampling methods	Within household, other alters may be interviewed. Respondents in receiving country may be sampled through snowballing, but usually for sampling purposes only	Selected network members in the place of origin (red) are tracked and interviewed	Selected network members in both the place of residence and the place of origin are tracked, interviewed and uniquely identified
Location study		Usually not multi-sited	Usually sequentially multi-sited	Simultaneously multi-sited	Sequentially multi-sited
Location alters		Unconstrained	Household and abroad (migrants)	Unconstrained	Constrained to sample sites
Temporality		Cross-sectional / Longitudinal	Cross-sectional (with retrospective data about migration histories)	Longitudinal	Cross-sectional
Resulting data		Personal networks, i.e., the networks of relationships surrounding focal **individuals**	Household networks, i.e., the networks of relationships among **household** members, as well as the household's relationships with other relatives of the household head/spouse who are currently living abroad and with whom contact is maintained	"Transnational networks/ child care arrangements", i.e., the networks surrounding the focal **transnational relationships** (indicated in bold in the graph)	A single network of networks, connecting the members of the **transnational community**, due to link-tracing and unique identi-fication of respondents/alters