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Bridging Across Nations

The social capital of diversity, brokerage and closure in transnational migrant networks: a study on assimilation patterns in Milan and Barcelona.

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ABSTRACT. This dissertation deals with the network effects on immigrant assimilation: how the composition and structure of migrants' personal networks affect patterns of assimilation in host societies.

A personal network is the set of all current and active social contacts that a focal individual (Ego) has, including family, friends and acquaintances. It is operationalized here as the list of 45 alters who were mentioned by Ego (the migrant) as people with whom he had some kind of contact in the last two years, and whom he could currently still contact. In particular, personal contacts can be of any nationality, and live in any country.

In network terminology, *ego-network* data are used here. They come from two separate surveys on migrant personal networks and assimilation patterns, carried out in Barcelona, Spain, and Milan, Italy. The Spanish survey collected data on 289 international migrants from Argentina, Dominican Republic, Morocco, Senegal, and Gambia, in the years 2005-2006. In the Italian survey, 107 immigrants from Sri Lanka were interviewed in 2011-2012. The author managed the latter survey, which was prepared by extensive ethnographic work in Milan and Sri Lanka.

Migrant personal networks are analyzed in both their composition, that is, the distribution of actor attributes in the network, and structure, that is, the pattern of relations in the network. Most analyses are based on two attributes of network actors: nationality and country of residence. A step further is proposed, beyond the traditional dichotomy between network composition and structure, with a study of the pattern of relations *between different actor attributes*. This combines the usually separate dimensions of composition and structure to examine the structural *cohesion versus segregation* of actors from different nationalities, or in different countries of residence. A specific measure is proposed to index cohesion versus segregation of different attributes in the network, which is called the index of subgroup segregation: "geographical" segregation, if it concerns actor countries of residence; "national" segregation if it regards actor nationalities.

Theoretically, the index of subgroup segregation can be related to the popular sociological concepts of structural brokerage and network closure. However, it describes a particular kind of brokerage and closure: brokerage and closure between actors from different nationalities and in different countries of residence, which are called "brokerage between differences" and "diversity within closure" in the text. Empirically, the index of subgroup segregation is shown to capture an existing variation in the data, and to extract new, non-redundant information which cannot be predicted by traditional compositional and structural measures alone.

Personal network metrics are used to operationalize immigrant transnationalism in particular, and investigate its relationship with assimilation. Personal networks capture different *degrees* of transnationalism, through compositional measures; and different *types* of transnationalism, through the index of subgroup segregation. Specifically, the notions of "brokerage between differences" and "diversity within closure" correspond to two substantially different types of transnationalism: transnational brokerage and transnational cohesion.

Two dimensions of assimilation, or adaptation, in host societies are taken into consideration: the cultural and the economic. The former is measured by an acculturation rating scale, and studied with data on Moroccan and Senegambian immigrants in Barcelona. The latter is indexed by measures on employment status and income, and studied with data on Sri Lankan immigrants in Milan.

The results strongly support the hypothesis that the meso-level of personal networks has a specific effect on assimilation, independently and separately from the micro-level of immigrants' individual characteristics. The composition of personal networks is relevant, with national and geographical diversity positively affecting assimilation outcomes. The structure of personal networks is also significantly associated with assimilation, but this effect only emerges when structure is combined with composition through the index of subgroup segregation: brokerage between differences has a positive impact on cultural assimilation; diversity within closure facilitates economic assimilation.

Network transnationalism is shown to be a pervasive and still variable phenomenon among international immigrants. Results suggest that the *degree* of transnationalism is significantly associated to immigrant assimilation, yet in a non-linear, non-monotone relationship (first positive, then negative), similar to an inverted U curve. The *type* of transnationalism has a relevant impact on assimilation too: transnational brokerage fosters cultural assimilation, whereas transnational cohesion has positive effects on economic assimilation.

Contents

Chapter 1

Introduction. A social network approach to transnational migration

The first thing Shenal did as he got to Colombo, Sri Lanka, after a 3-hour drive from his home village, was call the brother of his friend Chaminda, so they could meet in one hour at the entrance of the port. Shenal was looking forward to seeing his posh white car after one year, with its new DVD player installed in the rear. Both Shenal and Chaminda lived in Milan, Italy, and both were Sri Lankan: Shenal had moved to Italy some twelve years earlier, from a village near Kuliyapitiya, in the Sri Lankan North Western province; Chaminda was from Galle, in the Southern Province, and had arrived to Milan through Germany only two years before. Shenal and Chaminda had met the first time through common friends in a bar around the central station of Milan, the day after Chaminda and his family arrived from Germany by train; after just one week from Chaminda's arrival, Shenal found a house for him and his wife, and their two 8-years-old sons, thanks to other Sri Lankan friends in Milan. A couple of weeks later, he introduced Chaminda's wife to an old Italian lady he used to work for: the lady hired Chaminda's wife, and she also offered to teach Italian to her two children twice a week.

Three months later, Shenal and Chaminda were sitting in a Chinese bar in Milan, and Shenal mentioned the forty lakhs rupees (around 25 thousand euros) he saved and what to do with it. Chaminda told his friend about his brother Kamantha: he was living in Galle, and knew about a South Korean manager who had just moved to Sri Lanka and was looking for a personal driver. The driver had to have his own car, and his task was to drive the manager between the company's offices in the Island, for five days a week. No more than one month later, Shenal had bought a beautiful white Nissan car from acquaintances near Colombo. After the car had been blessed in the traditional ceremony

by a Buddhist monk in Kuliyapitiya, Chaminda's brother started to work as a driver for the South Korean manager. Shenal was receiving a part of Kamantha's pay every month; but he was already fancying the days when he would have settled back in Kuliyapitiya, in a few years, and driven around the villages in his white 40-lakhs-worth Nissan.

The relations between Shenal, Chaminda and Kamantha are just an example of the many transnational networks that shape the lives of Sri Lankan immigrants in Milan. Sri Lankans in Italy speak daily with family and friends in the Island, or to friends within the Sri Lankan diaspora in Europe, Asia and Australia. Sri Lankan mothers in Milan see their children, husbands talk to their wives, sisters give advice to their brothers, in daily video calls over the Internet between housing projects in Milan and rural villages in inland Sri Lanka. Sri Lankan mothers in Milan sometimes decide to temporarily leave Italy after the birth of their child, and go back to Sri Lanka, to return to Milan in a few months: they will not be able to work in Italy in the first months after childbirth, and raising a child in Milan is much more expensive than in their hometowns; besides, they want their children to grow up in Sri Lanka, learn the language and eat the right food in a familiar context, in the very first months and years of their lives. The monthly savings of Sri Lankan janitors, bartenders, domestic workers, restaurant cooks, warehouse workers, are sent every month from Italy to Sri Lanka, through formal or informal money transfers: money to support families, buy houses, or start businesses. Small transnational businesses are constantly launched between Italy and Sri Lanka: fishing boats, small bus companies, taxis or bars are operated in Sri Lanka by kin, friends or acquaintances, while their Sri Lankan owners or co-owners are living in Milan.

Transnational networks in the home country and the diaspora are a central source of material help, emotional support, and economic strategies for Sri Lankan households in Milan. On the other hand, having an extensive network of co-national immigrants in Italy, and a network of Italian natives, is often very important to both find help and give help to friends, as shown by the way Chaminda found accommodation, his wife got a job, and his sons started to learn Italian.

During my first approaches to Sri Lankans, in both Milan and the Island's rural villages, everything suggested that the most dynamic and adaptive immigrants were those who managed to "surf" with confidence on this constant flow of transnational and national relationships; those who were able to maintain good relations in Italy, Sri Lanka and countries of the diaspora, and locate the right resources in each component of their personal network. Transnational and national personal networks seemed to be essential to migrants' adaptation in the host society: there seemed to be a *network effect* on immi-

grant assimilation, which could enhance as well as constrain individual action and individual characteristics. In particular, bridging, reconciling, balancing diversities within one's network, bringing together people from different nationalities, or from different countries of residence, appeared to be a key advantage in Sri Lankans' trajectories of adaptation in Italy.

Since the late 1980s, sociologists have been aware that not only the relationships with the host society, but the continuing social, economic, political, and cultural relations with the home country, are a fundamental aspect to be accounted for in immigrants' lives. Migrant *transnationalism* has been a major interest in migration studies over the last twenty-five years, at least since, in the early 1990s, research on the cross-border practices and relationships of Caribbean and Filipino immigrants in the Unites States described contemporary "transmigrants" as forming families, taking economic actions, doing politics and developing identities across national borders (Basch et al., 1994). Transnational studies have since investigated the relationship between transnational involvement and immigrant adaptation to host societies, and sometimes depicted the transnationalism of contemporary migrants as a new and successful form of immigrant incorporation, *in contrast to* assimilation.

Since the very first attempts at defining migrant transnationalism, cross-border social networks have been central to the concept. In one of the first publications that introduced the notion of transnationalism and established its relevance in migration studies, Basch et al. (1994) defined it as "the processes by which immigrants forge and sustain multi-stranded *social relations* that link together their societies of origin and settlement" (p. 8, italics added). As many and diverse as they may be, the several notions and definitions of migrant transnationalism that followed in the years, always imply the existence of cross-border social networks, whereby international migrants are simultaneously embedded in more than one society and nation state (Molina et al., 2012). Still, in spite of the inherently *relational* definition of transnationalism, the use of relational data and social network analysis in the operationalization of this concept has usually been limited, and research designs on transnational migration have typically focused on transnational *practices and behaviors*, rather than *relations*.

Transnational practices and behaviors may pertain to different domains: political activities, economic strategies, cultural traits, religious customs, etc. In most research, migrant transnationalism is measured by the intensity or frequency of such activities as sending money remittances to hometowns, financing political organizations in the home country, participating in cultural or religious co-national associations; or by the strength

of particular cultural traits and preferences, such as transnational ethnic identifications. Transnational activities and cultural preferences will not be the main focus of this dissertation. Rather, the main novelty proposed here is the use of social network data to describe and measure migrant transnationalism. In this study, being transnational means having a transnational social network, with many connections in the home country or the international diaspora; and network variables are used as indexes of transnationalism. Social networks are operationalized as personal networks, that is, the set of social contacts of any kind (family, friends, and acquaintances) that the migrant currently has, and the connections between them.

In this design, transnational networks are intended to capture the "structure", rather than the "agency" aspect of transnationalism. In other words, here transnationalism will be conceived of as a set of structural conditions that shape other outcomes of migrant lives; rather than an array of individual, and possibly rational, actions, decisions or choices. On the subject of the relationship between transnationalism and assimilation, this leads to a different modelling strategy compared to existing studies, one that views transnationalism as an *independent* variable which affects migrant assimilation.

In quantitative studies of transnationalism and assimilation, transnational behaviors, practices or cultural preferences are typically treated as a dependent variable, to be modelled on a set of independent predictors that describe migrant assimilation patterns. Guarnizo et al. (2003) exemplify this empirical strategy with one of the most complete existing databases on transnational migration, the data from the "Comparative Immigrant Enterprise Project" on Latin American immigrants in the United States: they model transnational political involvement as dependent on measures of migrant social and economic assimilation in the American society. This kind of design has been more recently followed in studies on transnational migrants in Europe as well (Snel et al., 2006), and it has contributed groundbreaking insights on the association between migrant transnationalism and assimilation. On the other hand, I adopt a different strategy, whereby the transnationalism of the social structure embedding the migrant, that is, social network transnationalism, is treated as an *independent* variable which predicts assimilation outcomes.

The word "assimilation" may have a controversial ring in recent migration studies (Alba and Nee, 1997). Especially at the beginning, the notion of transnationalism was regarded as an *alternative* to the assimilation perspective: immigrants did not need to assimilate to the host society; in fact, many of them were doing well, or even better than assimilated immigrants, by investing more on relationships with the home society. I

will not by any means imply in this dissertation that assimilation requires severing the migrant's relationships with the home country, the co-national diaspora, or fellow immigrants. Quite the contrary: a major conclusion of this work will be that those relationships have a *positive* effect on assimilation. In other words, I will not think of assimilation as a one-way and unidimensional process in which the immigrant approaches the host culture and society to the extent that he relinquishes the home country and society. And I will not assume that the immigrant is better off the more he becomes involved in the receiving culture and society, and the more he abandons the origin culture and society.

By assimilation, I will mean a positive and successful *adaptation* of the migrant to the culture and the economy of the host country. Culture and economy are the two domains in which assimilation will be described and measured. Cultural assimilation or adaptation will be also termed "acculturation", following a terminology perhaps more popular in anthropology and cross-cultural psychology (Berry, 1997; Cabassa, 2003). Cultural assimilation will be operationalized by an acculturation rating scale drawn from the Acculturation Rating Scale for Mexicans Americans-II (Cuellar et al., 1995), which indexes the degree to which the migrant accepts or enjoys cultural traits, tastes and values of the host society.

Economic assimilation or adaptation will also be termed "incorporation" in the labor market of the receiving country. I will consider immigrants who are employed in the host country and earn an income above the poverty line as successfully incorporated. Thus, data on employment status and income will be combined to operationalize economic assimilation.

As noted above, a major difference in this study compared to existing research on transnationalism and assimilation is the inversion of their relationship: transnationalism is treated as the independent variable, assimilation as the dependent outcome. Two main hypotheses justify this strategy. First, I make the hypothesis that social networks, rather than cross-border practices and behaviors, capture an empirically relevant aspect of migrant transnationalism, and social network analysis offers powerful measures on this phenomenon. In other words, it is my hypothesis that the "structural" transnationalism of social networks is a relevant, yet variable, phenomenon among international migrants.

Secondly, I make the hypothesis that *multiple* dimensions of network transnationalism matter to assimilation. Different characteristics of transnational networks are simultaneously relevant to how immigrants adapt to host societies: only by treating them as multiple independent variables in predictive models, can they jointly be accounted

for. The basic intuition here is that not merely how many people in the home country and the international diaspora the migrant knows, but whether and how these people know each other and know other contacts in the migrant's network, is relevant to adaptation trajectories. In network terminology, *both* the composition, *and* the structure of transnational networks matter. I will distinguish these two dimensions as the *degree* and the *type* of transnationalism: the former has to do with the *composition*, the latter derives from the *structure* of personal networks.

In the following chapters, the importance of "how people know each other", and specifically how people *with different attributes* know each other, will be discussed under the heading of *cohesion versus segregation* in migrant networks. The relevant "attributes" of social contacts here are nationality and country of residence. By cohesion versus segregation, I mean the extent to which the migrant's contacts from different nationalities, or in different countries, know each other and fall in the same cohesive groups; or rather are unconnected and fall into separate groups. In the latter case, actor nationalities and countries of residence can be described as *segregated* in network structure, with the migrant *brokering* between them.

This establishes a link between the network analysis of migrant transnationalism and the popular sociological concept of structural brokerage, as it has been used in the social capital literature. Much research has documented the advantages of occupying a brokering position in a social network, one that bridges otherwise unconnected groups of actors, or spans "structural holes" in the seminal terminology introduced by Ronald Burt (1992). However, in other cases, a very different structural position has been shown to benefit individual actors, one that is embedded in the "closure" of a dense and tightly knit network, which was first identified as a source of social capital by James Coleman (1988).

Segregation of attributes in network structure means brokerage between different attributes: if countries or nationalities are segregated and unconnected in the structure of his network, the migrant brokers between *different* countries and nationalities. In this dissertation, existing arguments and evidence on brokerage versus closure as social capital will be recalled to discuss the relationship between attribute segregation in network structure and assimilation patterns. On the other hand, brokerage as conceived in this work is different from *purely structural* brokerage in the traditional sense, which means bridging unconnected network groups, regardless of the actor attributes in those groups. I will focus on *brokerage between differences*, that is, on a structural position in the network which gives the migrant the opportunity to broker *between actors from different nationalities or in different countries of residence*: for example, between Italians and Sri

Lankans in Italy; or between Sri Lankans in Italy and Sri Lankans in Sri Lanka. I am less interested in structural brokerage between actors with the same attributes, for example between unconnected groups of Italians in Italy, or different groups of Sri Lankans in Sri Lanka. Similarly, I will focus on *diversity within closure*: rather than network closure and dense connections among any kind of actors, I will call attention on those situations in which closure brings together, in the same cohesive subgroups of the network, people from different nationalities or in different countries of residence.

Diversity, cohesion and segregation in the countries of residence of social contacts, which I call the "geographical" dimension, will be used to qualify fundamentally different degrees and types of migrant transnationalism. While the level of geographical diversity may measure the *degree* of transnationalism, and differentiate between less and more transnational networks; cohesion and segregation may distinguish different *types* of transnationalism given the same degree, namely a situation of "transnational cohesion" versus one of "transnational brokerage". In the latter, the migrant brokers between unconnected social contacts who live in different countries; in the former, the migrant's contacts in different countries know each other in a dense and closed transnational personal network.

On the other hand, not only transnationalism, but social integration will be considered a relevant dimension in the description of migrant networks as well. Thus, besides the "geographical" dimension, a "national" dimension will also be taken into account, which concerns the nationality of social contacts rather than their country of residence. Diversity, cohesion and segregation in actor nationalities will be used to describe different degrees and types of migrant social integration in the host country. By social integration, I mean here what has been also called "structural assimilation" in sociological literature (Alba and Nee, 1997), that is, migrant's participation to family, friendship or other kinds of social relationships with natives of the host society. Diversity in the nationalities of social contacts may capture the degree of social integration; cohesion and segregation between nationalities may measure different types of social integration, namely a "cohesive" versus a "brokering" type. Similarly to the distinction between "transnational brokerage" and "transnational cohesion", the "brokering" type of social integration characterizes those networks in which the migrant is the only connection (or one of very few) between contacts of different nationalities, particularly co-nationals and natives; while in the "cohesive" type of social integration, people of different nationality tend to know each other in more dense personal networks.

To sum up, underlying this work are a number of hypotheses on the social networks

of international migrants, and their bearing on assimilation patterns. These hypotheses are stated here, and will be discussed in the Conclusions to this dissertation (Ch. 7), in light of the results presented in the following chapters.

Hypothesis 1 The network effect on assimilation.

Personal networks matter to migrant assimilation, *independently and separately* from individual characteristics. In quantitative models of assimilation, they may even be better predictors than traditional individual variables used in migration studies.

Hypothesis 2 The effect of network composition: diversity is positively associated to assimilation.

The characteristics of migrants' social contacts, that is, the composition of migrants' networks, are relevant to assimilation patterns. Specifically, I make the hypothesis that two attributes of social contacts significantly affect migrants' assimilation outcomes: nationality and country of residence. Thus, two hypotheses may be distinguished here:

Hypothesis 2.a Compositional *diversity* positively affects assimilation.

Hypothesis 2.b Both *geographical* and *national* diversity matter: knowing people both in many different countries, and from many diverse nationalities, facilitates assimilation. As discussed above, "geographical" diversity (actor countries of residence) can be thought of as a measure of transnationalism; "national" diversity (actor nationalities) can be considered as a measure of social integration.

Hypothesis 3 The effect of network structure: brokerage is positively associated to assimilation.

The intuition is that not simply who is in the migrant's network, but also how they know each other, can affect assimilation patterns. "How actors know each other" is what network analysts call the structure of a social network, that is, the number and distribution of relations in the network. Network structure reveals much about the way one manages the relations in his network, controls them and is constrained by them. In particular, different network structures imply that, given the same degree of diversity in his network, the migrant can be a broker between differences, or rather he can be embedded in a dense community where differences are closely connected to each other. Given the same degree of network transnationalism (diversity in actor countries of residence), we may observe "transnational brokerage" or "transnational cohesion" in the network; given the same degree of network so-

cial integration (diversity in actor nationalities), we may observe a "brokering" or a "cohesive" type of social integration. I make the hypothesis that having a brokering or a cohesive type of network transnationalism and social integration is relevant to assimilation outcomes. In particular, brokering between actors *from different nationalities*, or *in different countries of residence*, has positive effects on assimilation.

With respect to migrant transnationalism in particular, two additional hypotheses guide this work:

Hypothesis 4 The transnationalism of migrant social networks is a relevant phenomenon.
I make the hypothesis that a significant part of the immigrant population has transnational networks. Furthermore, there is a significant variation in network transnationalism among immigrants, thus network data offer effective measures of migrant transnationalism.

Hypothesis 5 The *degree* and *type* of transnationalism affect assimilation patterns.
I hypothesize that variations in transnationalism, as measured by social network metrics, are reflected in different outcomes of cultural and economic assimilation. There is substantial variation in both the *degree* and the *type* of transnationalism. In particular, as anticipated by Hypothesis 3, this means that the difference between "brokering" and "cohesive" transnational networks affects assimilation patterns.

This Introduction is followed by a chapter that presents the basic sociological concepts used in the dissertation, namely social networks, social capital, immigrant assimilation, and transnationalism (Ch. 2). The background of these notions in the existing literature is discussed in its most relevant aspects to this study.

Chapter 3 introduces the empirical data used in this dissertation. These come from two separate surveys on the social networks of Latin American, African, and Asian immigrants in Barcelona, Spain (years 2005-2006), and Milan, Italy (years 2011-2012). I managed the Italian survey, which was carried out among Sri Lankan immigrants, and was prepared by extensive ethnographic work on Sri Lankan migration to Milan. The following analyses use data on 391 migrant personal networks: 289 from the Spanish survey, 102 from the Italian one.

In Chapter 4, I examine the composition of the networks, that is, the distribution of the attributes of migrants' social contacts. Nationality and country of residence are the

most relevant attributes: the analysis is mostly concerned with where migrants' contacts are from, and where they currently live. This chapter also deals with network structure, that is, the pattern of relations in the network: it studies the distribution of actor centrality in migrant networks, and how that interacts with actor nationality and country of residence.

Chapter 5 shifts from the actor- to the network level in structure, describing how migrant networks are structured into separate cohesive subgroups. The chapter tackles the problem of cohesion versus segregation of nationalities and countries of residence in network structure; it proposes a measure to capture the variation on this dimension, which I call the index of subgroup segregation in the network. I discuss the working and meaning of this index, its contribution compared to traditional measures of network composition and structure, and its relationship with the notion of brokerage and closure.

Chapter 6 draws on the previous discussion to address the central problem of the network effect on assimilation: that is, the association between personal networks, network transnationalism in particular, and the patterns of immigrant assimilation. Cultural and economic assimilation of international immigrants are studied separately. The composition and structure of personal networks, as well as the segregation of actor nationalities and countries of residence in network structure, are described by the measures introduced in Chapters 4 and 5.

The Conclusions (Ch. 7) use the findings in the previous chapters to assess the hypotheses stated in this Introduction about migrant networks, assimilation, and transnationalism.

Chapter 2

Background: social networks, social capital, and transnational migration

Social network analysis is the central analytical approach adopted in this dissertation. Throughout the next chapters, results from the analysis of immigrants' social networks are linked to concepts and arguments from the sociological literature on social capital. The relevant literature background on social networks and social capital is discussed in section 2.1 of this chapter.

While social networks and social capital are the independent variable in the design of this study, immigrant assimilation is the dependent outcome. Two separate aspects of immigrant adaptation in host societies are discussed in this chapter as relevant to the following analyses: cultural and economic assimilation (section 2.2).

A key function of social network data in this dissertation is the description and measurement of immigrants' involvement in transnational social fields. This chapter introduces the perspective of transnationalism in migration studies, which was originally proposed in opposition to the traditional assimilation framework (section 2.3): whereas the latter focused on the one-way relationship between immigrants and the receiving society; transnational studies contended that contemporary immigrants maintain a wide array of ongoing and constant social relationships with their home country, and that these are essential to the way they live and adapt in host societies.

2.1 Social networks as a source of social capital

2.1.1 The analysis of social networks: sociocentric versus egocentric network data

Social Network Analysis (SNA) is a collection of metrics and models for the quantitative analysis of social networks, which have been developed since the 1930s in various substantive fields, from psychology to sociology, anthropology and political science (Freeman, 2004; Borgatti et al., 2009). In SNA, a network is a set of *nodes* or *actors*, and the *ties* or *relations* among them. The network is *social*, in that nodes are social units, individuals, groups or organizations; and ties are relationships of interactional, social, political, or economic type.

SNA is not simply a broad inconsistent repertoire of analytical tools: social analytic measures and models are grounded in a common view and approach to social reality, which has led to consider Social Network Analysis as a specific *paradigm* or *perspective* in the social and behavioral sciences (Wasserman and Faust, 1994). The essential characteristic of this perspective is its focus on the *relationships* between actors, rather than on actors' individual attributes: SNA is fundamentally interested in the patterns of relations among nodes, which network analysts call the *structure* of the social network. In a recurrent dichotomy in social network studies, network structure is contrasted to network *composition*, that is, the distribution of actor attributes within the network. For example, if network actors are all the members of an immigrant hometown association in Milan, network composition would refer to the distribution of such individual characteristics of the members as sex, age, income, educational level etc.; network structure would refer to the patterns of the relations among the members: who knows whom, who is in the same family, who befriends whom, etc., depending on the definition of the relation.

In one of the most popular textbooks on Social Network Analysis, Wasserman and Faust (1994) mention four additional points as defining features of the social network perspective:

i) Actors and individual actions are considered to be interdependent, rather than independent and autonomous.

ii) Ties among actors are viewed as channels for transfer of material or immaterial resources. In other words, a relation usually implies a flow between two nodes: the flow may involve material resources, information, emotional support, influence, etc.

iii) The structure of the network fundamentally affects individual action, in that it provides opportunities for or constraints on it.

iv) Structure is conceptualized as lasting patterns of relations among nodes.

That "structure matters" can be seen as the fundamental axiom of Social Network Analysis (Borgatti et al., 2009). Structure matters for the whole network, its evolution and performance (e.g. the performance of a firm or a sport team); and it matters for individual actors in the networks, their outcomes, positions and future characteristics. Given a social group, traditional social science seeks to explain its actions and outcomes, and those of its members, on the basis of the individual characteristics of the members themselves, and of conditions in the external macro-context (public policies, attitudes and behaviors of people outside the group, macro-economic factors, etc.).

In contrast, social network analysis seeks to explain the actions and outcomes of the group and the individuals primarily on the basis of the distribution of relations among individuals, and on the position of each individual in this distribution. The pattern of relations, or the network structure, is intended to represent the social environment, or the *social structure*, in this approach. This is consistent with the conceptualization of social structure as lasting patterns of social networks in early anthropology (Radcliffe-Brown, 1952), as well as in more recent sociological theory (Martin, 2011).

This structuralist view, whereby the structure of social relations explains individual outcomes, and, specifically, the four basic propositions mentioned above as defining the social network approach, are all central hypotheses in this dissertation: thus, social network analysis is adopted throughout this study not just as a quantitative analytical toolkit, but as a general perspective on social reality.

Two different operational definitions of a social network must be distinguished, which correspond to two different research traditions in Social Network Analysis and in the social sciences. A network is *sociocentric* when the set of its nodes is defined by external and institutional boundaries: a node is in the network if it falls within the boundary (Wasserman and Faust, 1994). The boundaries may be of any kind, provided that they can be observed by researchers: for example, the boundaries of a firm, with the network including all its employees; the boundaries of a school, whose students will be the network actors; the boundaries of an immigrant hometown association, with the network representing relationships among its members. Besides the group boundaries, also the relation needs to be preliminary defined to identify the network: this could be the relation "A knows B", "A gives advice to B on work matters", "A is related to B", etc. Once

both the group boundary and the relation are defined, the operational definition of social network follows: the social network is the set of all the actors within the boundary, and all the relations of the given type which exist among them. For example, that may be the network of work advice among the employees of a firm; the network of friendship relations among the students in a school; the network of family relations among the members of an immigrant hometown association. Sociocentric networks are also called *whole* or *complete* networks.

In contrast, a network is *egocentric* or ego-centered (also called ego-network) when the set of nodes is not defined by an external boundary, but by a relation with a focal individual, "Ego": a node is in the network if it is mentioned by Ego as belonging to his egocentric network (McCarty, 2002). For example, the network of all of Ego's friends; the network of the people with whom Ego discusses important matters; the network of the contacts who can help Ego in an emergency. Network actors are also called the "alters" of the egocentric network. In this case, the network boundary is itself relational, since it is defined by a given relation between Ego and the alters: the network actors are those who are in that relation with Ego (friendship, discussion of important matters, help in emergency, etc.).

However, the Ego-alter relation, which determines who the network actors are, is conceptually distinct from the alter-alter relations, which generate the actual network ties. The alter-alter relations do not need to be the same as the Ego-alters relations. For example, we may study the ego-network of who knows whom among Ego's friends, or who is related to whom among the people who support Ego in emergency: in the former case, the Ego-alter relation is friendship, while the alter-alter relation is simply mutual knowledge; in the latter case, the Ego-alter relation is "support in emergency", while the alter-alter relation is "being relatives". Thus, whereas in sociocentric networks an external group boundary identifies the network nodes, and a relation definition identifies the network ties; in egocentric networks a relation between Ego and alters identifies the network nodes, and the definition of a (possibly different) relation among alters identifies the network ties[1].

While sociocentric network data are prevalent in sociology, egocentric networks have been traditionally more popular among anthropologists, at least since the seminal use of ego-network data in the Manchester School of anthropology (Barnes, 1954; Mitchell, 1956; Bott, 1957; Boissevain, 1973). Nonetheless, ego-networks have been employed

[1] This discussion assumes that Ego himself is removed from the ego-network, and that the ego-network ties are only alter-alter relations (see McCarty and Wutich, 2005).

in sociology and urban studies as well, especially by research on "personal communities" and social support in urban contexts (Wellman, 1979; Fischer, 1982). Much of this work is related to the "community question" of how the distribution and content of primary ties are affected by urban life and macro-changes of economic and social systems in industrial and urban societies (Wellman, 1979). More recently, ego-network methods have been applied to sociological studies of poverty and segregation in non-Western urban contexts, like São Paulo, Brazil (Marques, 2012). However, network studies on the community question follow along an old concern in sociology, which dates back at least to Ferdinand Tönnies' (1887) discussion of the shift from "Community" (Gemeinschaft) to "Society" or "Association" (Gesellschaft) in the late XIXth century.

In studies on the community question, small ego-networks of 5 to 10 actors which capture the most intimate or supportive ties, are typically used as an operationalization of the personal community, which is defined as the set of Ego's primary relations. In fact, irrespective of the substantive field of interest, egocentric research designs normally deal with a *large* number of *small* ego-networks, that is, a collection or sample of networks. In contrast, sociocentric research designs usually focus on a *small* number of *large* networks, and network actors are their population of interest. On the other hand, the Egos, rather than the network actors (alters), are the population of interest in ego-network studies. In other words, behaviors and outcomes of the Egos are the main focus of these studies, rather than behaviors and outcomes of the network actors; and ego-networks are used to construct a set of measures that can be added to traditional variables (e.g. socio-demographics) about the Egos. This is the same empirical approach followed in this dissertation.

As detailed in Ch. 3, the analyses in the following chapters will be based on egocentric network data. The Egos are international immigrants in Milan, Italy, and Barcelona, Spain, and social network analysis is used on a collection of hundreds of immigrant egocentric networks. These are intended to represent the *personal networks* of immigrants, that is, the set of all current and active social contacts of Ego (see Ch. 3). A crucial difference between this research project and traditional ego-network research designs lies in the larger *size* of the egocentric networks studied here, and in the focus on their *structural* characteristics. The interest in small personal communities has typically restricted structural analyses in ego-network research: there is little to say, and little variation to observe, about the patterns of relations in networks of 5 to 10 nodes (McCarty, 2002). Thus, the attention to network structure has long been a prerogative of sociocentric research designs, with ego-network studies limiting themselves to network composition, i.e. the attributes of alters in egocentric networks. On the other hand, the egocentric net-

works studied here include as many as 45 alters, and the relations among them: this size gives place to much variation among connectivity patterns in the networks, and allows us to apply to egocentric data measures and procedures which are typical of sociocentric network analysis.

2.1.2 Social capital and its network origin

The intuition of social capital

Two popular passages in the sociological literature are usually quoted to show the intuition of social capital. The first is Pierre Bourdieu's (1985) statement that "Social capital is the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition – or in other words to membership in a group – which provides each of its members with the backing of the collectivity-owned capital, a 'credential' which entitles them to credit, in the various senses of the word"[2]. The second passage is James Coleman's (1988) definition: "Social capital is defined by its function. It is not a single entity but a variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors – whether persons or corporate actors – within the structure. Like other forms of capital, social capital is productive, making possible the achievement of certain ends that in its absence would not be possible".

One basic intuition can be traced in both the passages, which lies at the core of the concept of social capital: there are advantages that accrue to individuals as a consequence of their relationships with other individuals; these advantages cannot not be obtained from individual economic resources (economic capital), or education and skills (human capital). Social capital is a set of resources that are embedded in relations with others, that is, in social structure. These resources are accessible and possibly mobilized by individuals, in order to get returns that would not be obtained otherwise.

This basic intuition is sufficient to expose the link between social capital and social networks: social networks are the source of social capital; social network analysis may

[2] This is a translation from the original definition in French. The latter stresses the "permanent and useful" relations that constitute the social group which generates social capital: "Le capital social est l'ensemble des ressources actuelles ou potentielles qui sont liées à la possession d'un réseaux durable de relations plus ou moins institutionnalisées de interconnaissance et interreconnaissance; ou, en d'autres termes, à l'appartenance à un groupe, comme ensemble d'agents qui ne sont pas seulement dotés de propriétés communes (susceptibles d'être percues par l'observateur, par les autres ou par eux-mêmes) mais sont aussi unis par des liaisons permanentes et utiles" (Bourdieu, 1980).

then be used to describe and measure social capital. If the adjective "social" indicates social structure or social networks as the origin of this form of capital, the term "capital" highlights the similarity between social capital and other forms of capital with a long history in economics and social sciences: economic capital and human capital. Just like economic and human capital, the concept of social capital implies (1) an investment (in social relations); and (2) a return (expected or actual) (Lin, 1999a).

On the other hand, social capital is different from economic and human capital in that it is more intangible (Portes, 1998), and escapes identification with specific properties or characteristics of reality. Although it is always inherent within the social structure, social capital is defined by its function, not by precise properties or characteristics of the social structure itself: in fact, very different, even opposite, characteristics may be a source of social capital in different contexts, as the discussion on the social capital of network closure versus structural holes will exemplify below. As Coleman (1988) puts it, a specific function defines the concept of social capital, just like a specific function defines the concept of "chair": despite differences in form, material and appearance, you know that something is a chair when you can sit on it; despite differences in the characteristics of the social structure that generates it, you know that something is social capital when that social structure enables or facilitates purposive actions by individuals or groups.

The original proposals by Bourdieu and Coleman gave rise to two essentially different perspectives on social capital, an individual versus a collective one (Portes, 1998): social capital as a resource of individuals, which facilitates individual action; and social capital as a property of groups, collectivities, polities, societies, countries, etc., which produces certain desirable collective outcomes. Robert Putnam (1993; Putnam et al., 1994) is credited with introducing the latter notion, which has spawn a whole line of research in the political sciences. However, the *individual* notion is the one used in this dissertation and discussed in the following.

Several mechanisms have been identified as the "functions" whereby social capital yields returns to individuals, that is, social networks enable individual action. Social networks always carry *information*: receiving much and diverse information from extensive and differentiated networks is a critical advantage for individuals in many fields of instrumental action, for example when looking for a job or a house (Granovetter, 1973; Burt, 1992)[3]. The connections of an individual may *influence* other actors in ways

[3]Mark Granovetter's (1973; 1974) seminal work became a major point of reference in the literature on social capital, although the notion of social capital had not been introduced yet when Granovetter published his results in the early 1970s.

that benefit the individual, by virtue of their power, reputation or credential vis-à-vis other actors (Burt, 1992; Lin, 1999b): for example, if A already works for and is trusted by an employer, he may vouch for B to be employed in the same firm; in this case, the relation with A is a source of social capital for B by virtue of the influence that A exerts on the employer. A network may provide an individual A with *social credentials*, if A's recognized membership in a group signals to other actors that A can access resources beyond his individual capital (Lin, 1999b). Membership in the same group may create *trust* among individuals, which is a condition for inexpensive and successful transactions, as in the case of the "enforceable trust" among immigrant minorities discussed in Ch. 6 (Portes and Sensenbrenner, 1993). Social networks can provide people with stronger identities, recognition, and emotional support, an effect of *reinforcement* for single individuals (Lin, 1999a; Portes, 1998). Finally, social structure may generate *reciprocal obligations* that benefit individual actors (Coleman, 1988), as in the case of the "bounded solidarity" among immigrants discussed in Ch. 6 (Portes, 1998; Portes and Sensenbrenner, 1993).

This list is not intended to be an exhaustive typology of the functions of social capital: rather, it is a repertoire of the positive mechanisms of this form of capital that will be recalled the most in the following chapters. These effects do not take place all together, and all as a consequence of a single specific kind of social structure. Instead, their activation and operation depend on different characteristics of the social network, which may also be in contrast to each other. Thus, the operation of one positive mechanism may exclude another: a diverse, extensive and sparse network may be very effective for conveying useful *information*; however, these very characteristics may cause it to be a poor source of identity *reinforcement* and *reciprocal obligations*. Of course, which mechanism is more relevant to individual purposive action depends entirely on the context and the kind of action under consideration: the effects of *information* or *influence* may be more relevant for individual carrier advancement in corporate contexts; *reinforcement* and *reciprocal obligations* may be more important for the mental well-being and economic incorporation of immigrants in the host society.

Structural brokerage versus network closure as social capital

Given the clear link between social networks and social capital, different strategies have been proposed in sociology to identify the *properties* of networks that best operationalize social capital. Some lines of research have focused on the attributes of social contacts, that is, network *composition*, as an operationalization and measurement of social capital. Nan Lin's social resources theory is a popular example (Lin, 1982; Lin, 1999b): in this

theory, social capital consists of the resources embedded in social networks, and these resources originate from specific attributes of network actors, in particular their socioeconomic status. In other words, the socioeconomic status and the position in the social stratification of Ego's social contacts are the paramount source of social capital for Ego, and affect Ego's socioeconomic attainment. Thus, the focus here is on actor attributes rather than on the pattern of relations, although social resources theory includes propositions on how certain patterns of ties (e.g. the size of the network) and certain characteristics of the relations (e.g. the strength of ties) also affect the way network resources are accessed and mobilized by Ego.

On the other hand, since Coleman's (1988) defining work, a *structural* focus has characterized social capital theories: it was clear since the beginning that the advantages that social networks yield heavily depend on such properties as network size, density, cohesion, subgroups, etc.; that is, on the pattern of connectivity within the network. Thus, social capital needs to be operationalized not only with the attributes of network actors, also with the distribution of network ties: not only compositional, also structural metrics are needed to measure social capital. But while the relevance of network structure to social capital has always been agreed upon, different and even competing arguments have been advanced in sociological research as to *what kind* of network structure is really beneficial to individual actors and can be considered as social capital.

The most popular argument on the relationship between network structure and social capital is Ronald Burt's theory of "structural holes" (Burt, 1992; 2000; 2001). Structural holes are the void between separate cohesive subgroups of the network. A cohesive subgroup is a set of actors with many connections to each other, and few connections to the rest of the network: subgroups have a high density of connections within, but a low density of connections between each other. Structural holes separate different cohesive subgroups, and sparsely connected networks with multiple subgroups are rich in structural holes, as opposed to overall dense and tightly knit networks. Burt's fundamental proposition is that *bridging* structural holes, that is, connecting cohesive areas of the network that are otherwise unconnected, is the most beneficial network position for an actor. In other words, *structural brokerage* in loosely connected networks is the paramount source of social capital for Ego. Several arguments support this proposition.

In the first place, structural brokers have informational advantages. The diffusion of information is the key mechanism of social capital involved in the structural holes argument. In this context, information means knowing about opportunities, learning about new ideas, observing innovative practices. Cohesion means similarity, structural bro-

kerage means diversity of information. Information is old and redundant within dense networks and cohesive subgroups: being connected to each other ("cohesion" in network terms) and being connected to the same people ("structural equivalence" in network terms) means sharing the same information. In contrast, between-subgroup flows of information occur more rarely and carry more new and diverse information. Separate areas of the network are the sources of different, non-redundant pieces of information, which are additive rather than overlapping each other. As a consequence, actors who are connected to a single subgroup of the network are likely to receive, share and transmit the same information; actors who are connected to multiple subgroups, that is, network brokers who span structural holes, are likely to receive and control more, newer, and more diverse information. In ego-network terms, a sparsely connected egocentric network, where many alters do not know each other and multiple subgroups and structural holes exist, is a better source of information than a dense and closely knit ego-network, where everyone knows each other. In the former case, Ego is connected to diverse social circles, and is located at the crossroads of different sources of information, perspectives, skills, and resources.

Structural brokerage means not only receiving more and better information, also *transferring* and *controlling* more information. The structural broker is not only the *recipient* of new information from others, he is also the *source* of new information for others. He receives information from one group, which is not known to other groups; he may or may not share this information with them. While in dense networks information spreads without control, in networks rich in structural holes Ego controls if and where the information spreads. Those who learn new ideas an behaviors before others, and control and transfer new information to others, are likely to emerge as "opinion leaders" and become more influential and powerful than others (Burt, 1999)

On the other hand, the advantages of structural brokers do not depend entirely on information; they are also related to social control and power relations. In the concept that Ronald Burt borrows from Georg Simmel (1922), the structural broker is the *tertius gaudens*, the third who benefits from being in between two separate parties. By virtue of his recognized position between two parties, the *tertius* can limit the authority of or demands from one party, on the basis of his relationship (affiliation, loyalty, obligation, etc.) to the other. He can play one against the other, and take advantage of the tension and uncertainty between the two. In the most straightforward example, having two bosses means enjoying more freedom and autonomy than having one. In other words, having multiple affiliations and relationships to unconnected parties means suffering less constraint, pressure and social control.

Finally, structural brokers enjoy better social capital also in the *influence* sense of the concept. Being connected to different social circles and groups means that Ego is more likely to have people exerting influence in his favor in more different contexts and for more different opportunities.

Diversity is a key concept used by Burt in explaining the advantages of structural brokerage. Structural brokerage means connection to diverse social circuits; this implies diversity of the information received, the models and perspectives observed, the influences exerted through one's connections. The advantage of diversity was not a new argument when Burt introduced the notion of structural holes. Granovetter's (1973; 1974) proposition on the "strength of weak ties", a major reference in Burt's work, is the first popular sociological statement on the benefits of network diversity. Granovetter argues that weak ties to acquaintances with whom Ego interacts less, as opposed to strong primary ties, are the most fruitful connections in the search for a job: weak ties normally link to more distant and diverse social circuits, thus they are the best channels for more, new and non-redundant information on job opportunities. In Burt's words, weak ties are those that span structural holes.

These arguments suggest a focus on both network structure (sparseness), attributes of relations (weakness), and attributes of actors (actor diversity) in the operationalization of social capital. Network diversity emerges consistently as a crucial aspect in most propositions on social capital. In Granovetter's work, an attribute of relations, weakness of ties, works as a correlate of diversity. In Burt's theory, structural brokerage means connectedness to diverse social circles – although diversity is not the only reason why structural brokerage is beneficial. In Lin's social resources theory, the diversity of resources is an essential advantage, which is noted in the "extensity-of-ties proposition" (Lin, 1999b), whereby more extensive networks provide actors with more opportunities to locate the right resource for instrumental action. Both actor attributes and the pattern of ties will be used in this dissertation to operationalize social capital. In particular, compositional diversity will be central in this operationalization. Diversity will be measured with regards to two actor attributes, namely nationality and country of residence: a diverse personal network in the following analyses will be one in which the migrant is connected to social contacts from many different nationalities, and currently living in many different countries.

Much empirical evidence has been found over the last twenty years in support of the

structural holes argument, as I will discuss in Ch. 6. However, a sparsely connected network, rich in opportunities for structural brokerage, is arguably not the best kind of social structure in all contexts and for all populations. In fact, in his seminal work, James Coleman (1988; 1990) suggested that an opposite network structure may be a source of social capital: one which "closes" the network with dense and tightly knit connections.

The "closure" argument emphasizes the positive effects of mutual obligations, reciprocal expectations, and group support to individual action, and shows how dense and closed communities generate this kind of social capital. Trust is one of the basic mechanisms here (Coleman, 1988; Portes, 1998): if A and B belong to the same closed community, where everyone knows and monitors each other, trust is more likely to arise between them, because deviant and opportunistic behaviors are more easily discovered, communicated and collectively sanctioned. Similarly, compliant and deserving behaviors are collectively recognized and rewarded by the community. Monitoring or social control, rapid communication, and bad or good reputation are the main mechanisms that enhance the general level of trust in the community. In turn, trust enables collective action and cooperative activities that would be otherwise unfeasible or too costly.

Also the "reinforcement" value of social capital is enhanced by community closure, as closely knit communities are a stronger source of identification, emotional support and group "bounded" solidarity (Portes and Sensenbrenner, 1993). At the same time, dense communities usually coexist with multiplex relationships, those that arise and are sustained in multiple domains and roles (e.g. family, neighborhood, work, etc.): enabling mutual control and trust, also multiplicity increases reciprocal obligations and expectations. I will go back to mutual trust, group solidarity, and multiplicity as sources of "closure" social capital in Ch. 6, especially with regards to immigrant minorities.

In conclusion to this discussion, it should be noted that the opposition between the "bridging" and "closure" arguments derives from entirely different views on which is the ultimate benefit of social capital. In turn, these lead to different propositions on the social network structure that generates social capital. In Burt's view, the essential benefit of social capital is enhancing entrepreneurship, in the most general sense of the word, and all the factors that foster it: diversity, individual choice, freedom from constraint. In Coleman's perspective, the paramount benefit of social capital is enhancing cooperation and solidarity among individuals, and all its pre-conditions: trust, reputation, reciprocity. Where Burt sees constraint and control, Coleman finds mutuality; where Burt finds opportunities for the brokering actor, Coleman sees risks of opportunistic behavior by the actor's counterparts. As a result, a sparsely connected social structure rich

in structural holes creates social capital in Burt's theory; density and closure, that is, the *lack* of structural holes, produce social capital in Coleman's propositions.

This opposition demonstrates how social capital is defined by its *function*, rather than by particular properties of the social structure. Both structural holes and network closure are social capital, and both Burt's and Coleman's arguments are validated, in different contexts: structural holes fulfill the *function* of social capital in some situations, while network closure does in others. A major finding in this dissertation will be that brokerage and closure can be both beneficial for transnational immigrants: they are both social capital, yet in different contexts and for different kinds of purposive action.

At the same time, brokerage is often contrasted to closure for its effects on network *diversity*. Structural brokerage is described as social capital because, among other things, it implies connectedness to many diverse social circles, that is, contacts with different attributes, abilities, behaviors and resources. By contrast, network closure is a correlate of homogeneity of social connections, the *lack* of diversity, although it creates social capital in terms of mutual trust, reciprocity, and solidarity among actors.

Thus, two separate lines of research demonstrate the advantages of both compositional diversity and closure in the network, yet these two conditions are typically regarded as mutually exclusive. This dissertation will depart from the traditional opposition between diversity and closure, and investigate what happens when these two principles are actually *combined* in personal networks. The combination or balance between diversity and closure, that is, *diversity within closure* in the network, will be captured by the index of subgroup segregation proposed in Ch. 5, and Ch. 6 will explore its positive effects for immigrant assimilation. In particular, I will call "transnational closure" the combination of *geographical* diversity and structural closure of the personal network, and discuss its working as social capital among Sri Lankans in Milan.

2.2 Immigrant assimilation in sociology and cross-cultural psychology

2.2.1 Cultural, social, and economic assimilation in the sociological account

The traditional framework

The assimilation of immigrants to host societies has been a major subject of sociological studies throughout the XXth century. The Chicago School of sociology is credited with introducing the notion of immigrant assimilation, and the first theories on its determinants and development in time, with its work on European migration to the United

States in the first decades of the 1900s. In the original definition by Robert Ezra Park and Ernest Burgess, two majors sociologists in the Chicago School, immigrant assimilation is viewed as "a process of interpenetration and fusion in which persons and groups acquire the memories, sentiments, and attitudes of other persons or groups and, by sharing their experience and history, are incorporated with them in a common cultural life" (Burgess and Park, 1921, p. 735). The focus of this notion is on the group level, that is, on assimilation as a process that involves *groups* of people. The formation of solidarity, or a common sense of nationhood, among groups of different origin is the essence of assimilation, which results from "a sharing of tradition" and an "intimate participation in common experiences" (Burgess and Park, 1921, p. 735).

This definition does not imply the idea that a minority immigrant group necessarily rejects its original cultural traits to embrace the majority culture. Rather, the different groups come together in a "common cultural life" and come to share common national sentiments. The stress is on national solidarity and identity, a concept close to what we would call today "ethnic identification".

In the view of Park and his colleagues, a common sense of nationhood between peoples from different origins does not arise easily and without obstacles when foreign social groups come into contact. In fact, assimilation is the ending point of a "race-relations cycle", another popular concept from the Chicago School. This cycle of inter-group relations involves different subsequent stages, namely "contact, competition, accommodation, and eventual assimilation" (Park, 1926). The *competition* between two different ethnic or national groups is the initial consequence of *contact* between foreigners. It leads to an equilibrium, or *accommodation*, in a new social structure where power and (possibly unequal) positions are mutually acknowledged. During this stage, personal relationships that cross group borders, including primary relations as inter-group marriage, gradually lead to eventual *assimilation*, that is, the disappearance of the group border and distinction. The hypothesis that this process is "progressive and irreversible" (Park, 1950, p. 138) gave place to much of the critique to assimilation theory in more recent sociological studies (Alba and Nee, 1997). Whereas, in the first half of the XXth century, European immigrant minorities actually seemed to follow a regular and progressive path across generations toward equal relationships and the decline of ethnic boundaries with mainstream American society; a similar pattern has often failed to account for the experience of non-European first- and second-generation immigrants in more recent decades.

Studies of European migration to the United States led to a consolidated framework

on assimilation around the half of the XXth century. Milton Gordon's "Assimilation in American Life" (1964) summarizes it, in what has been later recognized as the "canonical account" on assimilation theory (Alba and Nee, 1997). In this account, assimilation embraces two main, separate dimensions: the cultural and the social one.

Cultural assimilation, or acculturation, is the process whereby the minority gradually adopts the majority's cultural traits, tastes and values. Social assimilation, which Gordon calls "structural assimilation", is assimilation in social relationships, rather than in cultural patterns: the establishment of primary-group relationships between minority and majority, whereby minority members enter the social cliques, clubs and institutions of the mainstream society. Gordon identifies other dimensions of assimilation as well. Among these, the "identificational" dimension is particularly interesting to subsequent migration studies: it refers to assimilation in ethnic identity, whereby the minority comes to share a sense of peoplehood centered on the host society. This notion follows the original stress on nationhood in the Chicago School, and establishes a link between the origins of assimilation theory and contemporary studies of ethnic identification.

In Milton Gordon's account, cultural assimilation takes place before assimilation in any other domain, and is inevitable. It is a one-way process: the minority absorbs cultural traits from the majority. Social assimilation *can* occur subsequently, but it is not a necessary and inevitable outcome. In fact, social assimilation is a sufficient condition for acculturation, yet acculturation is *not* a sufficient condition for social assimilation: a minority may well absorb the majority's cultural traits, and still be excluded from primary social relationships with the mainstream society. Thus, cultural assimilation may coexist with *a lack* of social assimilation, that is, structural pluralism: separate institutions and social networks for separate ethnic groups. However, when it does take place, structural assimilation is the last, most mature stage of assimilation, and it entails assimilation in all the other dimensions.

The socioeconomic domain is another relevant aspect of assimilation in the canonical account. Entry in the same socioeconomic positions as the mainstream is relevant both in itself, and as a motive or premise for other kinds of assimilation. In particular, it is a motive for or a cause of social ("structural") assimilation: immigrants enter mainstream social cliques in order to access better occupations (socioeconomic assimilation as a motive for social assimilation); or they enter mainstream social cliques as a consequence of their having an economically and occupationally equal status with natives (socioeconomic assimilation as a cause of social assimilation).

Two essentially distinct views on socioeconomic assimilation have emerged in the sociological literature (Alba and Nee, 1997). Socioeconomic assimilation may be defined

as the process whereby the minority achieves *equal attainments* to the majority: minority members attain an average or above average socioeconomic standing in the society. In this notion, socioeconomic standing is measured by education, occupational position, or income. In the second place, socioeconomic assimilation has been conceived of as *equal opportunities*: minority members can access institutions such as the labor market or schools and universities, in the same way as natives. Here the emphasis is on discrimination versus equal treatment toward immigrant minorities. In this dissertation, socioeconomic assimilation is thought of as *equal attainments* between immigrants and natives.

The critiques to traditional assimilation theory

The notion of assimilation as proposed by the traditional sociological account has been widely criticized in more recent studies of migration. Assimilation has been faulted for being an ethnocentric, normative and ideological concept: one that assumes the mainstream culture of the (Western) host societies to be the standard at which minority groups should tend, and postulates that immigrants should give up their original cultural traits in the process. In this sense, the very concept of assimilation has been questioned for justifying public policies that aim at eradicating original cultural traits and identities from immigrant communities (Alba and Nee, 1997).

At the same time, more recent migration studies have argued that assimilation theory yields a poor description of the actual way contemporary immigrants adapt to host societies. The concept of assimilation may suggest that a single, uni-directional, progressive and irreversible path is experienced by all immigrant groups, one that eventually leads to equal opportunities, comparable attainments and cultural uniformity with the mainstream. Yet, such a linear assimilation path has turned out to be far from the experience of many contemporary immigrants. In fact, some immigrant groups seem to get permanently trapped into low-skilled and low-paid jobs, and do not enjoy the same socioeconomic upward mobility as European first and second generation immigrants in the first half of the XXth century. Theories of segmented labor markets (Piore, 1979) have been advanced to explain this process.

A pattern of "segmented assimilation" has been found to better describe the adaptation of more recent immigrant minorities to receiving societies: unlike second-generation immigrants of European descent, the new immigrant second generations often find out that social assimilation to the mainstream, and separation from co-ethnic social circles, do not mean upward social mobility; rather, they lead to enter the underclass of the host society. In contrast, preserving the co-ethnic social capital may be a more successful

strategy for economic advancement (Portes and Zhou, 1993). Along similar lines, the hypothesis of an ethnic "enclave economy" was studied and sparked a long debate in the 1980s. Some immigrant minorities, in particular Cubans in South Florida, seemed to have developed an economic enclave founded on immigrant enterprises with co-ethnic labor force, in which socioeconomic upward mobility occurred within social and cultural *separation* from the mainstream society (Wilson and Portes, 1980; Portes and Manning, 1986; Sanders and Nee, 1987; Portes and Jensen, 1987; Sanders and Nee, 1992; Waldinger, 1993; Light et al., 1994).

At the same time, the history of other immigrant minorities, like Jewish immigrants in Europe and the Japanese in the United States, has been shown to follow a very different pattern of incorporation from the one postulated by assimilation theory. These groups have been described as "middleman minorities" (Bonacich, 1973; Bonacich and Modell, 1980), in that they settle in an intermediate occupational position, which allows them to escape low-status occupations, while not assimilating in the mainstream labor market either. Working in trade and commerce, they mediate between two parties (producer and consumer, employer and employee, owner and renter), and fill the "status gap" between elites and masses in the host society. In the experience of these minorities, discrimination and hostility from the mainstream result in reactive ethnic closure and solidarity, which reinforce the ethnic occupation and control of middleman economic positions.

Assimilation as a process of groups versus individuals

Immigrant assimilation may be studied as an individual or a group process (Alba and Nee, 1997). At the group level, assimilation consists in the decline, and eventually the disappearance, of an ethnic distinction or boundary between two groups. This process may involve the "vertical" relationship between a minority vis-à-vis a majority or "mainstream" population; or it may involve the "horizontal" relationship between two minorities.

In the cultural dimension, the decline of distinction between two groups does not require cultural influence to be one-way, i.e. from the majority to the minority, as in the canonical account. In fact, historically a mutual exchange of cultural traits has often been the case, whereby the majority has absorbed the minority's cultural patterns as well. In the social dimension, group-level social or structural assimilation means that the minority group is not socially bounded and separate, that is, closed in its own social cliques, clubs and institutions. Finally, economic group assimilation has occurred when the minority does not occupy overall distinct positions or niches in the labor market, in terms of wages, socioeconomic standing or economic industry. Social and economic

assimilation at the group level imply equal opportunities for minority individuals: e.g. minority members go to the same schools as majority members; or they are not systematically discriminated in access to jobs.

At the individual level, the notion of assimilation is more one-sided. Individual assimilation can meaningfully be defined only as the process whereby a minority member approaches the cultural or socioeconomic standards of the mainstream. The process is successful when the minority individual is "able to function in the mainstream society" (Alba and Nee, 1997). Thus, cultural assimilation at the individual level implies that the migrant absorbs, accepts, and shares cultural traits from the majority. The expression "cultural traits" encompasses several aspects: language, cuisine, music, TV, and other forms of entertainment. Individual socioeconomic assimilation means economic advancement, upward mobility, incorporation in the mainstream economy, whereby the immigrant comes to occupy similar positions and obtain similar earnings to natives. This dissertation will focus on assimilation as an *individual* process.

2.2.2 Acculturation in cross-cultural psychology

On the subject of cultural assimilation, a prolific tradition of research developed aside from strictly sociological approaches, in the fields of cross-cultural and social psychology. In this literature, the process of cultural assimilation is normally called "acculturation", and the original definition of the concept is drawn from anthropology, rather than from the sociological tradition of the Chicago School: following Redfield et al. (1936), acculturation is defined as "those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural patterns of either or both groups". Although this definition mentions changes in the cultural patterns of "groups of individuals", the subsequent psychological research has been mostly interested in the *individual* cultural adaptation and change which ensue from the contact between foreign cultures. Measures of *individual* acculturation have been designed (Cabassa, 2003), and theories have been proposed on the causes and consequences of acculturation for individual actors (Berry, 1997). One of the most popular individual measures of acculturation in this field, the Acculturation Rating Scale for Mexican Americans-II or ARSMA-II (Cuellar et al., 1995) will be adapted in this dissertation to index cultural assimilation among immigrants in Barcelona (see Ch. 6).

The original definition by Redfield and colleagues, like the very shift from the term "assimilation" to "acculturation", points out a quite different approach to cultural adaptation than in the sociological tradition. As Redfield et al. (1936) point out, "acculturation

is to be distinguished from (...) *assimilation*, which is at times a phase of acculturation". In other words, since its foundations, this research tradition did not assume that the contact takes place between a minority and a dominant group; nor that the cultural change consists in the acceptance of dominant cultural traits and the relinquishment of original cultural traits by the minority – that is, assimilation. This difference from the sociological tradition is not irrelevant, since it has a specific consequence on the way acculturation has been operationalized and measured in subsequent cross-cultural psychological research.

The way cross-cultural psychology has studied immigrant acculturation heavily reflects the original view of acculturation as a cultural change that does not necessarily imply assimilation to a dominant culture. Countering the conceptualization of immigrant cultural adaptation as an uni-directional process which removes *from* the origin culture and approaches *toward* the host culture, studies in cross-cultural psychology commonly accept the distinction between two, separate and orthogonal dimensions of acculturation: (1) "cultural maintenance", that is, the immigrant's propensity to preserve his origin culture; (2) "contact and participation", that is, the immigrant's tendency to establish relationships and participate with the host society (Berry, 1997).

These two dimensions are separate and orthogonal, in that there is no specific association between them: the way the immigrant behaves or "scores" on the dimension of cultural maintenance does not determine the way he behaves on the dimension of contact and participation. In particular, there is not a *negative* relationship: a high tendency to cultural maintenance does not imply the refusal of contact and participation in the host society; likewise, a high propensity to contact and participation in the receiving country does not determine the abandonment of the origin culture. Rather, the acculturation process may lead the migrant to any combination of behaviors along the two dimensions: a high propensity to both preserving his own culture and participating in the host society; a low inclination to both; a tendency to cling on to the origin culture while rejecting contact with the host society; or an inclination to assimilate to the host society while losing original cultural traits.

The four possible combinations between low and high "scores" on the two separate dimensions are called "strategies" or "modes" of acculturation in cross-cultural psychology. The influential work by John Berry (Berry et al., 1989; Berry, 1997; Sam and Berry, 2006) has established the following terminology for the four modes of acculturation:

Separation High scores on cultural maintenance, low scores on contact and participation: the migrant attributes a high value to maintaining his original cultural identity, and a low value to establishing relationships with the host society.

Assimilation Low scores on cultural maintenance, high scores on contact and participation: the migrant is inclined to interact and participate in the host society and culture, while he does not value the maintenance of his original cultural traits.

Marginalization Low scores on cultural maintenance, low scores on contact and participation: the migrant has a low propensity to both preserving his cultural roots and participating in the host society.

Integration High scores on cultural maintenance, high scores on contact and participation: the migrant seeks to maintain his cultural integrity, while also participating in the receiving society.

Whereas the expression "acculturation strategies" stresses an element of free choice in the behavior of immigrants, the more neutral "mode of acculturation" does not imply that separation, assimilation, marginalization and integration are the outcome of a preference by, or rather a constraint on the immigrant. As a matter of fact, a specific mode of acculturation may result more from constraints imposed by the dominant group, than from individual preferences of the migrant (Berry, 1997). Separation may follow from discrimination or segregation of a minority. Assimilation may be imposed by the majority, e.g. through school education. Marginalization is often a forced outcome, the consequence of a combination between forced assimilation and social exclusion of immigrants. On the other hand, integration may only be the product of a free choice, yet one that requires specific macro social conditions, in that it can only be made in inclusive or multicultural societies.

Interestingly, Berry (1997) links his acculturation typology to the traditional sociological account on assimilation by Gordon (1964), with the proposition that the Assimilation strategy is likely to occur in the presence of what Gordon calls cultural and structural assimilation; while Integration is the most likely outcome when Gordon's structural assimilation takes place *without* cultural assimilation of the minority group. On the other hand, in Gordon's account, structural assimilation *necessarily* causes cultural assimilation as time passes. This contradiction exposes a crucial difference between Berry's framework and the classical assimilation theory in sociology: the prediction that an Integration equilibrium, in which the immigrant maintains his origin culture while also participating in the host society, can occur *instead of* a full Assimilation outcome, in which participation in the host society goes together with the relinquishment of the origin culture.

In general, the very distinction of the two dimensions of cultural maintenance and participation in the host society, with the corollary that migrants can follow both prin-

ciples, or reject both principles at the same time, is a point on which the traditional assimilation framework and Berry's perspective clearly disagree. Specifically, the mode of Integration is in contrast with predictions from the traditional assimilation theory. According to assimilation theory, the adaptation process cannot settle on an equilibrium in which immigrants successfully participate in the host society, *while simultaneously* preserving cultural identity and possibly contact with the origin society. In contrast, in Berry's framework, and in the body of research that it produced, not only is Integration described as one of the possible "equilibrium" outcomes of the acculturation process, it is even found as the most successful outcome in terms of immigrants' physical and psychological well-being (Berry et al., 1987; Berry, 1997). On the other hand, while at odds with the traditional assimilation framework, Berry's conceptualization seems today closer to the sociological perspective of immigrant transnationalism, which stresses the coexistence of participation in the host country and involvement in the origin society among contemporary immigrants. Berry's modes of acculturation, as well as the transnational perspective in sociology, will be major points of references in this dissertation.

A interesting parallel between Berry's modes of acculturation and types of personal networks has been found by Brandes et al. (2010), which is particularly relevant to this study. Working with the same data on migrants' personal networks in Barcelona that will be used in the following (see Ch. 3), Brandes and colleagues combine nationality and country of residence to distinguish four classes of social contacts: (1) "origin": migrant's co-national contacts who still live in his home country; (2) "fellow": migrant's co-national contacts who live in the host country; (3) "host": natives of the host country; (4) "transnationals": all other contacts (alters from a third nationality, or living in a third country).

Using cluster analysis, Brandes and colleagues identify different types of personal networks, which can be very clearly interpreted as the network equivalents of Berry's modes of acculturation. Personal networks with very high frequencies of "origin" contacts and very low connections to "host" alters reflect the Separation mode of acculturation; an Assimilation strategy can be read in networks that are highly connected to "host" people, while maintaining few relations with "origin" contacts; networks with low proportions of both "origin" and "host" connections, and many "fellow" contacts, correspond to the Marginalization mode; finally, balanced networks with average frequencies of "host", "origin" and "fellows", embody the Integration mode of acculturation. The crucial result here is the perfect correspondence between network clusters independently found in the data, and the theoretically grounded modes of acculturation widely

recognized in cross-cultural psychology.

Using the same data, Lubbers et al. (2007) show the relevance of both the composition and the structure of personal networks to a particular aspect of acculturation, namely ethnic identification. They find that ethnic-exclusive identifications, which are based solely on the migrant's own ethnic group, are associated to tightly knit, cohesive networks with few separate subgroups, few connections to natives of the host country, and a high proportion of family contacts. In contrast, personal networks which are more integrated in the native society are correlated to weaker ethnic identifications, based on plural or generic labels.

The insights on personal networks and acculturation contributed by Brandes et al. (2010) and Lubbers et al. (2007) have been an major source of inspiration for this dissertation. The basic hypotheses of this work, namely that there is a network effect on assimilation, and that both network composition and structure matter to this effect, were conceived following the suggestions made by Brandes, Lubbers and colleagues on the association between networks and assimilation among immigrants in Barcelona. The following chapters build on this work, exploring how outcomes of both *cultural* and *economic* assimilation are affected by network composition, network structure, and the *interaction* between composition and structure.

2.3 The perspective of transnationalism

2.3.1 The emergence of transnational migration

In the late 1980s and early 1990s, ethnographic research on the cross-border activities of Caribbean and Filipino immigrants in the United States claimed the need for a whole new perspective in migration studies (Glick Schiller et al., 1992; Basch et al., 1994; Glick Schiller and Fouron, 1999). In contrast to the traditional assimilation framework, the new approach stressed the relevance and scope of the ongoing relationships of contemporary immigrants with their home countries. These included social relationships with family and friends, economic activities, political involvement, and a wide array of religious and cultural cross-border practices in the sending societies. *Transnational* migrants, or "transmigrants", "although they move across international borders, settle, and establish relations in a new state, maintain ongoing social connections with the polity from which they originated. In transnational migration people literally live their lives across international borders" (Glick Schiller and Fouron, 1999, p. 344). The transnationalism of contemporary immigrants was described as a new mode of immigrant incorporation: one which took place across national borders, in a "transnational social

field" where relations with the home society were as important as those with the host country. According to the new perspective, migration studies needed to focus on the web of relations and practices that created transnational social fields, rather than on an uni-directional relationship between immigrants and the host society, like in traditional assimilation research.

Although the existence of an extensive transnational social field spawned by constant cross-border relationships was a groundbreaking discovery, some shortcomings in the early research on immigrant transnationalism attracted several critiques. Much of this research lacked clear operational definitions of transnationalism, which made impossible the assessment of its actual relevance and extent among contemporary immigrants. On the other hand, transnationalism generically defined as the maintenance of social relationships with the home country was no novelty in migration studies, as international migrants have always preserved ties of some sort with their countries of origin, since the first sociological accounts of international migration in the early XXth century (Waldinger and Fitzgerald, 2004).

Especially the scale and relevance of transnational activities in immigrant populations were not clear from early research on the subject. The first studies of transnationalism were based on mostly ethnographic accounts, which tended to sample on the dependent variable, as they focused on immigrant communities that were chosen by researchers *precisely because* they were transnational (Portes, 2003). This led to overestimating the scope and scale of immigrant transnationalism: while suggesting that transnational involvement was the norm among contemporary immigrants, the early research actually failed to estimate the real extent of transnational activities. A major attempt at tackling this problem took place in 1998, when a large scale survey was launched in the United States as part of a collaborative project by several American universities, namely the Comparative Immigrant Entrepreneurship Project (CIEP). A representative sample of 1,202 Colombian, Dominican and Salvadorian immigrants were interviewed in their areas of higher concentration in Los Angeles, New York, Providence, and Washington, D.C. (Portes, 2003; Guarnizo et al., 2003). Data from this source, the largest survey to date specifically designed to study immigrant transnationalism, showed that only a *minority* of the immigrant population, around 10% to 15%, actually engaged in "regular and sustained" transnationalism, as defined by constant cross-border economic activities and political activism (Portes et al., 2002; Guarnizo et al., 2003).

Nonetheless, broader definitions of transnational activities were also possible, which encompassed a larger proportion of immigrant populations. While regular transnational activities involve a minority of international migrants, "occasional" transnationalism

characterizes the vast majority of them. Thus, Guarnizo (1997) distinguishes "core" transnationalism from "expanded" or "occasional" transnationalism: the former only designates *regular* activities that are an integral part of an immigrant's life, and follow predictable patterns (see also Guarnizo et al., 2003). *Core* transnational immigrants can be thought of as a new class of immigrant entrepreneurs or political activists, who undertake cross-border activities on a regular basis. While this is a minority, those who occasionally engage in transnational activities represent up to one third of the immigrant population. Along similar lines, Itzigsohn et al. (1999) propose a distinction in degree, between "narrow" and "broad" transnational practices: the former are highly institutionalized activities, which require constant participation and regular travel; the latter are not institutionalized, and based on occasional involvement and sporadic travel.

Transnationalism varies in degree, as well as in the domain of activities, practices and behaviors. Transnational involvement may take place in the economic, political, social, cultural, or religious domain (Levitt and Jaworsky, 2007; Portes, 2003). Economic transnationalism ranges from widely-spread practices as sending money remittances to families or savings to banks in the home country; to being self-employed in transnational enterprises which depend on constant cross-border economic relationships, for example because they import goods, make investments, or employ people in the home country (Portes et al., 2002). In the political domain, transnational involvement includes being member of political parties or associations, financing political organizations, taking part to electoral campaigns in the home country (Guarnizo et al., 2003). Finally, cultural and religious transnationalism involves participating in hometown associations, sending money for projects and charity works in hometowns, travelling to attend religious festivities in the home country, etc. (Itzigsohn and Saucedo, 2002).

2.3.2 The network origin of transnationalism

Most research on immigrant transnationalism up to date has used the frequency or intensity of transnational activities and practices as an operationalization of immigrant transnationalism. On the other hand, whatever the domain of transnational activism, social networks clearly lie at the core of any notion of transnationalism: in any domain and with any degree, immigrant transnationalism is based on the existence of a flow of *social relationships* that cross national borders. These may be family relationships, economic transactions, political connections, membership in religious groups: in any case, they are social networks.

As discussed by Molina et al. (2012), the relevance of social networks to an operational definition of transnationalism is apparent in the very first discussion on the con-

cept of "transnational social field" by Glick Schiller and Fouron (1999). Specifically, Glick Schiller and colleagues view *egocentric networks* as the building blocks of an operational definition of transnational social fields. A social field can be defined as an "unbounded terrain of interlocking egocentric networks" (Glick Schiller and Fouron, 1999): a *transnational* social field is a network of egocentric networks which stretch across borders and bridge different nations.

Molina et al. (2012) trace the link between the early conceptualization of "social field" based on networks in the Manchester School of anthropology (Barnes, 1954), and the concept of immigrant transnationalism as introduced by Glick Schiller in migration studies, and operationalized by egocentric networks. Following this line of thought, Molina and colleagues argue for an ego-network operationalization of transnationalism. They claim that egocentric networks are particularly suited for the study of transnationalism because they are unconstrained, or "unbounded" to use Glick Schiller's word. As discussed above, egocentric networks are defined by the relationship with a focal individual (Ego), rather than by an institutional boundary like sociocentric networks: thus, any actor who has a relevant relationship with Ego is in the network, which is not constrained by any pre-determined boundary imposed by researchers. This is even more the case if the ego-network is defined by a very general social relation, as in our case, with personal networks which include all types of social contacts (see Ch. 3).

At the same time, ego-network data allow to focus on a specific place, like Milan and Barcelona in this dissertation, and to assess the degree of Ego's embeddedness in that place: ego-networks originate from an Ego, thus they originate in a place. In this sense, ego-networks, and the transnational social fields they generate, give the study a perspective "from inside" specific places, as opposed to the view "from outside" which results from sociocentric network data (Molina et al., 2012). The relation to a place also means that ego-network analysis can describe the embeddedness of actors in places, and study the *variation* of this embeddedness within transnational social fields: in fact, transnational fields result from the social networks of both highly transnational Egos, and highly *local* Egos, who are much more embedded in the focal place (Molina et al., 2012). Molina and colleagues suggest a way in which measures of geographical diversity in this web of ego-networks can help identifying transnational social fields. Geographical (and national) diversity of migrant egocentric networks will be a central topic throughout this dissertation (see Ch. 5).

2.3.3 Immigrant transnationalism and assimilation

As I will argue in the following chapters, using social networks rather than transnational activities as an operationalization of immigrant transnationalism may lead to very much reappraise the scale of migrants' transnational involvement: whereas only a minority of international immigrants appear to be truly transnational in definitions based on cross-border behaviors and practices, our data show that high levels of *network* transnationalism are common among the majority of immigrants.

On the other hand, despite the controversies on the scale and scope of immigrant transnationalism, the significance of transnationalism in migration studies is not just a function of its extent, that is, of *how many* immigrants are actually transnational. Even if it should involve only a minority of immigrants, transnationalism may nevertheless be relevant for its *effects* on immigrant incorporation. This is a major point in the research that describes transnationalism as a new and positive avenue to immigrant adaptation in host societies. The relationship between transnationalism and assimilation has been the subject of a few quantitative studies in the last years, mostly based on data on Latin American immigrants in the United States from the CIEP project. The essential conclusion that can be drawn from this body of research is that there is no conflict between transnationalism and assimilation among contemporary immigrants.

Regardless of whether transnationalism is defined strictly or broadly, Guarnizo et al. (2003) find that transnational political activism is not the reactive practice of marginalized and disadvantaged immigrants, as is often imagined in public discourse on the topic. In fact, transnational political activists are more educated immigrants, those with longer tenure in the host society, and those who are more likely to also participate in host country politics. This suggests that transnationalism and assimilation can develop together: contrary to what the traditional assimilation framework may predict, assimilation does not require to relinquish involvement and participation in the home society and culture.

Itzigsohn and Saucedo (2002) study the association between immigrant incorporation and "sociocultural" transnationalism, defined as the repertoire of public social practices and institutions that create a field of transnational sociability and identification, or a community without propinquity among immigrants and people in their home country. These include participating in hometown associations which bring or send people back and forth between the host and the home country; travelling to attend public festivities at home; taking part to charity organizations which operate in the sending country. Itzigsohn and Saucedo find that this kind of transnational involvement is not weakened by incorporation in the host society. In particular, it does not decrease with the time elapsed since migration, nor with the attainment of citizenship in the United States. In

fact, in some cases, incorporation in American society even enhances transnational sociocultural activism.

Portes et al. (2002) focus on the economic transnationalism of the self-employed immigrants whose firm's activities rely on regular relationships with the home country. Their findings suggest that transnational entrepreneurship may actually *facilitate* incorporation of the first and second generations of immigrants in the host society. Again, the most transnationally active immigrant entrepreneurs are long-term U.S. residents and American citizens. Transnational entrepreneurship appears to be a positive alternative to low-skilled, low-paid and dead-end jobs. Moreover, the financial safety of this kind of economic incorporation among first-generation immigrants may work as a springboard for the educational and occupational assimilation of their offspring, similar to the experience of the self-employed immigrants and their children in middleman minorities and ethnic economies in the 1970s and 1980s (Zhou, 1992; Nee and Sanders, 2001). Thus, transnationalism is likely not to impede, but rather to foster short-term and long-term assimilation in the first and second generations.

In Europe, Snel et al. (2006) estimate quantitative models on the association between transnationalism and assimilation outcomes in a sample of 300 immigrants in the Netherlands. They take into account both transnational activities as money remittances, financial investments, political activism or participation to charities in the home country; and transnational ethnic identification, that is, ethnic self-identifications based on co-national or co-ethnic groups abroad. Like the studies on the CIEP data, Snel and colleagues find no conflict between assimilation and transnationalism in this broad operationalization. In particular, in their data, the intensity of transnational activities and the likelihood of transnational ethnic identification are not lower among immigrants with higher educational status and better socioeconomic position.

The research in the last decade on the association between transnationalism and assimilation in Europe and America has provided crucial insights on how transnational activism does not counter, but if anything facilitates, the process of immigrant assimilation in host societies. In most of this research, however, the operational definitions of transnationalism are based on specific transnational behaviors, practices and exchanges, which leads to neglect the fundamentally *relational* origin of immigrants' transnational involvement.

Although social networks clearly lie at the core of transnationalism, the use of network data and concepts in the existing literature on the topic is rare and limited. The study on transnational political activism and assimilation by Guarnizo et al. (2003) fea-

tures network variables constructed from a free list of up to three contacts in each of several categories, which results in personal networks of less than 9 contacts on average. The focus is on network composition, specifically the ratio of nonlocal to local contacts in the network; while network size is the only structural variable incorporated in the study. Likewise, Snel et al. (2006) use a single network variable in their models, namely the number of host country natives in the social network[4].

The major methodological proposal in this dissertation is to shift to a *network* operationalization of immigrant transnationalism. This is a change in methods, as well as a substantial conceptual shift. Analyzing behaviors, practices and exchanges, the existing literature studies transnationalism as *individual action*, at the expense of the transnationalism of *social structures*. In contrast, the latter is the major focus in this dissertation. It is my argument that immigrant transnationalism is fundamentally inherent within the social structure in which international migrants are embedded. Therefore, following the anthropological and sociological view of social structure as stable patterns of relations in social networks, I propose a conceptualization and an operational definition of transnationalism based on social networks, with both their composition and their structure.

2.4 Conclusions

Social Network Analysis is adopted in this dissertation, not just as a source of metrics for quantitative analysis, but as a whole substantive perspective on social reality. The fundamental hypotheses of Social Network Analysis are that network actors are interdependent, network relations imply a flow of material or immaterial resources, the lasting patterns of relations define network structure, and this structure fundamentally affects individual actions and outcomes (Wasserman and Faust, 1994). The work exposed in the following chapters shares all these hypotheses. The major idea that motivates this work is that, besides the micro-level of immigrants' individual characteristics and the macro-level of policies and institutional contexts, the meso-level of immigrants' social networks has crucial implications for assimilation outcomes. This dissertation will try to demonstrate such implications.

Social networks as used in this dissertation are egocentric *personal networks*, which encompass all the current and active social contacts of the migrant. As discussed in Ch. 3, these are sampled by a list of 45 social contacts (alters) mentioned by the migrant (Ego), and the relations among them. The expression "personal community" will

[4]The article does not give further details on the operational definition of social network used for data collection.

be used at times as a synonym for "personal network", although it perhaps suggests a nature of cohesion, closure and solidarity that does not necessarily characterize migrants' networks.

Personal networks will be used to describe and measure social capital, consistently with the established sociological literature on the network origin of this form of capital (Lin, 1999a). The notion of social capital will be adopted in its traditional meaning, as the set of the characteristics of social structure that produce returns or advantages to individuals in specific purposive actions (Bourdieu, 1985; Coleman, 1988). In existing sociological theories, this notion embraces *both* network composition *and* network structure: both the attributes of social contacts, and the pattern of relations among them, are relevant to enabling and facilitating individual action. Consistently, both the composition and the structure of personal networks, as well as the *interaction* between them, will be taken into account to describe immigrants' social capital in this dissertation.

In the following chapters, network composition, that is, the attributes of network actors, will be viewed as one source of social capital. In particular, I make the hypothesis that compositional *diversity* has the function of social capital: this is the diversity of social circles and communities spanned by one's network, which means diversity of information, influences, and models to which Ego is exposed and which he can control (Burt, 1992). This hypothesis is not new in social capital research, as the value of network diversity emerges from most literature on social networks as a source of social capital (Granovetter, 1973; Burt, 1992; Lin, 1999b). More precisely, diversity in the nationality and countries of residence of social contacts will be seen as a source of social capital here. As anticipated in the Introduction, underlying this view is the hypothesis that brokering, reconciling resources, mediating identities, transferring information between different social groups and communities creates crucial advantages to immigrants in their path of adaptation to host societies.

Not only network composition, also network structure will be considered as a source of social capital in the following chapters. I make the hypothesis that, beyond contacts' characteristics, specific patterns of relations among one's contacts are beneficial to individual instrumental action. Two competing arguments will be accounted for about network structure as a source of social capital: the proposition that structural brokerage between unconnected groups in sparse networks is the source of social capital, or the "bridging" argument (Burt, 1992); versus the statement that dense, tightly knit and closed networks are the most useful to migrants for instrumental action, or the "closure" argument (Coleman, 1988). This dissertation shares the view that social capital is defined by its *function*, rather than by specific patterns or properties of social structure, which is

a major point in the original formulations of the concept (Coleman, 1988). This means that *both* structural brokerage *and* closure, two opposite properties of social structure, may be social capital if they turn out to fulfill the *function* of this form of capital. Indeed, this will be a result from the following analyses: structural brokerage and network closure are both social capital for international immigrants, yet in different contexts and for different kinds of individual purposive action.

The existing literature suggests that both network composition and structure determine the social capital which accrues to individuals by virtue of their social relations. I will go a step further into this consideration, to argue that not only composition and structure *both and separately* matter to social capital; social capital is also affected the way composition and structure *interact*, determining different patterns of *brokerage between differences* and *diversity within closure* in the social network. Thus, the following chapters will combine network composition and structure, to capture the extent to which the immigrant brokers between different nationalities and countries of residence; or rather, he brings different nationalities and countries of residence in the closure of single cohesive groups. A specific index will be proposed to measure this dimension, which I called the index of (geographical or national) subgroup segregation in the network. In this sense, structural brokerage and network closure will be *qualified* in this work: "brokerage between differences" and "diversity within closure" are notions that add a consideration for actor attributes, compared to the traditional concepts of brokerage and closure as used in social network research.

Social networks are not only essential to the definition of social capital, they also lie at the foundation of the notion of immigrant transnationalism (Molina et al., 2012). Therefore, data on immigrants' social networks, and in particular egocentric data on their personal networks, allow for a powerful operationalization of immigrants' transnational involvement. In this way, a study on the personal networks of contemporary immigrants can take into account the most recent perspectives in migration studies, which contend that not only the one-way relationship with the host society, also the continuing connections with the home country are central in the lives of contemporary immigrants.

The network operationalization of transnationalism is a key aspect of this work, and no previous study on this subject makes as extensive a use of data on transnational networks. Existing operationalizations typically measure transnational involvement with the frequency or intensity of transnational practices and activities, and sometimes with transnational ethnic identifications. Networks appear in some studies on the relationship between transnationalism and assimilation, however with much more limited net-

work data, and with a strict focus on network composition. In contrast, the operationalization of transnational involvement proposed here uses several compositional and structural measures from data on total personal networks, as sampled by a list of Ego's 45 contacts and the connections among them. This is a methodological as well as a conceptual shift, as it implies moving the focus from the transnationalism of individual action to the transnationalism of social structures.

In the following chapters, the independent variables of social capital and transnationalism will be related to the dependent outcome of immigrant assimilation. Assimilation will be conceptualized as an *individual* path, rather than a group process (Alba and Nee, 1997). In other words, I will not deal with the problem of the shift in the overall position of an ethnic group, in terms of social, cultural or economic assimilation, within the stratification of society. Two dimensions of assimilation as an individual process will be accounted for: the cultural and the economic one.

By cultural assimilation, I will mean the migrant's ability to accept or adapt to cultural practices, tastes, preferences and values of the host society. I will also use the expressions "cultural adaptivity" and "acculturation". On the subject of acculturation as an individual outcome, research in cross-cultural psychology will be a major point of reference. A long line of research in cross-cultural psychology has explored the use of standard scales to measure individual acculturation (Cabassa, 2003). In this dissertation, cultural assimilation will be operationalized by an individual index which draws on the Acculturation Rating Scale for Mexican Americans-II (Cuellar et al., 1995), a scale constructed from questions that measure the migrant's closeness to the origin and the host culture separately.

The use of an acculturation scale is not the only way in which this dissertation draws on acculturation research in cross-cultural psychology. Berry's (1997) framework on modes of acculturation will be another essential point of reference from that research tradition. A crucial point in this framework is that cultural maintenance and participation into host society are not conflicting principles in immigrants' experience, but they can be followed or rejected both at the same time. In fact, social and cross-cultural psychologists have consistently found the mode of acculturation that follows both principles, Integration, to be the most successful in the experience of international immigrants (Berry et al., 1987; Berry, 1997). This is at odds with traditional assimilation theories, which do not predict a stable equilibrium in which immigrants combine participation into the host society, and cultural maintenance and social relationships with the home society (Gordon, 1964). On the other hand, the social psychological research on Inte-

gration turns out to be consistent with sociological studies on immigrant transnationalism, and their most recent conclusions that find no conflict between assimilation and transnational involvement (Itzigsohn and Saucedo, 2002; Portes et al., 2002; Guarnizo et al., 2003; Snel et al., 2006). The notion of Integration as a specific acculturation strategy will be used in the interpretation of results on immigrant personal networks in the following chapters.

Finally, in the economic dimension, individual assimilation will be equated with a successful incorporation in the labor market of the host society. I will follow the notion of economic assimilation as *equal attainments* compared to natives, rather than equal opportunities and absence of discrimination (Alba and Nee, 1997). Thus, in my operational definition, economic assimilation will consist in the achievement of a position in the host labor market that puts the migrant safely out of poverty, according to the material standards of the host society. Data on employment status and income will be combined in an index whereby immigrants with a job *and* a monthly income above the poverty line will be considered as economically incorporated, as opposed to immigrants who are unemployed or earn an income below the poverty line.

Chapter 3

The data: two surveys on immigrant personal networks in Milan and Barcelona

The analyses discussed in the following chapters are based on two sources of data. The first is a survey on the personal networks of international migrants in Barcelona, Spain. Interviews for this survey were carried out in a population of Argentinian, Dominican, Moroccan, Senegalese and Gambian migrants in the years 2005-2006. The project was founded by the American National Science Foundation and managed by Chris McCarty (University of Florida) and José Luis Molina (Universitat Autònoma de Barcelona) (Lubbers et al., 2007). This project and its results inspired a second survey on the personal networks of international immigrants in Milan, Italy. This is the second data source, which focuses on a specific national group: Sri Lankan immigrants in Milan. I managed this survey, which took place a few years after the Spanish one, in 2011-2012, and was prepared by extensive ethnographic work in Milan and Sri Lanka. Funding for the project came from the Center for Interdisciplinary Studies in Economics, Psychology and Social Sciences (CISEPS) at the University of Milan-Bicocca, Centro Studi Luca d'Agliano in Milan (LdA), and the scholarship of the Doctoral Program in Urban and Local European Studies (URBEUR) in the same University.

The Spanish and the Italian survey shared a common focus on the personal networks of international immigrants. They both conceived personal networks as the set of all the *current* and *active* social relationships of the respondent, including contacts from all types of relation (family, friends, acquaintances), spheres of sociability (work, neighborhood, leisure, etc.), nationality and country of residence. The same operational def-

inition of personal networks was used in Milan and Barcelona, by adopting exactly the same question to elicit a list of alters from respondents (the "name generator" in network terminology): "Would you please list the names of 45 persons whom you know and who know you, with whom you have had some contact in the past two years (face-to-face, by phone, or by the Internet), and whom you could still contact if you needed to?".

The fixed-size list of 45 alters was intended to yield a representative sample of respondent's *total* personal network. In both surveys, the structure of personal networks was also mapped by asking respondents whether each alter in the list knew each other: interviewees could evaluate the relation between every two alters as "certainly" existing, "maybe" existing, "certainly not" existing[1].

This dissertation is based on the data about five immigrant populations involved by the two surveys: Sri Lankans in Milan ($N = 102$); Argentinians ($N = 82$), Dominicans ($N = 67$), Moroccans ($N = 70$), Senegalese and Gambians ($N = 70$) in Barcelona. Senegalese and Gambians will be aggregated into a single ethnic group, since Gambia is a little enclave within Senegal, and the political separation between the two countries merely results from the history of European colonization in West Africa. In the following, this group will be referred to as the Senegambians.

3.1 Sri Lankans in Milan and the Italian survey

3.1.1 Why the Sri Lankans

An existing network of Sri Lankan informants could support researchers in the preparation of a survey among Sri Lankans in Milan. On the other hand, several reasons suggested that Sri Lankans were also a relevant and appropriate population for the study of the effects of social networks and transnationalism on immigrant assimilation patterns.

First of all, Sri Lankans are one of the largest immigrant minorities in Milan, and Italy. According to the most recent data by the Italian National Institute of Statistics (ISTAT), there were 75,343 Sri Lankans in Italy in December 2009: Sri Lankans were the 15th immigrant national group in the country, the 4th among Asian minorities (after the Chinese, the Filipinos, and the Indians)[2]. In Milan, Sri Lankans were 17,250 in December 2009, the 9th foreign nationality (the 3rd among the Asian nationalities, after the Filipinos and the Chinese)[3]. These figures increased in the two years before the survey

[1] As illustrated in the following, the actual wording of the question about whether each alter knew each other was slightly different in the two surveys.

[2] National-level data are published on-line on the website http://demo.istat.it.

[3] These figures refer to the province of Milan, an administrative territorial unit which approximately en-

took place, as indicated by the last official statistics available before the survey, namely those on the immigrant VISA applications received by the Italian Ministry of Interior on January 31st 2011 under the last "Decreto Flussi"[4]. 24,563 Sri Lankans had applied, which made Sri Lanka the 5th of all foreign countries for the number of VISA applications to the Italian government (the 3rd Asian country). At the same time, 13% of all immigrant applications referred to an employment in Milan, which was the first Italian city for the number of applications[5]. Thus, supposing that the population of Sri Lankan applicants followed the same territorial pattern as the whole population of applicants, more than 10% of the around 24,500 Sri Lankan applicants intended to settle in Milan in 2011: this means that between 2,000 and 3,000 more Sri Lankans were expected in Milan in 2011, in addition to the around 17,000 already living there, with an approximately 15% increase in one year[6].

In the second place, a significant variation in assimilation outcomes among Sri Lankans was uncovered by our preliminary ethnographic work in Milan. Sri Lankan migration to Italy started in the 1970s, and was presumably favored by the links between Italy and Sri Lanka which were established over the years by Italian Catholic missions in the Catholic area of the country. The migration flow presumably followed the network path and cumulative-causation pattern typical of international migration (Massey, 1990), and increased over the decades as a consequence of more and more stable and extensive Sri Lankan networks consolidating in Italy, and attracting further co-national immigration. This explains why the most Catholic area of Sri Lanka, the western coast between Colombo and Puttalam, is also the area of most intensive emigration to Italy: that is the area of the Island where the international networks which drive migration from Sri Lanka to Italy are most established and extended. In the Western coast, Wen-

closes the whole metropolitan area. The data were collected by Regione Lombardia (Osservatorio Regionale per l'Integrazione e la Multietnicità), the regional government in the area of Milan, and are available on-line at www.orimregionelombardia.it.

[4]The "Decreto Flussi" is the decree with which, every year or two years, the Italian government sets the numbers of foreign workers who can legally enter the country, and indicates the terms and deadlines for immigrant VISA applications. The "Decreto Flussi" in 2011 was the first one after December 2009.

[5]The data are published by the Italian Ministry of Interior on its website: www.interno.it. Data on the city of employment of foreign perspective workers are available because, under the "Decreto Flussi", the VISA application needs to be made by an Italian employer who wants to employ a foreign worker, rather than by the foreign worker himself.

[6]Although, according to the "Decreto Flussi", the Italian government formally accepts VISA applications from foreign workers who are currently living in their home country, it is well documented that this decree works in fact also as a legalization process of illegal immigrants *already residing* in Italy. This means that a relevant part of the 24,563 Sri Lankans who applied for an Italian VISA by the 2011 "Decreto Flussi" were in fact already living in Italy.

nappuwa, the most important Catholic town in Sri Lanka, is called "Little Italy" among Sri Lankans in Italy and the Island, since it has emerged in the years as the capital of the Sri Lankan emigration to Italy; as well as the place where many Sri Lankan immigrants in Italy buy houses and land, planning to resettle back in their home country one day.

From the standpoint of Italy, Sri Lankan immigration is one of the earliest among international migration waves from non-European countries. On the other hand, it is also a migration flow that still continues nowadays, with constant new arrivals from the Island, as statistics on the 2011 "Decreto Flussi" prove. As a result, the Sri Lankan population in Milan varies broadly in time since migration, a variation which would be hard to observe among other, more recently immigrated foreign minorities in Italian cities. Time since migration is, of course, the first variable to influence immigrant assimilation in host societies (Alba and Nee, 1997).

Sri Lankans in Milan also feature a variety of socioeconomic outcomes, compared to other immigrant groups. Among Sri Lankan immigrants, domestic service and janitorial jobs in residential buildings can be considered as an ethnic labor market niche in Milan (Schrover et al., 2007), which was clearly confirmed by our ethnographic exploration. These niches provide fairly stable, regular and protected jobs in the city, with good average salaries (between €1,500 and €2,500). Furthermore, Sri Lankans in these positions can usually afford to live in the most central and wealthy neighborhoods of Milan, as domestic workers and janitors are often offered an accommodation in the same building where they work. This results in a considerable improvement of life standards for the immigrant worker, as a consequence of the facilities, amenities and public services available in these areas of the city.

At the other end of the socioeconomic variation, a relevant part of the Sri Lankan population in Milan is unemployed, or occasionally employed in low-skilled and low-paid jobs in the service or manufacturing industry. As we could verify in our ethnographic work and with the survey interviews, many of these people can make ends meet in Milan only thanks to the assistance of family and friends, as well as public social services. Many of them cannot afford a bed in the city, and are hosted by co-national contacts. Many get their daily meals in soup kitchens run by Catholic charities in Milan. Much of this population is concentrated in the more segregated immigration neighborhoods in the periphery of the city.

The variability of time since migration and socioeconomic position suggested a substantial variation in the dependent variable of the study, namely assimilation outcomes, among Sri Lankans in Milan. At the same time, this population also stood out for a broad

variation in the independent variables, namely social networks and transnationalism. Both existing research on Sri Lankan migration to Italy (Pathirage and Collyer, 2011), and our own ethnographic work in Milan and Sri Lanka, showed how Sri Lankan migration conforms to the typical network dependency of international migration (Massey and Espinosa, 1997): it is decided, prepared and carried out with the constant support of social networks of family and friends, in both the host and home country. This is typical of economic migration, as opposed to the forced migration of political refugees: the former is not a sudden, traumatic or violent escape from home, but a move that is long planned and prepared with one's family, friends, and useful contacts.

It must be noted here that respondents in our survey were not from the Tamil minority of Sri Lanka: they were mostly Buddhist and Christian Sinhalese, the Sri Lankan ethnic majority, and less frequently Sri Lankan Muslims. Sri Lankan Tamil immigrants from the North and the East of the Island are normally asylum-seekers in Europe, who escape from the ethnic oppression and the civil war that have plagued Sri Lanka in the last thirty years, especially in the Northern and Eastern Tamil territories. However, our ethnographic research showed that Tamils are a small minority of the Sri Lankan population in Milan. Most Sri Lankans in Milan are Buddhist or Christian Sinhalese, or Sri Lankan Muslims, who migrate for economic reasons. They do not belong to ethnic minorities and are not victims of ethnic oppression in the home country; moreover, they come from regions that have been much less struck, or not struck at all, by the civil war.

Thus, Sri Lankan migration to Italy appeared to be particularly reliant on social networks in both the receiving and the sending country. Sri Lankan migration was clearly prepared with and supported by contacts in the home country. At the same time, it was not a disruptive event for social networks at home, as is often the case in forced migration. Unlike political refugees, Sri Lankans in Italy were not escaping from war or ethnic discrimination, and they had many friends and relatives who could choose to stay in Sri Lanka; furthermore, if legal immigrants, they had all the documents needed to travel back and forth from the Island, which is not the case for immigrants with political-asylum VISAs. As economic immigrants, Sri Lankans in Milan *had the choice* to maintain transnational networks in the sending society. On the other hand, they could rather choose to invest more in social networks based in the host country, either co-national or Italian, taking advantage of the existence of a large co-national community in Italy, and of employment positions in the service, domestic and janitorial industries which put them in constant contact with Italian people.

Finally, it must be noted that all the Sri Lankans that we interviewed are first-generation immigrants. Unlike the second generation, or the "1.5" generation of those who mi-

grated as kids with their parents, first-generation immigrants have obviously a wider and more active network in their home country. Maintaining transnational networks is much more difficult for subsequent generations (Portes et al., 1999; Lucassen, 2006). In other words, the first generation is more free to choose how much of a transnational and how much of a national network to create and cultivate: thus, we may expect *both* higher levels *and* a broader variation on network transnationalism among first-generation immigrants.

3.1.2 The ethnographic approach and the sampling strategy

Not all surveys for the collection of quantitative data need an ethnographic or qualitative work up front. In many cases, the sampling design and the closed-ended questionnaire of a survey have been developed and consolidated in repeated trials over the years: this is the case, for example, for large-scale regular surveys like the American General Social Survey, or the Labor Force survey by the Italian National Institute of Statistics. In some of these surveys, questionnaires include closed-ended items aimed at constructing quantitative scales along which respondents can be placed, such as acculturation, depression, or personality scales. The questions and response items for these scales have normally been widely explored and tested before the actual survey takes place, and they come to be well-established tools which may just be applied as they are to other survey samples. The Acculturation Rating Scale for Mexican Americans-II (Cuellar et al., 1995), on which part of this study draws (see Ch. 6, section 6.1), is an example of such scales and the kind of questionnaires on which they are based.

On the other hand, there are cases in which a quantitative survey cannot be prepared and carried out without extensive qualitative work up front. Several goals may underlie this work:

i) Defining the right questions to be asked in survey interviews. When there is little existing literature and no consolidated survey tradition on the population of interest, qualitative work may be needed to understand what are the right questions to ask respondents. Even if the subjects to be covered in the questionnaire and the underlying research questions are very clear, it may be much less clear what are the meaningful, appropriate and effective questions to ask *in that* population.

ii) Building a rapport of trust in the population. This is crucial to different stages of the quantitative survey: the collection of a sample of respondents; the actual execution of the interviews; the interpretation of answers with the help of respondents. A rapport of trust with the population also allows to identify key informants and

obtain their support. Again, the role of key informants is central in both the sampling stage, the preparation of the questions, and the interpretation of the answers.

iii) Defining a sampling strategy and expanding the base for sample selection. If no quantitative survey has been ever carried out on the population, and there is no official register or census of the population from which to extract a random sample, qualitative work is necessary to understand how to collect a sample whose characteristics are consistent with the research questions.

All these are common goals and problems especially for research projects which deal with "hidden populations". These are populations for which no official registers or census exist. Their actual size is unknown, and no traditional methods can be used to randomly sample from them. Often this is the case because the population is defined on the basis of an individual characteristic or condition that people do *not* wish to reveal. Typical examples are heroin users, homeless people, or undocumented immigrants. A migrant minority, defined on the basis of nationality or ethnicity, is a hidden population in that no register or census is typically available on the people who belong to a given nationality, let alone a given ethnic group. Some members of this population, namely illegal immigrants, do not even exist in official statistics, and normally do not wish to reveal that they belong to the population.

Around one year of ethnographic work among Sri Lankans in Milan preceded the actual survey. Since late 2010, participant observation involved a number of different contexts and events, both private and public. I took part to private family get-togethers, birthday parties, dinners and trips among family and friends in the Sri Lankan community. I attended political rallies and events organized for Sri Lankan politicians who visited and campaigned among Sri Lankans in Italy. I participated to religious ceremonies and events: ceremonies in Sri Lankan Catholic churches in Milan; Buddhist services in the Sri Lankan temples in the city; pilgrimages to Sri Lankan places of worship, like the Basilica of Saint Anthony in Padua, Italy. I took part to many public events in the community. Some had a religious character, like the processions in the neighborhood of the largest Sri Lankan Buddhist temple in Milan. Others were cultural events, like the showing of Sri Lankan films in Sinhala, in movie theaters specifically rented for the occasion. Yet others were community feasts or festivals which mixed religious and cultural aspects, such as music, dances and drama: for example, this was the case for the feast on the occasion of the Sinhalese New Year, celebrated in April 2011 in one of the largest parks in Milan. Sports events offered other opportunities for ethnography: for example,

the cricket world cup final, which was shown in a public gathering of Sri Lankans near a Sri Lankan Buddhist temple in the city.

Qualitative data were collected through ethnographic observation, unstructured interviews and simple conversations with Sri Lankan people. Stable relationships were built with some of them, including political organizers, religious leaders, and other key brokers with the community. Their role as key informants was crucial to the preparation of the survey.

Participant observation also took place in Sri Lanka for around three weeks, in the area of Kuliyapitiya, one of the largest towns in the Kurunegala District (North Western Province). I was there with Sri Lankan immigrants who were back from Milan to visit families and friends. This was an invaluable opportunity to observe transnational networks from the standpoint of the home society, and understand many different aspects of the experience of Sri Lankan immigrants in Italy.

Ethnographic work in Sri Lanka showed the ambiguity of migrants' relationships with their home society. In the villages around Kuliyapitiya, migrants were respected, admired, as well as envied and at times blamed for giving up the views and ways of the old country. For the migrants, families and friends in the villages were clearly among the dearest loved ones, but also a source of often excessive economic and moral obligations. People in the hometowns were also the implicit judges to whom migrants constantly felt the need to prove that their choice to leave had actually led to a successful and rewarding life.

I could witness the moral contradictions of the "acculturating" transnational migrants, who, after years in Europe, come to perceive some practices and views of their home society as backward and unfair, for example on the role of women or sexual relationships; while, at the same time, they profoundly disapprove of what they consider excesses in the Western societies, and commit to having their children learn and respect the values and mores of Sri Lankan tradition. I could observe the operation of the transnational enterprises Sri Lankan immigrants establish in the Island. Finally, I could note the importance of transnational migrants as political opinion leaders, as well as economic investors, in their hometowns.

Constructing the survey questionnaire

Qualitative work is needed to understand what the relevant questions are when the population of interest has not been widely studied in the past, and the tools to study it have

not been clearly defined yet by existing research. Especially in countries with recent immigration history like Italy, it is likely that a specific immigrant nationality has not been extensively studied yet. This was certainly the case for Sri Lankans.

Although Sri Lankans are a large foreign population by the Italian standards, and they often work in service occupations that make them a visible everyday presence in Italian cities like Milan, they are far less popular and exposed than other immigrant populations on the media and in public political debates. Very rarely have Sri Lankans made the headlines of Italian newspapers and TV news – which in a sense has been an advantage for them, given the way most Italian headlines in the last years have depicted foreigners and immigrants as a source of problems, emergencies, or at best controversies. Sri Lankans have very little to do with the main immigration issues that have alarmed the Italian media or public institutions over the last years, such as the smuggling of North African people across the Mediterranean Sea, the human trafficking of women from Eastern Europe, or the illegal settlements of Roma people in Italian cities. The lack of existing studies on Sri Lankans in Italy is in part explained by their low visibility in the Italian media and political discourse.

In the absence of extensive literature on a specific population of interest, the relevant topics and the research questions that motivate the project may be very clear, yet it may not be clear what are the relevant and meaningful questions to ask for studying those topics and answering those research questions. What does exactly acculturation mean for Sri Lankans in Italy? Which behaviors and preferences are close to their origin culture, and which ones indicate closeness to the Italian culture? What are the transnational practices more common among Sri Lankans, which a questionnaire may ask about to measure transnational involvement? What is the most effective way to ask Sri Lankans about social contacts? Are Sri Lankan friends and relatives recalled by names and surnames, by nicknames, or by "role names" as "mother", "brother", "daughter", etc.? Qualitative work is needed to answer this kind of questions before starting the actual survey.

Qualitative work was essential to building the survey questionnaire on the central topics of the project, namely social relationships, transnationalism, and assimilation.

On the subject of social relationships, participant observation revealed the way Sri Lankans recall each other, namely using names and nicknames that normally have little to do with given first names and surnames. Only role names like "mother", "father", "sister", "son", are used in the family: parents, siblings and children never call each other by first name. Ethnography showed which spheres of sociability are actually relevant to Sri Lankans in Milan, that is, where Sri Lankans actually meet people and make friends in

the city: this was crucial to understanding if expression as "coworker", or "church mate", would have been meaningful to our respondents. Similarly, in the qualitative stage of the project I could learn whether the distinction between "friend" and "acquaintance" was relevant in the way Sri Lankans think of their social relationship. I verified if the usual wording of network questions about the degree of contacts' "emotional closeness" could work for Sri Lankan respondents.

As far as cultural assimilation is concerned, participant observation allowed me to understand which spheres of acculturation were relevant to Sri Lankans in Milan, e.g. music, cinema, TV, books, food etc. I could observe the centrality of food habits as a measure of attachment to the origin culture, as well as the importance of watching Italian TV versus Sri Lankan TV on the Internet, as an index of acculturation. In general, I learnt which behaviors and practices could be expected to measure proximity to the home culture and proximity to the host culture among Sri Lankan immigrants; and which ones could be expected to show a substantial variation across respondents, as opposed to behaviors and habits that were essentially the same among all the Sri Lankans I met. In the economic domain, participant observation was essential to understanding which jobs are the most common among Sri Lankans in Milan, and which ones are the most stable and best paid. I could observe the most common coping strategies among unemployed Sri Lankans in Milan, and among the Sri Lankans who earn a salary way below the Italian poverty line.

Concerning transnationalism, as anticipated in the Introduction, ethnographic work suggested the relevance of social network transnationalism among Sri Lankans: it revealed how the social contacts in the home country or in the international diaspora were active and important to Sri Lankans in Milan, and how easy and common it was for them to keep in touch by phone or the Internet, over long distances and across countries and continents. In particular, I noted the role of online social networks like Facebook in maintaining the transnational networks of family, friends and acquaintances.

In the ethnographic stage of the project, I learnt about the transnational activities and behaviors actually practiced by Sri Lankans and available to them, especially in the economic and political domains. Different forms of economic investment in transnational enterprises, which were owned by Sri Lankans in Italy and managed by social contacts in the Island, emerged as a usual practice. The degree and the type of transnational social networks appeared to be crucial to starting up and successfully controlling such enterprises.

I recorded the practices of transnational political activism among Sri Lankans in Milan, and how they were important to both Sri Lankans in Italy and politicians in the

Island. Community leaders in Milan campaigned for Sri Lankan politicians in Italy, and this activism involved all the main parties in the Island. Several Sri Lankan politicians, including members of the Sri Lankan parliament, visited Milan during my ethnographic work, and organized campaign events with the help of the contacts they had in the city. Such events included political rallies, religious ceremonies, and interviews to Sri Lankan TVs and journals in Milan. On the other hand, immigrants themselves seemed to activism in co-national associations in Italy for their personal political return in Sri Lanka. Community leaders who organized religious feasts or cultural events in Milan, sometimes did so to build a reputation and consensus among co-nationals, in view of a future political carrier in Sri Lanka. Some had stable political partners in the Island, who gained popularity from their activism in Milan. Others lived themselves transnationally, spending several months in the Island every year.

The value of Sri Lankans in Italy as voters and political "opinion leaders" in the Island was apparent. Sri Lankan immigrants were clearly very important to politicians in Sri Lanka: not only for their own vote, but for how they affected others' vote in the home country. This meant that the opinion of immigrants influenced a relevant amount of votes for *current* elections in Sri Lanka. Which indirectly revealed how the transnational social networks of these immigrants were *extensive* and *active*: immigrants knew many people in the home country, talked to them and affected their opinions everyday. In many ways, these transnational relationships were active and important to both sides, for both immigrants in Italy and their contacts in Sri Lanka.

Building trust

Establishing a rapport of trust in the population of interest is essential to different stages of the survey: from the sampling of respondents, to the actual execution of the interviews, to the following interpretation of the answers.

Cultural divides may cause mistrust towards people from the ethnic majority in an immigrant group. This may increase if the majority members also come from public institutions, like academic researchers do: many encounters and interactions with public institutions are a source of legal and administrative problems, financial expenses, misunderstandings, feelings of cultural inadequacy, and emotional stress for migrants. On the other hand, participant observation among Sri Lankans allowed me and my colleagues to gain a "reputation" in the community: Sri Lankans knew where we were from, what was our job, what we were doing there and why. My identity was confirmed by multiple sources in the community, some of whom knew me personally very well. This openness was the very first step to avoiding mistrust and hostility, which were common and

expected at the beginning.

In this stage, the network effects on reputation were very clear: talking about my work with the most central people in the community greatly helped to spread the word about what I was doing among Sri Lankans. Leaders of Sri Lankan Buddhist temples, Catholic community leaders, directors of Sri Lankan schools in Milan, Sri Lankan political organizers, managers of popular Sri Lankan bars and restaurants in the city, were all essential in spreading the word and build my reputation with the whole community. Some of them came to be key informants themselves, besides helping build trust with the rest of the population.

Thus, trust was important with the whole population to carry out participant observation in the community, and with key informants to earn their collaboration. Furthermore, trust was essential to collecting the sample of respondents, that is, to convincing people to be interviewed. Finally, trust with respondents was crucial to actually carrying out the interviews. Network questionnaires may be perceived as intrusive, as they ask not only about the respondent himself, also about the people he knows, how he met them, if they know each other, etc. While the rationale behind questions on the respondent, his job, income, habits etc. may be easier to realize, it is more difficult to understand why someone would be interested in who your friends are and why you know them. When the interview concerns not only the respondent himself, but also other people, namely his relatives, friends, coworkers, employers and other acquaintances, misunderstandings easily arise. In particular, respondents are often afraid that their friends or family will be themselves contacted by researchers, asked questions, or involved in any way after the interview. An established reputation and a relationship of trust help avoid the diffidence and suspicions that may come with questions on social networks.

Collecting the sample

Ethnographic work was a key stage to understanding how to sample Sri Lankan respondents in Milan, and to actually building the sample. While a random sample could not be drawn, as typical of research on hidden populations and immigrant minorities, the sampling strategy was defined with two goals in mind:

i) Diversifying the "sources" of respondents. We tried to limit as much as possible the use of snowballing to collect respondents. "Sources" of respondents could be specific persons, or focal places in the Sri Lankan community, as explained below. We wanted to avoid sampling from the same social networks as much as possible.

ii) Reaching respondents with different degrees of cultural and economic assimila-

tion. In particular, this meant interviewing Sri Lankans with different times since migration, in different socioeconomic conditions, with different levels of proficiency in the Italian language, from different educational levels, and living in neighborhoods with different degrees of segregation of the immigrant population.

In sum, we aimed at obtaining a relevant variation in the sample, on both the independent and the dependent variables of the research design. Social networks were our paramount independent variable, therefore we did not want to end up "trapped" in the same social circuits, and interview respondents with similar networks. This was the rationale for diversifying the sampling sources. Assimilation was the dependent variable, and we tried to cover a substantial variability of cultural and economic assimilation outcomes in the sample.

We collected respondents in three main ways:

i) With flyers and posters about the project, which were circulated in several places of the city, especially those with a high concentration of Sri Lankan population.

ii) By setting up tables and stands in central places and events of the Sri Lankan community in Milan, where Italian and Sri Lankan staff gave information on the research project and the survey, and collected respondents.

iii) By asking key informants to collect respondents.

Ethnographic work was the basis for all the three sampling strategies. It allowed us to identify the most central places and events for the Sri Lankan population in Milan, and to know where and when to set up tables, organize events, and circulate information material on the project. Ethnography led us to gain the support of key informants, one of the sources of respondents. Trust and interest among the community, which were also a result of ethnographic work, were crucial to the success of all the three strategies.

Flyers and posters were circulated, and tables and stands were set up to promote and give information about the project, in public places and events which participant observation and interviews had shown to be central for the Sri Lankan community in Milan (Fig. 3.1). These included public squares, streets, metro stations, and street markets in "Sri Lankan" neighborhoods; Sri Lankan bars, restaurants and stores known to be popular among the community; Sri Lankan Christian churches and Buddhist temples in Milan; Sri Lankan schools; events organized in Milan by the Sri Lankan embassy in Italy; public gatherings of Sri Lankan people for community events. On these occasions,

Italian and Sri Lankan staff worked together, met potential respondents in person and could fully explain them the details of the project and the interviews.

Key informants and participant observation were important to know *where* to circulate the information on the survey, as well as *how* to give this information. For example, without previous qualitative work on the Sri Lankans in Milan, we could have not designed the right flyers and posters to promote the project; we would have not known which text and which pictures could catch the attention of potential respondents, and which kind of contact information would have made potential respondents more likely to call us back. The project was interested in Sri Lankans in Milan, and the information materials had to convey this: not only through the text in Sinhala, also with graphics and pictures. We had to understand what pictures are a symbol of Milan, and what pictures are symbol of Sri Lanka, to Sri Lankan immigrants in Italy. Of course, a picture that immediately recalls Milan to an Italian may be meaningless to a Sri Lankan; similarly, the pictures that evoke Sri Lanka to a Western tourist turned out to have little to do with the symbols of Sri Lanka among Sri Lankan immigrants in Italy.

All the information material included details on how to contact us and sign up to take part in the survey. An amount of €25 was offered to respondents who accepted to be interviewed, and flyers and posters included this information. The money was an incentive to participate to the survey, and was intended to compensate for the labor hours a respondent had to lose to be interviewed. As discussed in the following, interviews on personal networks may be significantly demanding in terms of both time and respondent attention. Interviews in Milan lasted on average around three hours.

The third source of respondents were the social networks of key informants and central persons in the community, who had been involved in the project. This was in part snowball sampling, although there were several different Sri Lankan people as the starting points of the snowballing, and they were specifically instructed to collect respondents from different environments and social circles, possibly people who did not know each other. These "recruiters" were mostly "relevant people", highly central in the community: leaders of Sri Lankan religious associations, both Catholic and Buddhist; Buddhist monks in Milan; directors of Sri Lankan schools; managers of Sri Lankan TV channels in Milan; Sri Lankan political organizers and leaders of cultural associations; managers and workers in popular Sri Lankan stores, bars and restaurants in Milan.

The collection of the sample was a separate and preliminary stage which took place before the actual interviews. Perspective respondents were asked to fill out a form, which could happen by phone, at our tables, or through a third Sri Lankan person. All respondents were recruited over around two months in late 2011. In the end, 117 Sri Lankans

in Milan had filled out a form to take part in the survey. Many of them had contacted us after reading the flyers and posters about the project in some part of the city: around 30% of the sample was collected in this way. Around 40% of the respondents had been met by our staff at tables and stands in public places and events of the Sri Lankan community. Finally, the third source, namely recruiting by key informants, accounted for the remaining 30% of the sample.

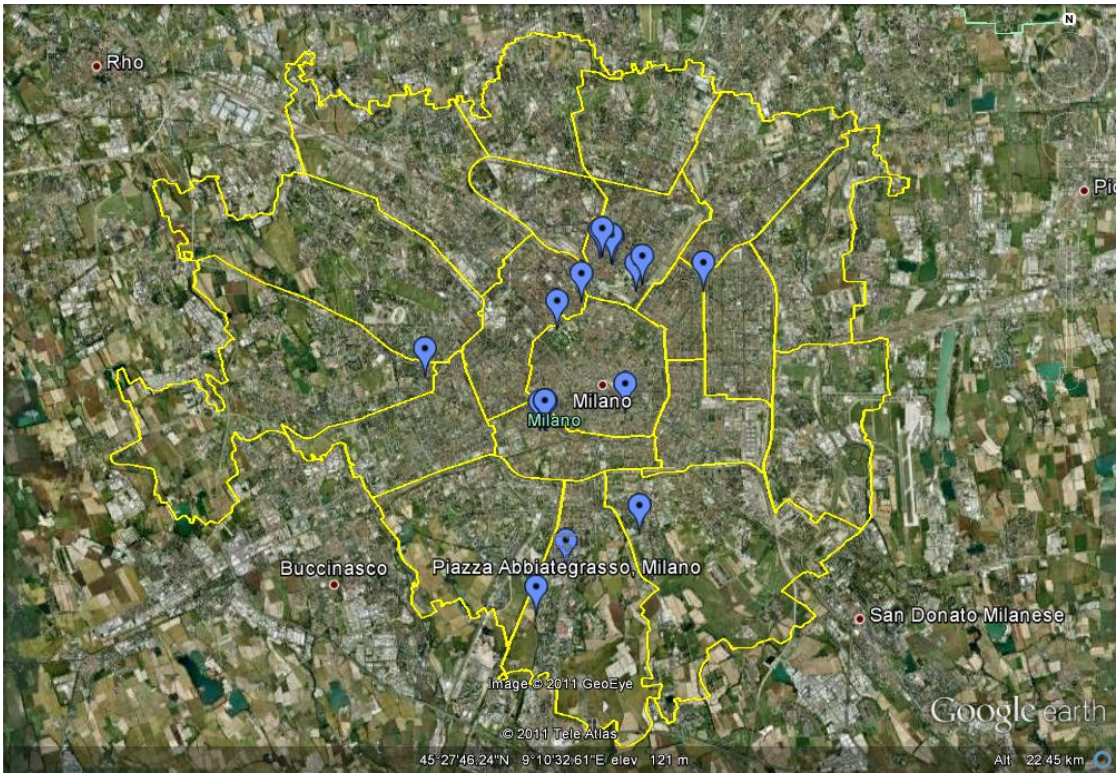

Figure 3.1: Location of the main public places in Milan where tables were set up and information material was circulated to recruit Sri Lankan respondents for the Italian survey. Most of them are very central places for the Sri Lankan community in the city (public squares, Sri Lankan street markets, bars, restaurants and stores; Sri Lankan Christian churches and Buddhist temples; Sri Lankan schools).

3.1.3 The interviews

Once the whole sample had been collected, respondents were contacted by phone so that they could confirm they intended to take part to the survey. All the interviews took place in Milan over around four months between 2011 and 2012. By March 2012, 107 Sri Lankans had been interviewed, and 102 of them had provided complete data on their personal networks.

The interviews were carried out by Italian interviewers, and were computer assisted: all questions and answers appeared on a laptop screen in Sinhala. In most cases, Sri Lankan interpreters helped the interviewers, although their contribution varied very much across interviews: sometimes respondents could not speak Italian at all, and interpreters were the only means for linguistic interaction with interviewers; in other cases, respondents were proficient enough in Italian to independently interact with interviewers, and interpreters only intervened to clarify the meaning of specific questions; finally, there were cases in which no interpreter was needed for the respondent to complete the interview. In any case, the fact that co-national interpreters worked for the project and were constantly present in the University offices where the interviews took place, was essential to establishing an atmosphere of familiarity and trust between Sri Lankan respondents and Italian interviewers.

As will be detailed in the following section, interviews included four modules: (1) Questions on Ego; (2) The question to elicit the list of 45 alters (the "name generator"); (3) Questions on each alter (the "name interpreters" in network terminology); (4) A question on the relation between each pair of alters. Interviews lasted on average three hours, and were particularly demanding in terms of attention required of respondents, as is typical of ego-network interviews. Some parts could be repetitive and require particular focus from the respondent: this was especially the case in the third and fourth module, where the same set of questions was asked on each of the 45 alters, and the respondent was asked to evaluate whether 990 pairs of contacts (all the possible pairs among 45 alters) knew each other. For this reason, there were breaks between modules, and interactions and conversations during the breaks also contributed to create familiarity between respondents, interpreters and interviewers.

While Module (1) (questions on Ego) was carried out with standard computer software for computer-assisted interviews, the Modules (2) and (3) were based on a specific software program for ego-network questionnaires, namely VennMaker (Kronenwett and Schonhuth, 2011). VennMaker displays personal network questions in a graphical environment which allows for the interactive drawing of the network on screen (Fig. 3.2). The respondent is presented with a graphical model of his personal network to be filled out using the software. In this model, a set of concentric circles, with Ego ideally in the middle, represent different types of relationship, with gradually decreasing strength of tie. In our interviews, the concentric circles represented close family (the smallest circle and the closest to Ego), extended family, friends, and acquaintances (the largest and furthest circle). Respondents had to "draw" social contacts as points in the circles, and

graphical characteristics of points (color and shape) represented different alter attributes. Finally, different sections intersected the circles in the model to represent different (and mutually exclusive) spheres of sociability: work, leisure, neighborhoods, religious meetings, etc. Thus, for example, friends from work and friends from the neighborhood were placed in different sections of the same circle.

The model shown in VennMaker provided a graphical guide on screen, which constantly gave respondents a sense of the personal network they were "constructing" during the interview, and served as a set of cues to explore the whole network in its different parts. In this sense, VennMaker was used in our interviews to facilitate the recalling of a representative sample of respondent's personal network through a sort of "graphical elicitation". On the other hand, the graphical elicitation did not impose a specific order to respondents in the recalling of alters: we did not ask to start filling the model from specific circles or sections, and interviewees could mention close family before or after acquaintances, friends from the church before or after friends from work etc., according to their own recalling. However, close family or close friends were usually the first points drawn by respondents, consistently with research on the bias of free lists of personal contacts toward strong and close ties (Brewer, 2000). Besides VennMaker's graphical elicitation, interviewers insisted at the beginning of Module (2) that social contacts could be of any nationality, and currently living in any country of residence.

Module (3) included several "name interpreters", which asked Ego about a set of fixed characteristics of the contacts he had mentioned: sex, age range, nationality, country of residence, etc. Modules (2) and (3) were jointly carried out during interviews, as questions on each alter were normally asked right after the alter had been placed in VennMaker's graphical model: by clicking on the alter point in the drawing, a new window opened up with questions about that alter.

In this part of the interview, VennMaker was very useful to realize mistakes and correct previous answers: because all the contacts and their names were always visible on screen (see Fig. 3.2), the respondent could go back any time to any alter he had mentioned before, if he realized that that alter had to be placed in a different circle or sociability sphere; or if he wanted to correct his answer on one of the name interpreters regarding that alter. Thus, besides providing a constant graphical elicitation of the alter list, VennMaker also allowed for more flexibility in describing the network, compared to standard ego-network questionnaires: Modules (2) and (3) developed as a conversation between the interviewer and the respondent about the latter's personal network, more than as fixed questionnaire. This made the ego-network questionnaire much less monotonous and repetitive, resulting in a more manageable burden on respondents.

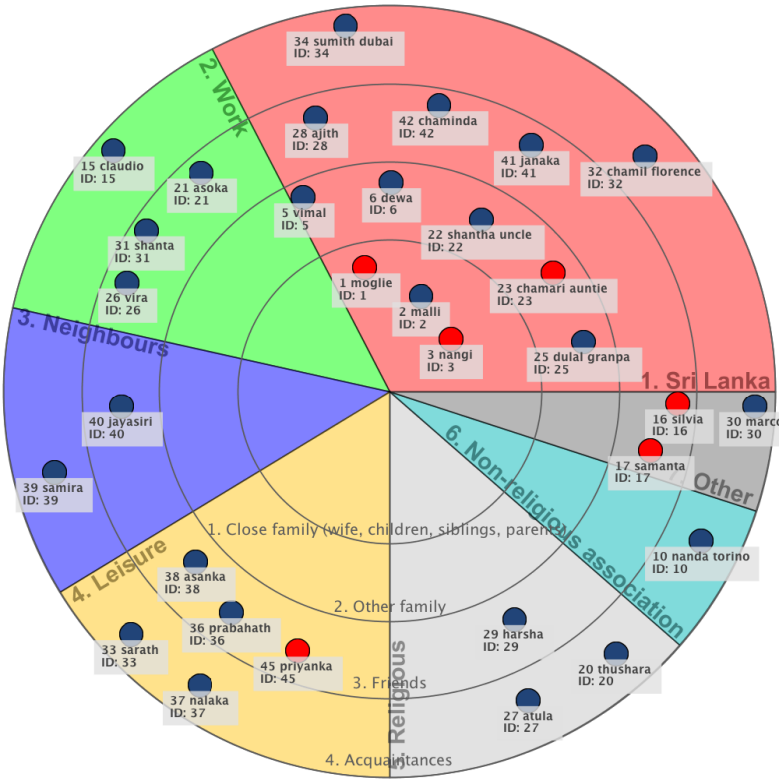

Figure 3.2: The VennMaker interface used in the survey interviews for Modules (2) and (3) (see text). The concentric circles represent different types of Ego-alter relationship, with decreasing strength of tie as the circle becomes larger and further from the center. The sections intersecting the circles represent different and mutually exclusive spheres of sociability.

Module (4), the evaluation of alter-alter relations, is another source of the high respondent burden in ego-network questionnaires, as the number of relations to evaluate grows geometrically with the list of alters required in the questionnaire: there are 45 possible relations among 10 alters, 190 among 20 alters, 990 among 45 alters, and so forth. In our interviews, the evaluation of the 990 relations among alters was carried out by means of an "adjacency" matrix, where contacts appeared as rows and columns, and each cell represented the possible relation between two contacts (Fig. 3.3). This matrix had to be filled out in Microsoft Excel, by putting 1s or 2s in a cell, if the corresponding two alters knew each other "certainly" or "maybe" respectively[7]. The interviewer filled out the matrix, as the respondent evaluated the relation existing in each pair of alters.

A Microsoft Excel macro was specifically designed to process the output from VennMaker, that is, the list of 45 alters and their attributes, and return an appropriate ad-

[7]The matrix cell was left blank if the two alters did not know each other.

jacency matrix. During the interviews, this macro automatically arranged the 45 alters in the matrix rows and columns, according to alters' circle and section in VennMaker, that is, according to alters' type of relationship (close family, extended family, friends, acquaintances) and sphere of sociability (leisure, work, neighborhood, etc.). In the end, the whole adjacency matrix was arranged into separate blocks which corresponded to combinations of types of relationship (VennMaker's concentric circles) and spheres of sociability (VennMaker's sections).

Thus, the whole matrix for evaluating alter-alter ties in Module (4) was eventually displayed to respondents in a specific row and column order, whereby contacts who were likely to know each other (contacts from the same type of relationship and the same sphere of sociability) were in close rows and columns. This order was meaningful and recognizable for respondents: they had to evaluate first the relations among their relatives, in the second place the relations between relatives and friends from work, in the third place the relations between relatives and friends from the neighborhoods, and so forth. These distinct blocks of the matrix had different graphical formats on screen (fill colors and text format), which helped respondents recognize and interpret the pattern.

In other words, the 990 alter-alter relations to be assessed appeared "graphically" in the matrix on screen, in a recognizable and meaningful sequence. This made Module (4) much more easy and quick to answer to, compared to the evaluation of 990 relations between 45 alters in a random order. In particular, the original order in which the 45 alters were mentioned in the interviews had always a random component: sometimes very close relatives were forgotten and mentioned at the end of the list; people whom the respondent had met in the same environment, e.g. friends from the neighborhood, could be very far apart in the list, although they very likely knew each other. Thus, the original order of the 45 alters as mentioned in Module (2) was rarely relevant and structured to respondents: evaluating the 990 pairs in that original sequence would have made the task substantially more difficult.

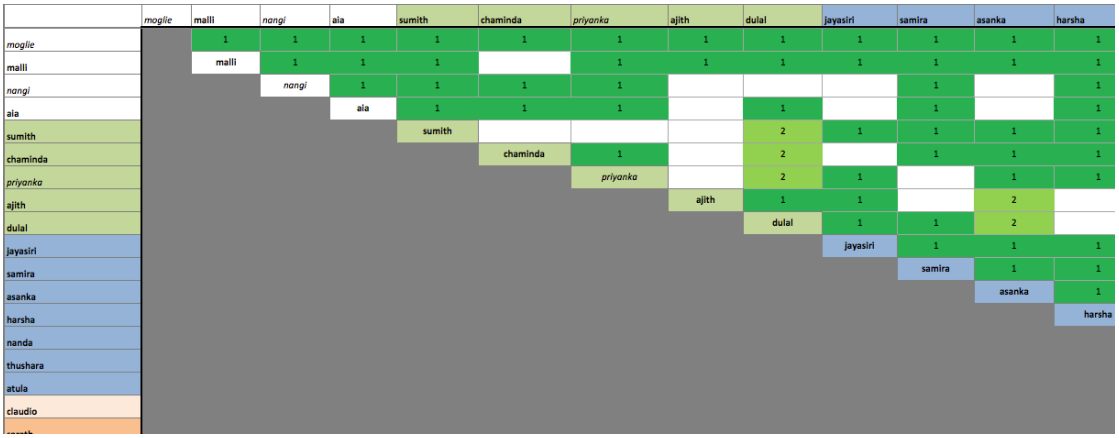

Figure 3.3: An example of the interface used in the survey interviews for collecting alter-alter ties in Module (4). The row and column headings of the adjacency matrix are alter names. In each cell, "1" means that the alters in the corresponding row and column "certainly" know each other, "2" means that they "maybe" know each other. Alters were automatically ordered in the matrix rows and columns with a specific Excel macro, according to their type of relationship and sphere of sociability with Ego: first was close family, then extended family, then friends from work, friends from the neighborhood, etc. These matrix blocks had different graphical formats, which made them easily recognizable for the respondent (see text). Note that only the upper triangle of the matrix had to be filled out, because the network ties were symmetric (if A knows B, then B knows A).

3.2 The Spanish and Italian questionnaires: a focus on personal networks

The two surveys in Milan and Barcelona shared a common focus on immigrants' personal networks. Information was collected on both the characteristics of social contacts, and the pattern of relations among these contacts: in network terminology, on both the composition and the structure of personal networks.

Personal networks are a type of ego-network. As mentioned in Ch. 2, sociocentric networks are typically defined by objective boundaries (e.g. the boundaries of a classroom, a firm, a sport club). In contrast, ego-networks are defined by a subjective relation between Ego and alters: an ego-network is the set of nodes (and the ties between them) that are related to a focal actor (Ego), according to a given definition of relation. Ego is not only the individual who "defines" the network, he is also the interview's respondent.

While the boundaries of sociocentric networks are objective, in that they can be observed by researchers; the relation to Ego is subjective, in that only Ego can establish whether or not he is related to an alter by that kind of relation: the inclusion or exclusion of an actor from the network depends on the respondent's interpretation of the relation, and on his evaluation of whether there exist such a relation between him and the actor. The relation defining an ego-network may be a quite specific one: the set of

people that assist Ego with everyday chores, the set of contacts with whom Ego interacts at work, the set of friends with whom Ego talks about important matters. On the other hand, personal networks are ego-networks defined by a more general definition of relation: the set of all the people that Ego knows. What "knowing" exactly means is discussed in the next section.

The distinction of "objective" boundaries versus "subjective" relation to Ego was not made incidentally. In fact, it has a fundamental implication: whereas data collection on sociocentric networks mostly relies on the researcher's observation, or on reports made by many people (all the nodes of the network), data collection on ego-networks relies on the report of a single person, namely Ego. This poses am important challenge to the design of interviews, which must collect the relevant data while limiting the burden on Ego.

The four questionnaire modules mentioned in the previous section structured interviews in both the Italian and the Spanish survey:

Module 1 Questions on Ego collected individual data on the respondent himself, including socio-demographic characteristics, information on the migration history, and data on assimilation outcomes.

Module 2 A single question, the "name generator", asked Ego to list 45 personal contacts.

Module 3 A fixed set of questions, the "name interpreters" asked information about on each alter and its relation to Ego (type of relationship, sphere of sociability, emotional closeness, etc.). Measures on network *composition* are constructed from these data.

Module 4 A single question asked Ego to evaluate the relation existing in each pair of alters. The *structure* of the network was obtained from this information.

3.2.1 Questions on Ego

Questions on Ego collected basic socio-demographic data, as well as information on the respondent's migration history. Descriptive statistics from these data are displayed in Figures 3.4, 3.5, and 3.6.

Migrants interviewed in Barcelona are quite young on average, around 30 years old. The Senegambians are the youngest population, with a concentrated distribution falling mostly between 25 and 32 years of age. Argentinians, Dominicans and Moroccans in

Barcelona have a median age of 30 years, and much more dispersed distributions of respondent age. Still, their distributions are clearly skewed to the left, toward younger ages: half of the Argentinian, Dominican and Moroccan respondents are between 17 and 30 years old, and the greatest majority of these populations (75% or more) is younger than 40 years old. In contrast, the median age in the Sri Lankan population in Milan is higher than 40: more than half of the Sri Lankans interviewed are between 40 and 60 years old.

All the migrants reached by two surveys are first generation, and most of them have been in Italy or Spain for less than 10 years. The Argentinians and the Senegambians, in particular, stand out for the shortest time since migration, with more than 75% of them having immigrated to Spain within 5 years before the interview. The Sri Lankans in Milan, and especially the Moroccans in Barcelona, are the oldest migrants in these data: with a relevant part of these populations arrived in the host country more than 10 years before the surveys.

Women are a minority of respondents among Senegambians and Dominicans in Barcelona, and there are unfortunately no women in in the sample of Sri Lankan respondents who could be reached by the Italian survey. Proportions are more balanced among Argentinians and Moroccans in Spain, with women representing a half or more of these populations.

Sri Lankans in Milan and Argentinians in Spain exhibit the highest educational levels among the five populations. Only a virtually irrelevant part of the Sri Lankan population did not achieve secondary education, consistently with the high level of schooling in the overall population which is known to characterize Sri Lanka compared to similar economies[8]. In fact, secondary education is the level achieved by more than 75% of the Sri Lankans interviewed in Milan[9]. Argentinians in Barcelona are the group in which university-level education has been achieved by most respondents. In contrast, Moroccans and Senegambians in Spain are the populations whose educational level is the lowest overall: around half of them has only achieved primary or lower education.

Senegambians and Moroccans are also the respondents in the weakest employment positions, together with Dominicans: one in four Senegambians in Barcelona is unemployed, and so are around 30% of the Dominicans and Moroccans interviewed in Spain. Only a minority of Senegambians, Moroccans and Dominicans is employed regularly or self-employed: around 20% of Senegambians, 25% of Moroccans, and 30% of Dominicans. The Argentinian respondents are split into two equal halves as far as labor market

[8]This point is discussed in more detail in Ch. 6, section 6.2.

[9]Given the organization of the Sri Lankan education system, this category actually aggregates a significant variation between Junior and Senior secondary education. It will be split into separate levels in subsequent analyses.

incorporation is concerned, with 50% of them unemployed or employed occasionally or part-time, and the other 50% regularly employed or self-employed. Sri Lankans in Milan seem to enjoy the most stable labor market positions: around 80% Sri Lankans are employed regularly or self-employed, and only the remaining 20% are unemployed or employed occasionally. In fact, more detailed analyses in Ch. 6 (section 6.2) will show how these figures actually cover quite different patterns of labor market incorporation and socioeconomic condition among Sri Lankans in Milan. The Sri Lankans also appear to be the most "legal" population among the five surveyed in Barcelona and Milan, with around 90% of the Sri Lankan interviewees reporting to currently have legal documents to reside in Italy. This figure decreases progressively among Argentinians, Dominicans, Moroccans and Senegambians in Barcelona. Only slightly more than 50% Moroccans, and around 30% Senegambians, report having legal documents to live in Spain.

Beyond standard questions on socio-demographic characteristics and the migration history of respondents, the Italian and the Spanish survey had quite a different focus on the information to be asked about respondents' adaptation patterns in the host society. The Spanish survey was part of a project aimed at the development of network measures of migrant acculturation: its questionnaire mostly concerned the patterns of migrants' cultural assimilation to the host society. In particular, most questions on Ego in Barcelona were intended to replicate the items used in the construction of the Acculturation Rating Scale for Mexican Americans-II, a standard measure of acculturation mentioned in Ch. 2. Data from these questions allow an analysis of the relationship between personal networks and patterns of acculturation in Ch. 6.

The Italian survey was part of a project on patterns of immigrant economic incorporation. Most items of the Italian questionnaire concerned respondent's income, employment status, wealth, housing condition, use of social services, etc. These data will be used in Ch. 6 to define an index of labor-market incorporation for Sri Lankans in Milan, and are the basis for an analysis of the association between immigrants' personal networks and outcomes of economic assimilation.

3.2.2 The list of alters: the name generator

Immigrants interviewed in Milan and Barcelona were asked to list a fixed number of 45 personal contacts. As mentioned above, the same name generator was used in both surveys: "Would you please list the names of 45 persons whom you know and who know you, with whom you have had some contact in the past two years (face-to-face, by phone,

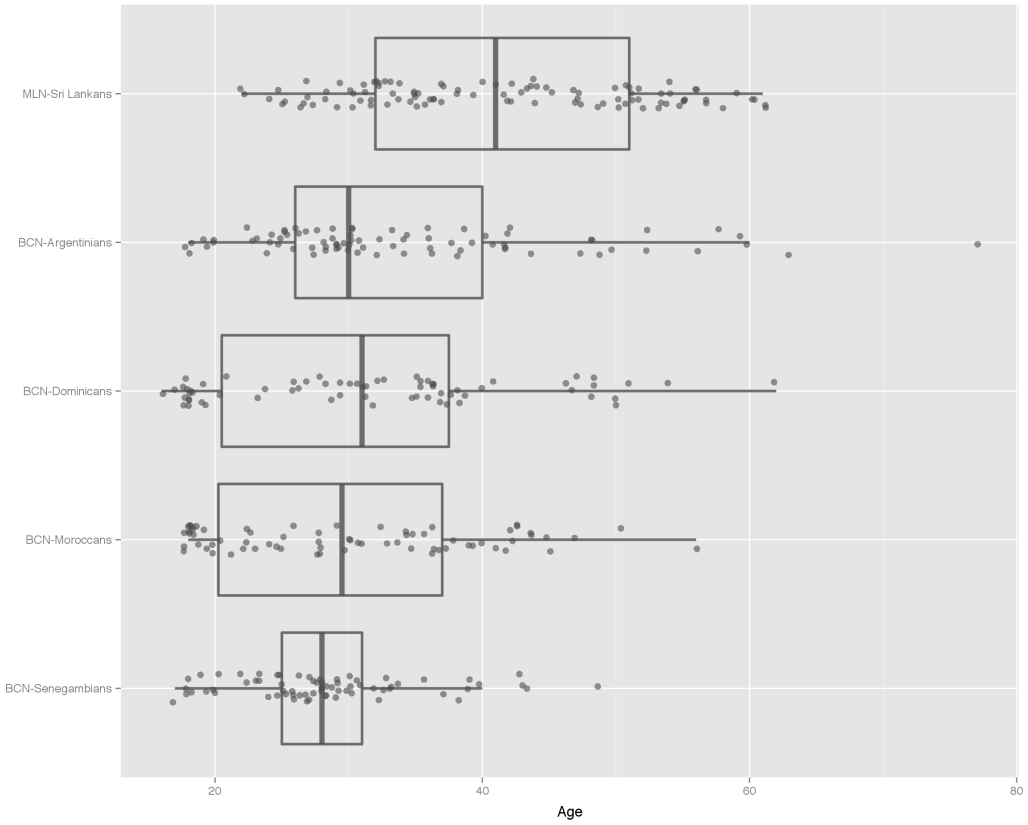

Figure 3.4: Age of respondents, by population: Sri Lankans in Milan (N= 101), and Argentinians (N= 81), Dominicans (N= 67), Moroccans (N= 70) and Senegambians (N= 70) in Barcelona.
In the background are boxplots for the distributions: the vertical segment in the middle of the box is the median; the left and right borders of the box are the 25th and 75th percentiles respectively. The horizontal segments from the borders of the box represent the rest of the distribution excepting "outliers": the segment to the left of the box extends up to the lowest value within 1.5 times the inter-quartile range (i.e. 1.5 times the length of the box); the segment to the right extends up to the highest value within 1.5 times the inter-quartile range.

or by the Internet), and whom you could still contact if you needed to?". Such a general question was intended to embrace any kind of personal contact, from close family (wife, children, siblings, etc.), to close and distant friends, as well as simple acquaintances. No restriction was imposed on characteristics of the contact or the relationship. In particular, contacts could be mentioned of any nationality, and currently living in any country; the relationship could be of any type, including family, friendship, co-working, being neighbors, etc. The only restrictions were aimed at limiting the list to the *current* and *active* personal network: the respondent could mention a person in his network only if he had had some contact with her in the last two years, and if he was currently able to

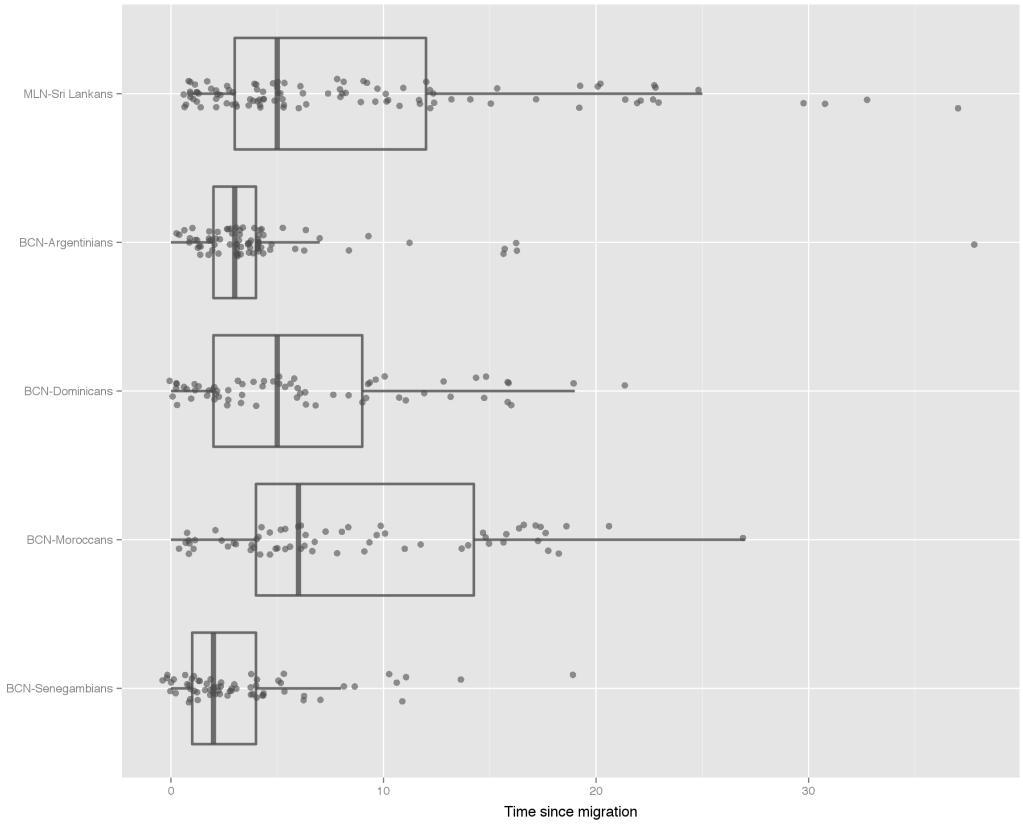

Figure 3.5: Time since migration of respondents, by population: Sri Lankans in Milan (N= 101), and Argentinians (N= 78), Dominicans (N= 65), Moroccans (N= 64) and Senegambians (N= 65) in Barcelona.
In the background are boxplots for the distributions: the vertical segment in the middle of the box is the median; the left and right borders of the box are the 25th and 75th percentiles respectively. The horizontal segments from the borders of the box represent the rest of the distribution excepting "outliers": the segment to the left of the box extends up to the lowest value within 1.5 times the inter-quartile range (i.e. 1.5 times the length of the box); the segment to the right extends up to the highest value within 1.5 times the inter-quartile range.

contact her again.

The goal of such a comprehensive name generator was to extract a relevant sample from the *total* personal network of the migrant (McCarty et al., 1997). The adjective "total" stresses that, unlike many ego-network studies, the one proposed here is not concerned with a *specific* kind of relation, role, or function that Alter holds for Ego: in other words, we are not interested specifically in family relations, or in the contacts that Ego calls on for material support, or in the people with whom Ego discusses "important matters", like in the popular ego-network question used in the American General Social Survey. Instead, the surveys in Milan and Barcelona aimed at capturing a sample of the

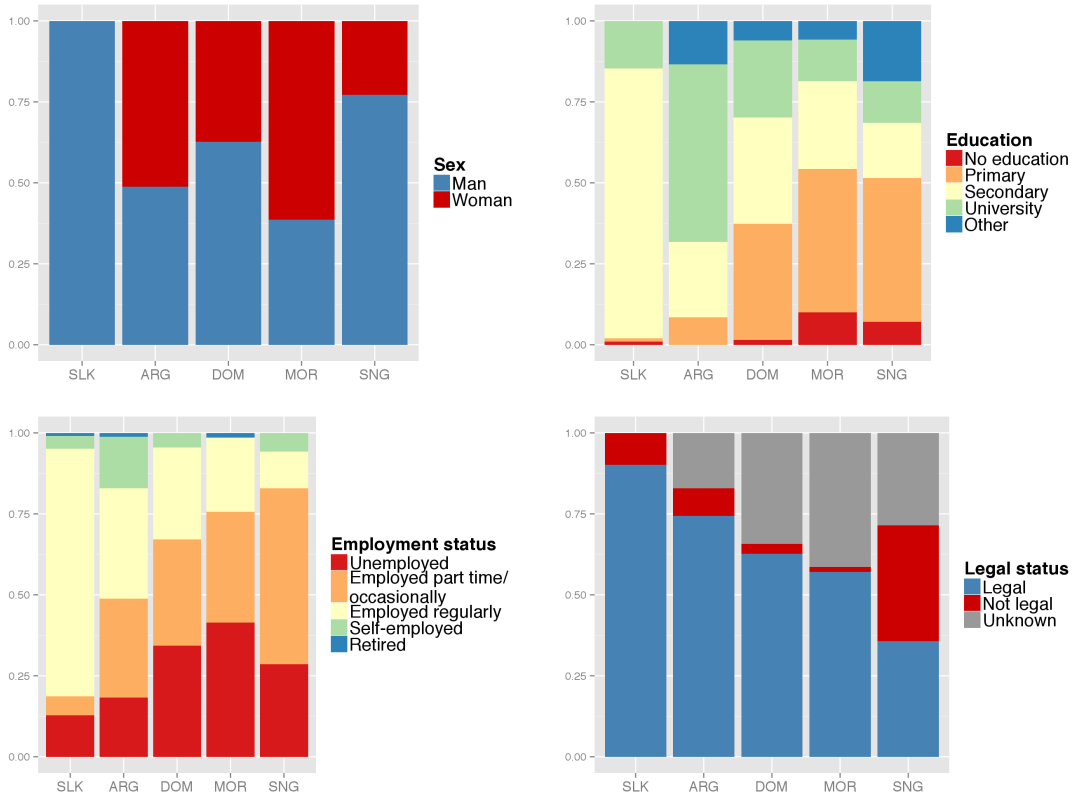

Figure 3.6: Distribution of Sex, Education level, Employment status and Legal status in the five populations: Sri Lankans in Milan ("SLK", $N = 102$), and Argentinians ("ARG", $N = 82$), Dominicans ("DOM", $N = 67$), Moroccans ("MOR", $N = 70$) and Senegambians ("SNG", $N = 70$) in Barcelona.

whole set of social relations in which migrants are embedded.

Ego-network questionnaires have typically collected data on ego-networks of much smaller size than the ones analyzed here. Most research on ego-network data is based on networks of around 10 alters; very rarely do ego-network data include more than 20 alters. The influential study on the "community question" in Toronto by Wellman (1979) was based on ego-networks of the respondents' six "closest intimates". Claude Fisher's (1982) insights on the evolution of communities in cities rely on egocentric networks of less than 20 contacts on average, resulting from free-size lists. The ego-networks used by Ronald Burt (1992) to analyze the effect of structural holes include between 6 and 20 alters.

In contrast, the data used in this dissertation describe egocentric networks of a *fixed* size of 45 alters. Three main goals justify the collection of this kind of data:

i) Obtaining a sample of contacts which is large enough to be representative of the

total personal network.

ii) Extracting a sample of the personal network which is not biased toward a particular category of contacts: contacts with specific characteristics (e.g. the richest), in a specific type of relationship with Ego (e.g. family), or in a specific group of people who know each other.

iii) Capturing the structure of personal networks.

As far as the first goal is concerned, much research has been done on the size of total personal networks, especially within the research program on the "Network Scale-Up Method" for estimating the size of hidden or hard-to-count populations, like heroin users or homeless people (Bernard et al., 1991; Killworth et al., 1990; Killworth et al., 1998b; Killworth et al., 1998a). The most reliable results from this works estimate to around 290 the average size of total personal networks (McCarty et al., 2001). On the other hand, this research was based on surveys among representative samples of American respondents: considering the higher geographical mobility of international immigrants, it could be argued that immigrants' personal networks are on average even larger.

Of course, if this is the scale of total personal networks, it is impossible to obtain information on all the social contacts of a respondent, that is, a "census" of one's personal network. The network must be sampled, and the number of elicited contacts should be high enough to extract a relevant and representative sample of it. The number of 45 contacts was established as a relevant "window" on a network of around 300 people, and a good compromise for keeping respondent burden within a reasonable limit.

On the second goal, namely collecting an unbiased sample of the personal network, research on ego-network methods has shown how the collection of egocentric data is highly affected by forgetting and biases when the name generator asks to mention a free number of personal contacts (Brewer, 2000; Marin, 2004). When asked about their network, not only do people forget contacts, they also forget them in a non-random fashion. Respondents tend to list first of all very close alters, those whom they have known longer, those with whom they interact the most, the contacts with whom they have multiplex relations; and the most central people in their network, that is, contacts with whom they share the most other contacts. Furthermore, respondents tend to order alters in groups, that is, they tend to list together contacts who know each other. These biases are particularly strong if the name generator is a single question, as in our surveys (Marin, 2004).

The following section discusses the effects of these biases on compositional and structural network measures, and the way the name generator of the Italian and Spanish sur-

veys relates to the third goal mentioned above, namely capturing the structure of personal networks.

3.2.3 Name interpreters and the relations between alters

In egocentric data collection, the "name interpreters" are those questions that ask about (1) attributes of each contact (e.g. Alter's age, sex, nationality); (2) the kind of relation that exists between Ego and each contact (e.g. whether Alter is family, friend or acquaintance, or the frequency of contact between Ego and Alter); (3) characteristics of the relations in each pair of alters (e.g. whether each alter knows each other) (Marsden, 1990).

Questions of the first type are the source of network compositional variables, which describe the distribution of attributes in the network (e.g. average age, number of contacts of the same nationality as Ego). Two of these questions are particularly relevant to this study: where Alter is from (nationality), and where he currently lives (country of residence). In this dissertation, alter nationality and country of residence will be used as separate variables in many cases. However, drawing inspiration from Brandes et al. (2010), these characteristics will also be combined to divide alters into five *classes* that will be referred to throughout this work:

i) *Origin*: migrant's co-nationals, who live in his home country (e.g. Sri Lankans living in Sri Lanka, in a Sri Lankan network).

ii) *Fellow*: migrant's co-nationals who also emigrated and currently live in the same country as Ego (e.g. Moroccans living in Spain, in a Moroccan network)

iii) *Host*: natives of the host society (e.g. Spaniards in networks of migrants in Spain)

iv) *Diaspora*: migrant's contacts who are co-national and live in a country other than Ego's home and host country (e.g. Dominicans living outside of Spain and the Dominican Republic, in a Dominican network).

v) *Transnationals*: all other social contacts. They are alters who are neither migrant's co-nationals, nor natives of the host society: mostly migrants of other nationality living in the same country as Ego (e.g. Ecuadorian friends of a Sri Lankan in Italy).

The second type of questions describe characteristics of network relations, rather than actors. Analyses in the following chapters will use two such characteristics in particular:

i) The type of relationship: specifically, whether Alter is Ego's family, rather than a friend or acquaintance.

ii) The degree of "emotional closeness" between Ego and Alter.

Emotional closeness is a version of the general notion of strength of tie, which is featured in most ego-network questionnaires (Marsden and Campbell, 1984). In some cases, tie strength is measured with respect to behaviors and practices in the relation, for example by asking Ego how frequently he sees or talks to Alter, or whether he would ask Alter for a certain type of support (e.g. money loans). In other cases, Ego is asked to evaluate the strength of tie by answering to such questions as "How well do you know Alter?" or "How close are you to Alter?". Interviews to immigrants in Milan and Barcelona included a question of the latter type. The Italian questionnaire asked the respondent: "On a 1 to 5 score, how much of a friend (how close) do you feel to this person?". The Spanish questionnaire included a very similarly worded question: "How close do you feel to this person?" (to be answered on a 1-5 scale too). In both questionnaires, possible answers were the following: (1) "Not at all close", (2) "Not very close", (3) "Somewhat close", (4) "Close", (5) "Very close".

Data on the relation existing in each pair of contacts are those that capture the structure of egocentric networks. An evaluation of the relation between each pair of alters was asked to respondents in Milan and Barcelona, with the following question: "Do these two contacts know each other?" The respondent could choose one of three answers: "Certainly Not", "Maybe", "Certainly Yes"[10].

The interest in ego-network structure is a major characteristic that the Italian and Spanish surveys had in common. Underlying both research projects was the assumption that immigrant assimilation outcomes are affected by *both* who the migrant knows, that is, the pattern of alter attributes, or network composition; *and* how these contacts know each other, that is, the pattern of relations among alters, or network structure. This structural focus, and the collection of data on large ego-networks, are a crucial point on which the two surveys on immigrant networks in Milan and Barcelona differ from existing studies on personal networks.

[10]The Italian questionnaire specified that "knowing each other" means that two contacts may meet or talk to each other even without Ego being there. The question in the Spanish survey had a slightly different wording: "How likely is it that these two persons contact each other independently of you?". Possible answers were: "Very likely", "Possible", "Not Likely". In the following analyses, two alters are considered to know each other if the respondent answered "Certainly Yes" or "Maybe" ("Very likely" or "Possible" in the Spanish data) to the question on alter-alter relationships.

As discussed above, egocentric networks of less than 20 alters, or resulting from free-size lists of alters, are likely to yield a biased picture of personal networks. Such bias concerns both the composition and the structure of the network. As for composition, particular attributes are overrepresented in ego-networks from free-size lists: alters are more likely to be family members or very close friends, thus similar to Ego in basic socio-demographic characteristics as age or nationality. Weak ties tend to be excluded, which may hide network effects that are relevant especially to social support (McCarty, 2002; Walker et al., 1993). Recalling biases affect structural analyses too: small ego-networks biased toward strong ties are more dense and tightly knit than whole personal networks, they include more central actors and fewer subgroups. The substantial structural variation that emerges when total personal networks are collected is likely to disappear in a collection of small egocentric networks of strong ties (McCarty, 2002). On the other hand, ego-network structural measures have been shown to approximate well the structure of large personal networks, and to exhibit a relevant degree of variation, with egocentric data on 30 to 60 alters (McCarty, 2002; McCarty et al., 2007).

At the same time, structural analyses on a collection of ego-networks require that all the networks have the same, fixed size. Network density, the most basic network-level structural measure, is affected by network size (Friedkin, 1981), and the same holds for actor-level structural measures as those on node centrality (Galaskiewicz, 1991). Thus, comparisons across personal networks on structural variables are only meaningful if the networks have the same size; otherwise, normalizing procedures are needed, which may render results much less clear and less interpretable.

In sum, research on ego-network methods suggests that egocentric networks of fixed size, and more than 30 alters, need to be collected if the variation of ego-network structure in the population is to be captured. However, the number of alters elicited in ego-network questionnaires dramatically increases respondent burden during interviews. After listing N contacts, Ego is asked to evaluate whether each of them knows each of the other $(N-1)$ contacts: this means assessing $N(N-1)/2$ relations, a number that rises geometrically with N. There are 990 possible relations among 45 alters, 1225 among 50 alters, 1770 among 60 alters, with a burden on respondents that quickly becomes unmanageable for ego-networks of very large size. The number of 45 contacts determines a reasonable respondent burden in ego-network interviews, while extracting a sample of relevant size from personal networks, reducing recalling biases, and effectively capturing personal network structure.

3.3 Conclusions

Although they were interested in essentially different dimensions of immigrant assimilation, namely the cultural and the economic ones, the two surveys in Milan and Barcelona shared a common, central focus on the total personal networks of international immigrants. Most importantly, they adopted exactly the same operational definition of personal network, and accordingly very similar, if not identical, items in the network questionnaires. This is what allows the following analysis to use the same network compositional and structural measures on the data from the two surveys, and to compare personal networks along these measures and across the five immigrant populations surveyed in Milan and Barcelona. At the same time, thanks to the different focus of the two surveys, the effect of personal networks and network transnationalism can be studied here on two different dimensions of assimilation: acculturation to the host society, and incorporation in its economy.

In the Spanish and the Italian data, cultural and economic assimilation can be related to both the composition and the structure of immigrant personal networks. Unlike other recent studies on immigrant networks (Lubbers et al., 2009), this dissertation is interested in networks at a given moment in time. In other words, the following analyses do not use longitudinal data, since they do not deal with such processes as social mobility, work or housing carriers, or the evolution of personal networks, whose definition has an inherently temporal component. Rather, they examine current assimilation outcomes, as related to the current and active personal network, and the currently available and mobilizable social capital that it implies.

The *structural* focus is the main novelty of these data in comparison to existing research on personal networks. Data on the relations between social contacts allow to map an otherwise invisible structural variation among immigrant personal networks. In particular, I will be able to describe personal networks in terms of structural brokerage versus closure: Is the migrant a broker between multiple, small unconnected subgroups of people, in a sparse and compartmentalized network? Or is he rather embedded in a dense, tightly knit, closed community?

The structural variation among personal networks cannot be captured with egocentric data on less than 20 alters. Yet, the following chapters will show that such structural properties as alter centralities, network density, cohesive subgroups, and structural brokerage, significantly contribute to improving our understanding of migrant transnationalism and its relationship with assimilation. This consolidates the results from research that has already been done on the Spanish network data, which has proved the relevance

of personal network structure to explaining patterns of acculturation, ethnic identification and social integration among international immigrants (Brandes et al., 2010; Lubbers et al., 2007; Lubbers et al., 2009).

Chapter 4

Nationalities and countries of residence in transnational networks

Personal networks offer a wide array of metrics for the study of migrant transnationalism. Some of these measure the *composition* of personal networks: they are based on the attributes of network nodes, for example the country of birth or residence of migrants' social contacts, and describe the pattern of these attributes in the network. Other measure the *structure* of personal networks: they are based on relations rather than nodes, and index how connections are distributed among migrants' contacts.

In this chapter, section 4.1 proposes a set of measures of migrant transnationalism based on the composition of personal networks, that is, on the frequency and interaction of certain actor attributes in the networks. Section 4.2 shows a way in which these compositional measures can be combined with network structure, using the centrality of actors to obtain a more complete description of transnational networks.

Two attributes of social contacts are the most relevant in the following analyses of network composition: nationality and country of residence. As anticipated in Ch. 3, these characteristics will be used both separately, and in combinations that define the five alter *classes* of *Origin* (migrant's co-nationals living in the home country), *Fellow* (migrant's co-nationals living in the host country), *Diaspora* (migrant's co-nationals living in a third country), *Host* (natives of the host country), and *Transnational* (all other social contacts)[1].

[1] See section 3.2 in Ch. 3 for further details.

4.1 Network composition: where migrant contacts are from, where they live

4.1.1 Nationalities and countries of residence as network frequencies

Once the nationality of alters is known, each ego network can be characterized by the number of Ego's co-nationals it includes, versus the number of natives of the host country. In Table 4.1 these numbers are expressed as proportions of the total number of alters (that is, proportions of 45), and are aggregated over each population involved in the Spanish and Italian surveys. The same statistics can be calculated for alters' country of residence, differentiating the contacts who live in Ego's current country from those who live in his home country (Table 4.2). Table 4.3 brings nationality and residence together, distinguishing the five alter *classes* of *Origin*, *Fellow*, *Host*, *Diaspora* and *Transnational*, taking their proportions in each network, and aggregating these measures over the surveyed populations.

These tables give an overview on the distributions of nationality and residence categories of social contacts in the migrant populations surveyed in Milan and Barcelona. Table 4.4 adds another piece of information, namely how much of the migrants' network is made up of family contacts, and how much of it is composed of family contacts who currently live in the migrant's country of origin. These numbers too are given as proportions of the network, and aggregated over the five populations. Figure 4.1 is the visual counterpart to Table 4.4, showing, for each population, the proportions of family members against the proportions of family members who live in the respondent's sending country. The figure gives a more detailed picture than the table does on the distributions of these frequencies, because it displays all the individual data points rather than aggregate statistics.

These tables on network compositions show some marked aggregate differences between the five populations. The average Sri Lankan in the Italian sample has a very high percentage of co-nationals in his personal network, 85% – the highest such figure among all the populations considered. One in ten Sri Lankan respondents has an almost completely Sri Lankan network, with 97% of his social contacts coming from his own home country. Most of these relations are to Sri Lankans who also migrated to Italy, given that *Fellow* alters make up almost 42% of an average Sri Lankan network, whereas on average fewer Sri Lankan contacts (around 37%) are still living in Sri Lanka (*Origin*) and much fewer (about 7%) reside in a country other than Italy and Sri Lanka (*Diaspora*). Alto-

gether, 55% of the contacts in the average Sri Lankan network live in Italy, around 37% live in Sri Lanka (virtually all of them are also of Sri Lankan nationality), and slightly more than 8% live in a third country.

Looking more closely at alter classes in Sri Lankan networks, only one out of ten Sri Lankan respondents maintains less than 16% *Origin* contacts and less than 27% *Fellow* contacts. In the highest part of these distributions, one out of ten Sri Lankans has more than 55% social contacts still living in Sri Lanka, and more than 60% contacts who are Sri Lankans living in Italy. The proportion of the *Diaspora*, the Sri Lankan contacts living in a third country, is not as high: only one out of ten Sri Lankan interviewees has more than 15% alters who are co-national and live neither in Italy nor in Sri Lanka.

Italians (*Host*) form about 10% of the average Sri Lankan network, and just one in ten Sri Lankan respondents has Italians in more than 20% of his personal network.

Many alters of Sri Lankan nationality are relatives of our respondents. In the average Sri Lankan network, family makes up slightly less than one third of all social contacts, and 20% of them are actually relatives still living in Sri Lanka (family and *Origin* alters at the same time). Only one in ten Sri Lankan respondents has less than 18% family in his network, while the 10% of Sri Lankans with the most kin social contacts have as much as 44% or more relatives in their network.

Overall, these figures depict highly co-national personal networks among Sri Lankans in Milan. Although these networks are significantly centered on Egos' country of residence (Italy) more than on the sending country (Sri Lanka), they tend to include few people actually native to Italy, but rather many co-national *Fellow* immigrants. *Fellows* tend to be more than co-nationals still living in Sri Lanka (*Origin*) in these networks. However, the proportion changes when we focus on family: a fairly big share of Sri Lankan networks are family members, and the greatest part of these still live in Sri Lanka.

The picture is quite different for immigrant groups in the Spanish sample.

Argentinian migrants have a much lower proportion of co-nationals in their average network (55%). By and large, they are the immigrant population with the most social relationships among natives of their host country: one out of three social contacts is a Spaniard in the Argentinian average network – a figure which is about one tenth for Sri Lankans in Milan. In the highest part of this distribution, one out of ten Argentinians has more than one half of her network made up of Spaniards. Compared to Sri Lankans in Milan, not only do Argentinians have less contacts in their home country (about 34% *Origin*), but above all they have much fewer relations to co-nationals in Spain (about 19% *Fellow*), as well as fewer contacts in the co-national *Diaspora* around the world (around

2%). To be sure, the part of the average Argentinian network that lives in migrant's receiving country is not that far from the corresponding Sri Lankan figure (60% versus 55%): but while for the average Sri Lankan, most contacts living in Italy are *Fellow* migrants from Sri Lanka; for the average Argentinian most contacts living in Spain are Spaniards.

One can easily imagine that Spanish as mother tongue, and a general cultural proximity between Spain and its former colony, is what facilitates Argentinians' connections to Spaniards, determining in this case a very different receiving context from the linguistic and cultural clash Sri Lankan immigrants face in Italy. As a matter of fact, while Argentinians in Spain are the population with the highest proportion of *Host* contacts in their average network, Sri Lankans are the group with the lowest such proportion among those considered here. Consistently with these figures, Argentinians are the population with the lowest average proportion of co-nationals in their network, whereas Sri Lankans are the ones with the highest such proportion.

In spite of these differences, Argentinian personal networks are not very far removed from Sri Lankans' in the weight of the family component: in the average Argentinian network approximately one quarter of all contacts are kin (a figure of 30% for Sri Lankans); around 16% are kin left home in Argentina.

Moroccans in Barcelona are in between Argentinians and Sri Lankans as far as the co-national component of their network in concerned: 65% contacts in the average Moroccan network are from Morocco. Most of them (one third in the average network) are *Fellow* migrants currently living in Spain, while only one quarter of them are Moroccans still living in Morocco. The low number of *Origin* contacts is a striking characteristic of Moroccan networks, which sets them apart from all other populations in the sample.

At the same time, while having a definitely higher percentage of co-national migrants than Argentinians in their average network, Moroccans turn out to be unexpectedly similar to Argentinians in the proportion of *Host* contacts, more than 29% on average (a figure of about 33% for Argentinians). Just like in the Argentinian sample, one out of ten Moroccans has as much as 56% or more of his network made up of Spaniards. This is particularly interesting as it suggests that linguistic, religious and cultural similarities, while certainly facilitating connections between migrants and receiving societies, are clearly not the only factor at play in this process: Moroccans and Argentinians have similar distributions of the proportion of Spaniards in their networks, although cultural proximity to the receiving society is arguably much lower for Moroccans than it is for Argentinians. The same insight comes from the strikingly lower number of *Host* contacts in the

average Dominican network (about 13%), a figure at odds with Dominicans being native Spanish speakers and coming from a former Spanish colony just like Argentinians.

Moroccans are the population with the highest proportion of family contacts in their network, more than 41%. At the individual level, Figure 4.1 makes this apparent, showing how Moroccan proportions of family in the network tend to be clearly higher than other populations. The aggregate figures and data points on family connections in Moroccan networks, however, are consistent with the general pattern that shows Moroccans having a fairly high number of *Fellow* and *Diaspora* social contacts, but a decidedly low number of *Origin* relations: while Moroccans have the highest proportions of family in the network, they tend to have the *lowest* proportions of family in the home country (y coordinate in Fig. 4.1), with less than one fifth of the average Moroccan network composed of kin still living in Morocco (18%). In other words, Moroccans have many kin relationships, but most of them must be to emigrated family (living in Spain or in other countries).

After the Sri Lankans, Dominicans are the second population in the ranking of the proportions of co-nationals in the average network, with about 81% social contacts on average who are natives of the Dominican Republic. One out of ten interviewed Dominicans has a personal network of only Dominicans. The Senegambian group is close to these figures, with around 73% co-national connections in the average network. With 46% and 44% of their average network made up of *Origin* alters, these two populations are those with the most relations to people living in migrants' home country – the most transnational populations in this sense. However, to understand how the extent of the co-national network may cover different patterns of transnationalism, we may compare these two populations to the Sri Lankans, who have an even higher number of co-nationals in their typical network (85%), but are mostly connected to co-national *migrants* in Italy, rather than to co-national residents in their home country: the opposite holds true for Dominicans and Senegambians, whose co-national networks tend to be more in the sending societies than in the receiving country.

Dominicans and Senegambians are interestingly similar also in the average frequencies of Spanish social contacts (*Host*): this is fairly low for both populations (around 13%), although Dominicans may be expected to have more Spaniards in their networks by virtue of a linguistic and cultural proximity to the receiving society which is certainly higher than the Senegambians' (and the Moroccans' and Sri Lankans', for that matter).

The main difference between the average patterns of Dominicans and Senegambians in network composition seems to lie in the number of *Fellow* immigrants in Spain: Do-

minicans appear to have a greater propensity to connect to fellow Dominicans in Spain, while Senegambians display a slightly more "cosmopolitan" average network, with more connections in the Senegalese and Gambian *Diaspora* around the world, as well as among migrants of other nationalities (the *Transnational* alters). Indeed, while Dominicans would be considered the most transnational of the two population if transnationalism was conceived of as connectedness to migrant's home country, Senegambians would be the most transnational if transnationalism were measured as the spread of relationships across many different countries and national borders, besides the migrant's sending and receiving societies (that is, in the international diaspora).

Finally, the Dominican and Senegambian average networks, together with the Moroccan ones, also suggest that connections in the home country are not necessarily connections to family: while showing the highest number of relations to *Origin* alters in their average network, Dominicans and Senegambians also have an average proportion of kin contacts which is in line with the same figure for Sri Lankans; this proportion is actually lower than the Moroccan figure, although Moroccans have on average far less contacts still living in their home country.

	N		Mean	sd	.05	.10	.25	.50	.75	.90	.95
MLN-Sri Lankans	102	*Co-nationals*	85.0	11.5	64.6	73.3	80.0	86.7	93.3	97.6	97.8
		Natives	9.8	7.9	0.0	2.2	4.4	8.9	13.3	19.8	22.1
		Other	5.2	6.7	0.0	0.0	0.0	2.2	6.7	13.3	22.0
BCN-Argentinians	81	*Co-nationals*	55.2	19.9	26.7	31.1	40.0	53.3	66.7	82.2	86.7
		Natives	32.6	18.5	6.7	6.7	20.0	31.1	46.7	55.6	64.4
		Other	12.2	10.9	0.0	0.0	2.2	11.1	17.8	24.4	35.6
BCN-Dominicans	64	*Co-nationals*	81.3	18.2	39.8	51.8	75.0	86.7	95.6	100.0	100.0
		Natives	12.8	14.3	0.0	0.0	2.2	11.1	16.1	26.7	45.7
		Other	5.9	9.3	0.0	0.0	0.0	2.2	7.2	17.1	25.7
BCN-Moroccans	70	*Co-nationals*	65.0	22.0	25.2	37.3	53.3	67.8	80.0	87.3	98.0
		Natives	29.3	19.8	0.0	4.2	15.6	25.6	41.7	55.6	61.4
		Other	5.7	8.4	0.0	0.0	0.0	2.2	8.9	13.3	17.8
BCN-Senegambians	69	*Co-nationals*	73.2	22.7	28.4	37.3	66.7	77.8	88.9	95.6	97.8
		Natives	13.5	16.1	0.0	0.0	2.2	8.9	22.2	40.4	43.6
		Other	13.3	14.1	0.0	1.8	4.4	8.9	17.8	28.9	41.3

Table 4.1: Ego's co-nationals, natives of the host country, and contacts of other nationality as proportions (%) of the personal network: mean, standard deviation and percentiles in the five populations.

Two main points emerge from these tables. First, a substantial degree of transnationalism is evident in the network composition of all the five populations, if migrant transnationalism is defined as social connectedness to the sending country. Including

	N		Mean	sd	.05	.10	.25	.50	.75	.90	.95
MLN-Sri Lankans	102	*Resident in home country*	36.8	15.2	11.1	15.8	24.4	36.7	50.6	55.6	59.9
		... in host country	55.0	15.9	31.1	35.6	42.2	53.3	68.9	77.6	80.0
		... in other country	8.3	7.4	0.0	0.0	2.2	6.7	11.1	17.8	22.2
BCN-Argentinians	81	*Resident in home country*	35.1	21.4	0.0	13.3	20.0	31.1	53.3	64.4	71.1
		... in host country	60.5	21.2	20.0	33.3	44.4	64.4	77.8	84.4	88.9
		... in other country	4.3	6.4	0.0	0.0	0.0	2.2	4.4	11.1	20.0
BCN-Dominicans	64	*Resident in home country*	46.4	29.3	4.4	8.0	21.1	42.2	66.7	88.9	91.1
		... in host country	48.7	30.3	4.4	6.7	22.2	47.8	76.1	88.2	93.3
		... in other country	4.9	10.0							
BCN-Moroccans	70	*Resident in home country*	26.4	22.6	0.0	2.2	8.9	21.1	42.2	62.2	69.1
		... in host country	64.5	25.7	13.3	26.4	45.0	71.1	86.7	93.3	93.3
		... in other country	9.1	9.5	0.0	0.0	2.2	6.7	13.3	20.4	26.7
BCN-Senegambians	69	*Resident in home country*	44.9	29.8	0.0	4.0	20.0	40.0	75.6	80.4	83.6
		... in host country	45.1	31.3	2.2	4.4	17.8	44.4	71.1	89.3	96.9
		... in other country	10.0	12.3	0.0	0.0	2.2	6.7	15.6	22.7	24.4

Table 4.2: Alters who live in the home country, in the host country and in a third country as proportions (%) of the personal network: mean, standard deviation and percentiles in the five populations.

the *Diaspora* in the definition of transnational relationships even increases the general degree of transnationalism among these migrants.

Secondly, there are relevant variations in this respect among migrants of different nationalities and in different receiving countries. These variations concern not only the degree of transnationalism as measured by the number of cross-border social relations (*Origin* or *Diaspora* contacts), but also the relationship between transnationalism and assimilation, when the latter is simply measured by the social connectedness to the host society (*Host* contacts). The number of *Fellow* social contacts can add to this picture as a measure of ethnic segregation, that is, an inverse measure of assimilation, in that it shows to what extent the migrant's personal community is co-national in its current country of residence.

Thus, this very first analysis of networks' composition may suggest a classification into three types of transnationalism-assimilation patterns, based on aggregate distributions of the *Origin*, *Host* and *Fellow* proportions (Fig. 4.2):

i) **Low transnationalism, low assimilation:** mostly co-national contacts, especially to fellow immigrants in the host country; few connections to the host society. Sri Lankans in Italy would fall into this category.

ii) **High transnationalism, low assimilation:** many co-national connections, mostly still residing in the home country; few connections to the host society. Dominicans and Senegambians follow this pattern.

	N		Mean	sd	.05	.10	.25	.50	.75	.90	.95
MLN-Sri Lankans	102	*Origin*	36.7	15.2	11.1	15.8	24.4	36.7	50.6	55.6	59.9
		Fellow	41.6	14.5	20.1	26.7	31.1	40.0	51.1	62.2	68.8
		Host	9.8	7.9	0.0	2.2	4.4	8.9	13.3	19.8	22.1
		Diaspora	6.7	5.5	0.0	0.0	2.2	5.6	11.1	15.6	15.6
		Transnational	5.2	6.7	0.0	0.0	0.0	2.2	6.7	13.3	22.0
BCN-Argentinians	81	*Origin*	34.2	21.1	0.0	13.3	20.0	31.1	51.1	62.2	71.1
		Fellow	19.1	10.9	2.2	6.7	11.1	17.8	22.2	35.6	42.2
		Host	32.6	18.5	6.7	6.7	20.0	31.1	46.7	55.6	64.4
		Diaspora	1.8	3.1							
		Transnational	12.2	10.9	0.0	0.0	2.2	11.1	17.8	24.4	35.6
BCN-Dominicans	64	*Origin*	46.0	29.1	4.4	8.0	21.1	40.0	66.7	88.9	91.1
		Fellow	32.3	21.6	2.2	5.1	11.1	31.1	51.1	61.6	66.3
		Host	12.8	14.3	0.0	0.0	2.2	11.1	16.1	26.7	45.7
		Diaspora	2.9	4.6							
		Transnational	5.9	9.3	0.0	0.0	0.0	2.2	7.2	17.1	25.7
BCN-Moroccans	70	*Origin*	25.6	22.7	0.0	2.0	6.7	20.0	42.2	62.2	69.1
		Fellow	33.3	19.0	2.2	6.4	20.0	32.2	46.7	58.2	63.4
		Host	29.3	19.8	0.0	4.2	15.6	25.6	41.7	55.6	61.4
		Diaspora	6.1	6.5	0.0	0.0	2.2	4.4	8.9	15.6	19.0
		Transnational	5.7	8.4	0.0	0.0	0.0	2.2	8.9	13.3	17.8
BCN-Senegambians	69	*Origin*	43.9	29.1	0.0	4.0	20.0	40.0	71.1	80.0	82.2
		Fellow	24.8	19.9	0.0	1.8	6.7	20.0	42.2	51.6	56.9
		Host	13.5	16.1	0.0	0.0	2.2	8.9	22.2	40.4	43.6
		Diaspora	4.5	5.8	0.0	0.0	0.0	2.2	6.7	11.6	14.7
		Transnational	13.3	14.1	0.0	1.8	4.4	8.9	17.8	28.9	41.3

Table 4.3: Alter classes as proportions (%) of the personal network: mean, standard deviation and percentiles in the five populations. (See the introduction to this chapter for the definition of the classes).

iii) **Low transnationalism, high assimilation:** few relations to co-nationals in the home country, fair amount of relations to co-nationals in the host country; many relations to natives of the host country. Moroccans and Argentinians in Spain tend to be closer to this case.

The emergence of such typologies shows that when network composition alone is used as a measure of transnationalism and social integration, there appears to be not so much a clear relationship between assimilation and transnationalism, as a variety of combinations between them. In other words, if we index assimilation as the number of *native* connections in the host society, and transnationalism as the number of connections in the home society and in the diaspora, we do not find assimilation consistently accompanying more transnationalism, nor do we find assimilation necessarily associated

	N		Mean	sd	.05	.10	.25	.50	.75	.90	.95
MLN-Sri Lankans	102	*Family*	30.2	11.4	15.6	17.8	22.2	28.9	35.6	44.4	51.1
		... in home coutry	20.8	10.3	6.7	8.9	13.3	20.0	26.7	35.3	37.8
		Friends & Acquaint.	69.8	11.4	48.9	55.6	64.4	71.1	77.8	82.2	84.4
		... in home country	16.0	10.4	2.2	2.2	8.9	14.4	22.2	28.9	37.7
BCN-Argentinians	81	*Family*	25.0	11.5	8.9	11.1	17.8	24.4	31.1	37.8	44.4
		... in home coutry	15.7	11.3	0.0	0.0	8.9	13.3	22.2	28.9	33.3
		Friends & Acquaint.	75.0	11.5	55.6	62.2	68.9	75.6	82.2	88.9	91.1
		... in home country	19.4	15.5	0.0	2.2	8.9	13.3	26.7	44.4	48.9
BCN-Dominicans	64	*Family*	33.2	16.4	9.6	16.2	21.7	31.1	42.2	55.6	61.9
		... in home coutry	19.8	15.4	0.0	2.2	10.6	15.6	27.2	39.3	42.2
		Friends & Acquaint.	66.8	16.4	38.1	44.4	57.8	68.9	78.3	83.8	90.4
		... in home country	26.5	23.1	0.0	2.2	8.3	17.8	42.2	66.2	68.9
BCN-Moroccans	70	*Family*	41.3	20.8	13.3	17.8	24.4	40.0	57.2	69.1	75.8
		... in home coutry	18.4	17.9	0.0	0.0	2.2	16.7	24.4	44.4	51.3
		Friends & Acquaint.	58.7	20.8	24.2	30.9	42.8	60.0	75.6	82.2	86.7
		... in home country	8.0	12.9	0.0	0.0	0.0	3.3	8.9	22.2	36.2
BCN-Senegambians	69	*Family*	36.4	19.6	9.8	12.9	22.2	33.3	46.7	57.8	76.9
		... in home coutry	20.6	15.7	0.0	0.0	8.9	17.8	31.1	42.2	45.8
		Friends & Acquaint.	63.6	19.6	23.1	42.2	53.3	66.7	77.8	87.1	90.2
		... in home country	24.2	21.9	0.0	0.0	2.2	17.8	40.0	53.8	58.2

Table 4.4: Family, family in home country, friends and acquaintances, friends and acquaintances in home country, as proportions (%) of the personal network: mean, standard deviation and percentiles in the five populations.

to less transnationalism. Instead, we observe *both* cases of a positive association between assimilation and transnationalism, with low levels of both (Sri Lankans), *and* cases of a negative relationship between assimilation and transnationalism, with high degrees of the former and low degrees of the latter (Argentinians and Moroccans), or low degrees of the former and high degrees of the latter (Dominicans and Senegambians).

Of course, aggregate statistics may not reveal the full story, or may even be misleading, on relationships between individual variables (the well-known risk of "ecological fallacies"). Still, in this case, if we examine the same compositional measures at the individual level, we observe essentially similar patterns.

Figures 4.3, 4.4 and 4.5 show the three proportions of *Origin*, *Fellow* and *Host* contacts together for each network, represented by a point in the plane. In each figure, two of these proportions are displayed by the x and y coordinates, while the third is given by point size. Because these are three proportions of the same whole, their sum can never be greater than 1, which means that points in the plots can only lie within the triangle

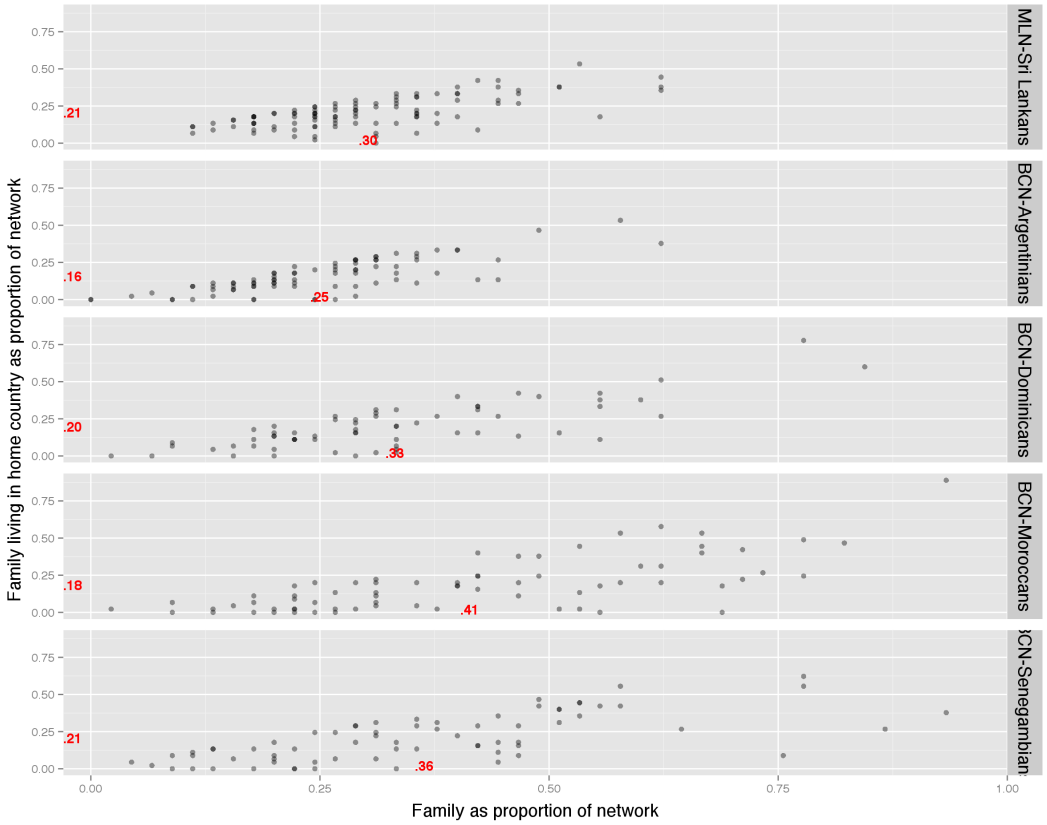

Figure 4.1: Proportion of Family in network by proportion of Family in home country in network (by surveyed population). Red numbers are the means of x and y distributions.

below the red line in each panel (the sum of their x and y coordinates cannot be greater than the unity).

Points that are close to the red line, meaning that the sum of their x and y proportions is close to 1, are very small, since their third proportion (point size) is necessarily close to 0. Furthermore, because *Origin*, *Fellow* and *Host* contacts are the three main categories of the alters in these networks, often almost exhaustive of the whole list of alters, whenever two of those categories are underrepresented the third is normally overrepresented: thus, points that are close to the axes origin are normally large, because their x and y proportions are close to 0, which leaves more room in the network for the third, size proportion.

A spread of points all over the triangle beneath the red line indicates the lack of a clear association between x and y. Finally, the blue segment in the panels is on the identity line

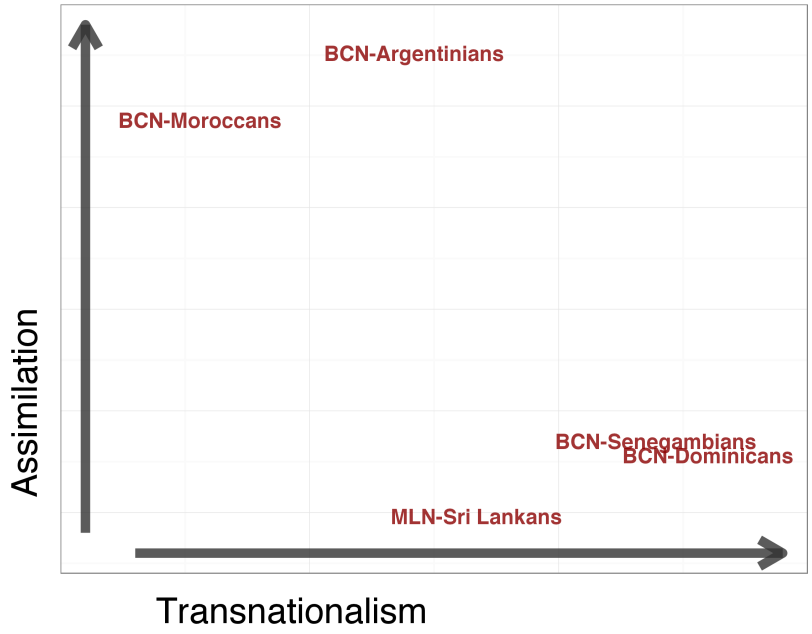

Figure 4.2: Transnationalism and assimilation of surveyed populations, as measured by average proportion *Origin* and average proportion *Host* in networks respectively.

and serves as a guide to recognize which proportion is bigger between x and y: the more a point is down below the blue segment, the higher the x proportion of that network is compared to the y proportion; the more a point is up above the blue segment, the higher that network's y proportion is compared to the x proportion.

The proportions at the individual level shown in Figures 4.3, 4.4 and 4.5 substantially confirm the picture given by aggregate statistics in Table 4.3.

Sri Lankans are the population that tends to have the least *Host* contacts: the proportions of Italians are definitely lower than proportions of *Origin* contacts in most Sri Lankan networks (networks below the blue segment in Fig. 4.3). Dominicans and Senegambians have just slightly more networks with a proportion of Spaniards equal or higher than the proportion of *Origins* (networks above the blue segment). For Argentinians and Moroccans, proportions of *Host* alters and proportions of *Origins* are much more balanced in the overall population, with network points equally distributed above and below the blue segment.

In Fig. 4.4 Dominicans, Senegambians, and especially Argentinians tend to have

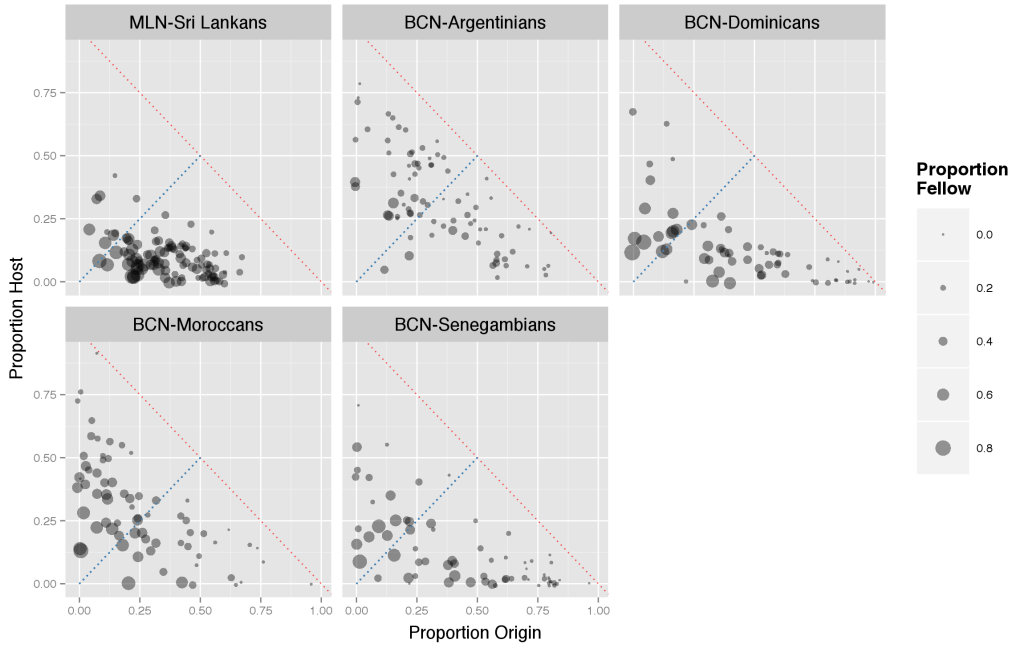

Figure 4.3: Proportion *Origin* by Proportion *Host* in networks, by surveyed population (point size is Proportion *Fellow*). The red segment is on the line where $x + y = 1$. The blue segment is on the identity line ($x = y$).

more *Origin* than *Fellow* contacts, with more network points below than above the blue segment. The opposite is true for Moroccans, who have less relations in the sending country, as revealed by aggregate statistics. Sri Lankan networks are more equally distributed between the triangles above (more *Fellow* connections) and below (more *Origin* connections) the blue line. Their network points are also much closer to the red line of Fig. 4.4 overall: this visually displays how co-national contacts (*Fellows* plus *Origins*) frequently make up almost the whole network of Sri Lankans in Milan.

Finally, the scatter plots in Fig. 4.5 are a visual representation of the segregation of most Sri Lankan, Dominican and Senegambian networks, whose proportions of *Fellow* alters tend to be markedly and regularly higher than the proportions of *Host* connections. The opposite is true for Argentinians, while Moroccan networks seem to be more homogeneously distributed among cases with more Spaniards than Moroccan relations (above the blue line in Fig. 4.5), and cases with more Moroccans than Spaniards (below the blue line).

The relationship at the individual level between connections to *Origin* and to *Host*

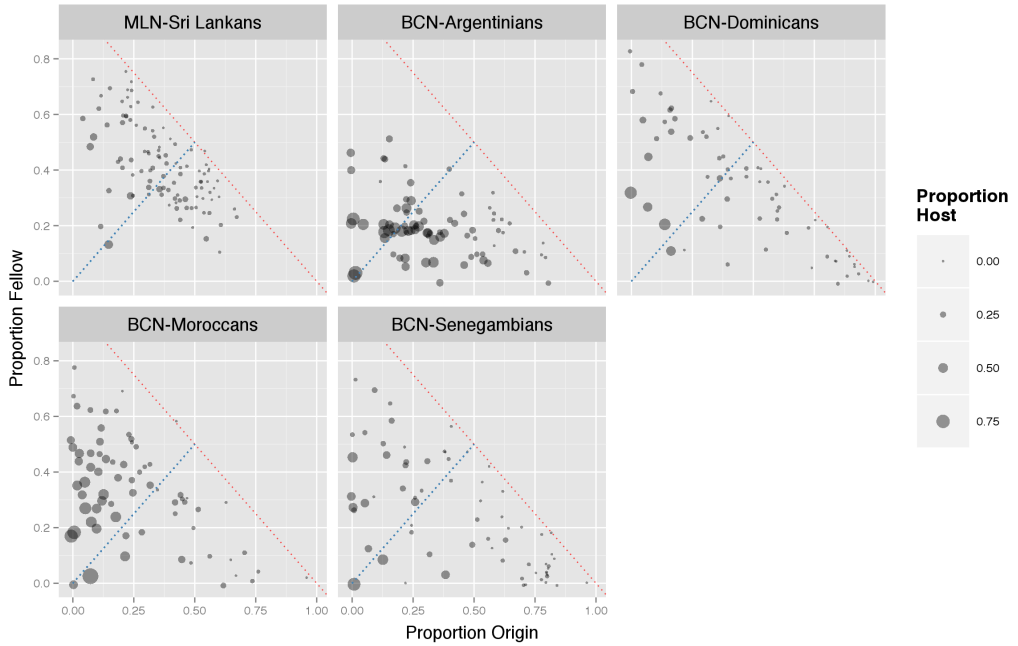

Figure 4.4: Proportion *Origin* by Proportion *Fellow* in networks, by surveyed population (point size is Proportion *Host*). The red segment is on the line where $x + y = 1$. The blue segment is on the identity line ($x = y$).

people in migrants' networks (Figure 4.3) leads to similar conclusions to the aggregate means. No clear association emerges between these two proportions, except perhaps for a weak negative relationship for Sri Lankans and Argentinians. In general, a variety of combinations seem to exist between low and high values of the two variables. Similarly low numbers of connections to *Host* alters (assimilation) are coupled with various degrees of connectedness to *Origin* people (transnationalism). Symmetrically, low degrees of relationships to *Origin* contacts can be associated to a variety of proportions of *Host* alters in the network, particularly among Dominicans, Moroccans and Senegambians.

This means that among these respondents we observe instances of both negative and positive association between connectedness to the host versus the home society, that is, assimilation and transnationalism as measured by network composition. In particular, although one may intuitively think that connectedness to the home society (transnationalism) is higher among migrants who have *less* relationships to the host society (assimilation), in reality we observe networks where these two sets of relationships are *both* low, which would mean a *positive* association between (lack of) transnationalism and (lack of) assimilation. Of course, networks of this type normally have a high proportion

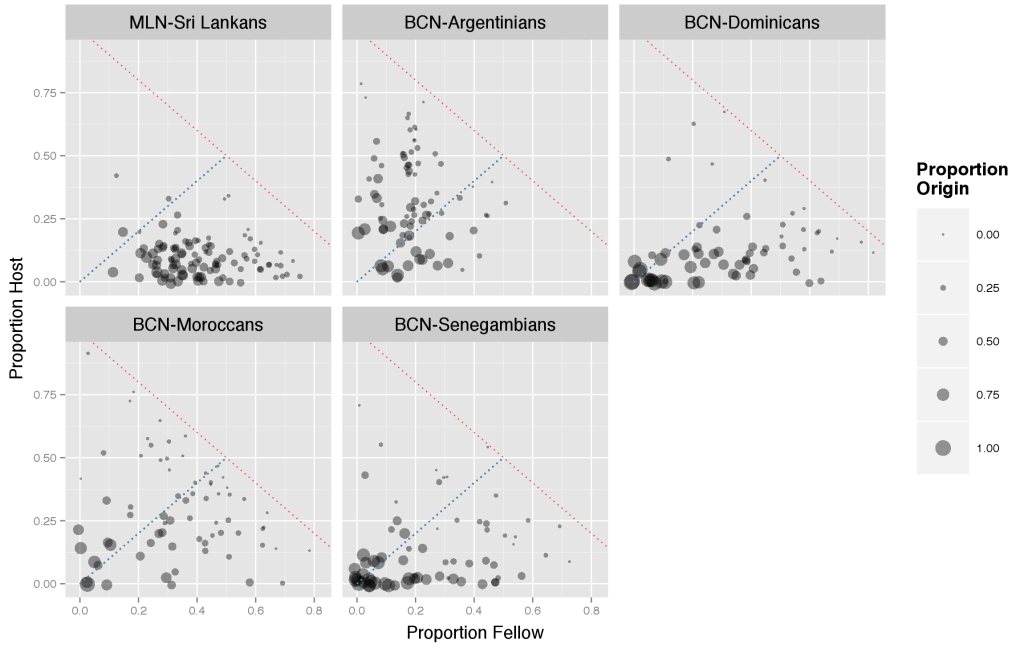

Figure 4.5: Proportion *Fellow* by Proportion *Host* in networks, by surveyed population (point size is Proportion *Origin*). The red segment is on the line where $x + y = 1$. The blue segment is on the identity line ($x = y$).

of *Fellow* alters (point size in Fig. 4.3), that is, they are ethnically segregated networks. On the other hand, especially among Argentinians and Moroccans, also combinations of high values on *both Host* and *Origin* proportions are possible, which would give further instances of a positive association between transnationalism and assimilation measures. Networks of this kind normally display a low proportion of *Fellow* contacts, that is, a low level of ethnic segregation.

The proportion of *Fellow* alters, which may be used as an *inverse* measure of social assimilation, does not appear to be in a regular association to the proportion of *Origins* either (Fig. 4.4). In all populations there is a variety of combinations of these two frequencies, with some networks showing low values of both or high values of both (a positive association), and others recording low measurements on one variable together with high measurements on the other (a negative association). In this respect, Sri Lankans in Milan are somewhat an exception, with a clearer negative association between the number of co-national contacts in Italy and the number of contacts back in Sri Lanka, over a range of generally always low numbers of Italian connections (point size).

Interestingly, also connections to *Fellow* migrants and to natives of the host society

are not apparently correlated (Fig. 4.5). Sri Lankans and Dominicans (and to a lesser extent Senegambians) show a generally low connectedness to the *Host* society, but at the same time various frequencies of *Fellow* contacts. Migrants with few contacts among both *Hosts* and *Fellows* of course tend to fill their network with contacts in the home country (especially among Dominican and Senegambian respondents), in a pattern of general withdraw from society in the current country of residence toward the sending society that has been labelled as *separation* (Berry, 1997; Brandes et al., 2010). On the opposite side, Argentinians tend to have much fewer connections among co-nationals in Spain, yet with different degrees of social assimilation as measured by their number of relations to Spaniards. In general, again, a variety of combinations between the frequency of *Fellow* and *Host* contacts seem to be possible, with instances of both positive and negative associations between the two variables.

The analysis of network compositions at the individual level suggests to add a fourth typology to the classification on the interaction between transnationalism and assimilation:

iv) **High transnationalism, high assimilation:** Many connections to both people in the home country and natives of the host society.

The emergence of different typologies of association between transnationalism and assimilation, rather than a regular positive or negative relationship between the two, is consistent with findings by Brandes et al. (2010) (see Ch. 2). Through cluster analysis on compositional variables in the same sample of migrant networks in Spain, Brandes and colleagues identify four typologies of networks, which turn out to reflect Berry's (1997) four modes of acculturation. These modes describe four possible combinations between two distinct dimensions of migrants' adaptation trajectories: the propensity to adhere to origin culture and society, and the propensity to assimilate to the new host culture and society. Brandes and colleagues find that all these four combinations can be found in real migrant networks: (1) high propensity on both dimensions, maintaining one's origin identity and at the same time being integrated into the host society ("Integration"); (2) low propensity on the former dimension and high propensity on the latter, assimilating to the host society while loosing one's relationships to the home country ("Assimilation"); (3) high propensity on the former dimension and low propensity on the latter, preserving relationships to the sending country while rejecting those to the native society in the host country ("Separation"); (4) low propensity on both dimensions, losing connections to the home country while not engaging in relations with the

host society either ("Marginalization").

4.1.2 Network distances: the spatial component

Space can be another interesting variable for conceiving and measuring transnationalism in social networks. We may imagine that a highly transnational network is one that not only stretches across national borders, but spans long distances and bridges several countries and continents. A similar intuition was suggested by the comparison between the composition of Dominican and Senegambian networks in the previous section: while Dominicans seemed more transnational than Senegambians for the high proportion of their networks living in the home country, Senegambian networks seemed more transnational than Dominicans' if connections to the international diaspora were taken into consideration.

Introducing the spatial component we can actually discover further and finer differences in the transnational expanse of migrants' networks. In these data, when measuring transnationalism as the average proportion of *Origin* alters, Dominicans and Senegambians appear as the most transnational populations in our sample, whereas Sri Lankans should be considered as one of the least transnational groups.

However, if we take into account the spatial span of the networks, quite a different ranking emerges (Fig. 4.6). Dominicans are still a very transnational population, whose networks have on average the greatest spatial reach across countries. Yet, Sri Lankans stand out as one of the most transnational groups as well. Sri Lankans in Milan display distances from their networks that are close to Dominicans' on average, but also decidedly more concentrated around the mean than Dominicans. This is the case despite the distance between home and host country is just slightly longer for Sri Lankans in Italy than for Dominicans in Spain (a difference of around 600 km), and Sri Lankans have on average less *Origin* contacts than Dominicans. Thus, the wide spatial stretch of Sri Lankan networks compared to Dominicans is perhaps more a consequence of Sri Lankans having more connections to the *Diaspora* around the world.

At the same time, the degree of transnationalism among Senegambians is put into perspective by the short spatial reach of their networks, which is certainly also a consequence of the sending and receiving countries being relatively closer for this population. By the same token, Moroccan networks appear to be the smallest in terms of spatial expanse.

Thus, when the spatial expanse of networks is taken into account, the *Diaspora* component of transnationalism is emphasized. By spanning long distances, connections to co-nationals around the world increase the spatial reach of migrants' networks, as few

as they may be compared to relations to *Origin* contacts. As a consequence, populations that seem more transnational in terms of connectedness to the home country, may appear less transnational in terms of spatial distances covered by their international networks, as in the Dominican case. Groups that would appear to be less transnational on the basis of the degree of relationships to the sending country, may turn out to have many long-distance cross-border relations through the co-national diaspora in their personal networks, as in the Sri Lankan example.

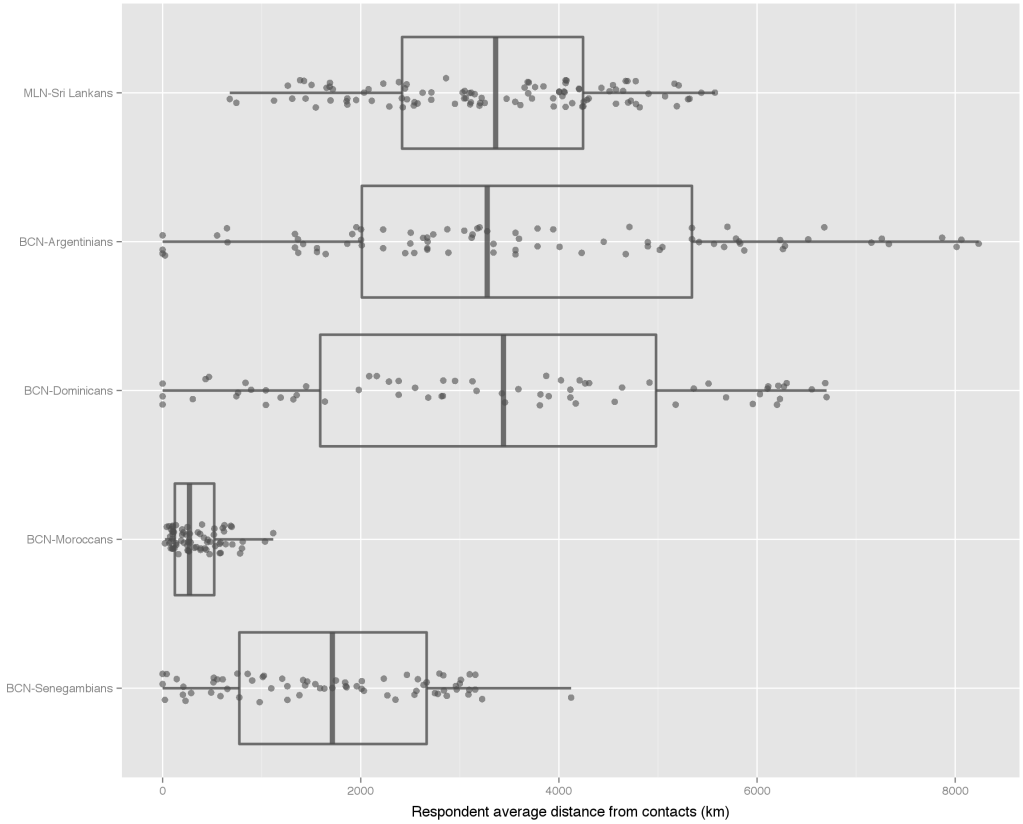

Figure 4.6: Average spatial distance of respondents from their social contacts, by population. Points are personal networks.
In the background are boxplots for the distributions: the vertical segment in the middle of the box is the median; the left and right borders of the box are the 25th and 75th percentiles respectively. The horizontal segments from the borders of the box represent the rest of the distribution excepting "outliers": the segment to the left of the box extends up to the lowest value within 1.5 times the inter-quartile range (i.e. 1.5 times the length of the box); the segment to the right extends up to the highest value within 1.5 times the inter-quartile range.

4.1.3 Home country and family networks

Turning back to network composition, the previous tables also reveal something more about the nature of transnational relationships. They show that family proportion in personal networks is not necessarily tied to the degree of transnationalism as measured by the total number of connections to the home country. To be sure, there is a positive correlation between the number of family members and the number of family members in the home country within the migrant's network, as shown in Fig. 4.1: when a migrant mentions more relatives among his contacts, he also lists more relatives living in the sending country. However, when the weight of family in the network is linked to the *total* number of *Origin* contacts, this correlation is lost: networks located more in migrants' home country do not necessarily constitute more of a family network, while networks located in the host country may well be largely composed of family relationships.

At the aggregate level, Moroccans have the highest proportions of family in personal networks, but their networks are not especially unbalanced toward Morocco as opposed to Spain when it comes to contacts' residence country. For Senegambians and Dominicans, high percentages of family are associated with high percentages of *Origin* alters in personal networks. However, Argentinians have a fairly high average proportion of *Origin* alters (much higher than Moroccans), but the lowest proportion of kin social contacts.

This finding is essentially confirmed by Fig. 4.7 on the individual level. Except for Argentinians and perhaps Moroccans, who show a somewhat positive relationship between *Origin* and family network, there seem to be no significant positive correlation between the two variables for the other populations. Interestingly, Argentinians and Moroccans are the two groups with most *Host* and least *Origin* contacts, and the only two populations where contacts back in the home country tend to be family rather than friends or acquaintances. In other words, when the connections to the home country are few and those to the host country are many, contacts to the sending society tend to be mostly family relations.

4.1.4 Physical distance, emotional closeness

A standard "name interpreter" in personal network questionnaires is the item asking how emotionally close the respondent feels to each alter, sometimes also worded as "how much of a friend to alter x". As mentioned in Ch. 3, this question was featured in the Italian survey as: "On a 1 to 5 score, how much of a friend (how close) do you feel to this

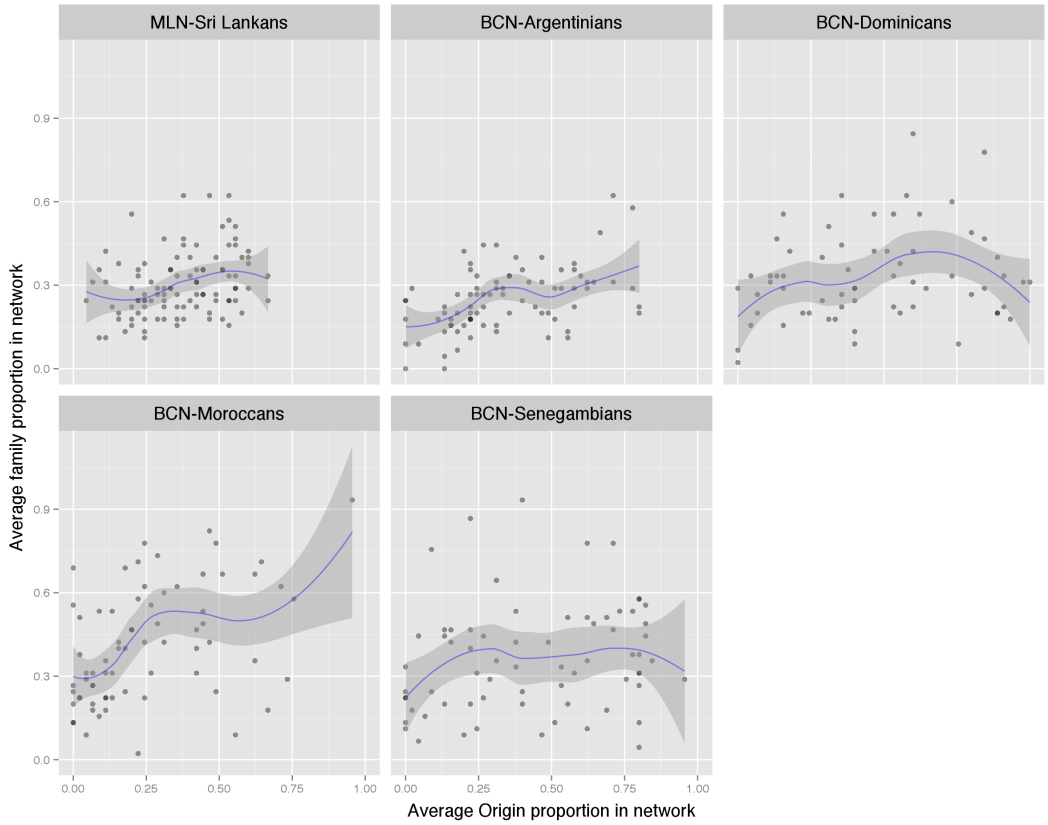

Figure 4.7: Proportion *Origin* by proportion Family in network, by surveyed population. The blue lines are fitted values of a polynomial local regression (the shaded area is the corresponding .95 confidence interval).

person?"[2].

This emotional/friendship score of alters on a 1-5 scale may be interpreted in various ways by respondents. Sri Lankan interviewees in Milan normally read it as a measure of how much of "a friend" the alter could be considered, how much he or she could be trusted, how much they cared for this person and how much this person cared for them. One could imagine that this score is correlated to frequency of contact: if more frequent interaction certainly does not always mean more emotional closeness, a minimum frequency of contact (although not necessarily face-to-face) is needed to sustain a fair degree of closeness. In other words, if emotional closeness is unaffected by the frequency of interaction once a certain degree of it is already there, the perception of

[2]The Spanish questionnaire included the same question: "How close do you feel to this person?", to be answered on a scale from 1 to 5.

closeness to someone inevitably goes down if there has been no contact whatsoever with this person over a very long time. On this note, it should be reminded that all the social relations mentioned in these interviews are people with whom the respondent has had some kind of interaction (face-to-face, by phone, over the Internet etc.) in the previous two years (see Ch. 3).

Interpretations and answers to the closeness question are also affected by whether or not Alter is a family member. Of course, this has a lot to do with the conventional and socially desirable views on family that are held in a given population.

Sri Lankans in Milan often exhibited a perspective that may be labelled as "familistic" for the central importance it gives to family as a premise, cause and measure of people's successes and failure in life. Family embraces an extended array or relations for Sri Lankans, including grandparents, uncles and aunts, cousins and the in-law family acquired through one's spouse. For Sri Lankans in both Milan and the rural hometowns of most Sri Lankan migrants in Italy, there is no doubt family is a crucial source of financial support, care of children and the elderly, and often collective economic and labor strategies (family businesses). People are expected to constantly receive help from, and give help to, parents, grandparents, uncles and aunts in a vast array of life circumstances. Supposedly family characteristics are often used as explanations for a person's character, virtues and defects, as well as for his or her success or failure as a man or woman. Family itself is a central measure of success or failure in rural Sri Lanka, as nobody is normally considered a successful person if he or (especially) she has not been able to establish a family and keep it close-knit; family conflicts, ruptures and separations are considered as (and often are) an existential failure as well as the catalyst for failures in other domains of life (e.g. the economic domain).

In interviews with Sri Lankan respondents, it was often clear that family members were given high closeness scores (4 or 5) just because they were cousins, uncles or aunts[3], irrespective of the actual emotional and material content of the relationship Ego had with them. In general, different criteria were normally used by respondents to assess the closeness of a family member versus that of a friend. For example, trust and availability for help were often taken for granted from family members, whereas a friend had to prove these qualities so as to be considered close. An older uncle was usually not seen as someone with whom personal emotional problems could be discussed, and this did not seem to affect how close he was perceived, whereas uneasiness in talking about personal problems with a friend was clearly something that made him less close on the 1-5 scale.

[3] In the Italian survey the question on emotional closeness was not asked for immediate family (if Alter was respondent's wife, parent, sibling or child).

The traditional question on alters' emotional closeness yields very interesting results on personal networks of migrants. Social contacts who are far away from Ego, in the home country or in the co-national diaspora, turn out to be often *more* emotionally important than social contacts in the host country, even after controlling for alters' nationality and family versus non-family relation.

Figures 4.8 and 4.9 summarize this result. For all the surveyed populations, the average closeness of *Origin* and *Diaspora* alters is normally higher than the average closeness of contacts living in the same country as the respondents: it is higher not only than the *Hosts*' (as may be expected), but than *Fellow* migrants' average emotional closeness as well. This is especially evident for non-family relations (friends and acquaintances, Fig. 4.8), but generally holds true for family connections too (Fig. 4.9). Sri Lankans, Argentinians and Moroccans are the populations that most clearly display a lower emotional closeness of *Fellows* compared to both *Origin* and *Diaspora* alters, whereas this difference dwindles for Senegambians, and especially for Dominicans.

The separation between family and non-family alters in Figures 4.8 and 4.9 ensures that the higher average closeness of *Origin* and *Diaspora* contacts is not trivially a result of family members (who generally have higher closeness scores) being possibly overrepresented among alters in the home country or in the diaspora. In general, such separation allows us not to mix what seem often to be two different kinds of closeness, friendship closeness and family closeness, which are differently conceived and assessed, as argued above.

The clear difference between the distributions of closeness scores in Figures 4.9 and 4.8 supports the point that family closeness is something different from that of friends and acquaintances: distributions in Fig. 4.8 (non-family) are much more "normal", with modes and means on middle values (3 or 4), whereas those in Fig. 4.9 (family) are more skewed to the right, with higher means, and modes regularly on high scores (mostly 5).

In sum, what Figures 4.8 and 4.9 tell us is that contacts who live in another country are often those to whom transnational migrants feel closest. Physical distance does not cause *Origin* and *Diaspora* contacts to be less important as friends or family to our respondents: in fact, quite the contrary. This is the case despite the fact that distance certainly implies less face-to-face interaction between Ego and alters, and presumably makes it harder for family or friends abroad to materially support Ego (e.g. with small money loans, working together or assisting Ego in everyday chores). On the other side of the coin, this result means that co-national *Fellow* migrants are often perceived as *less* close, less the friends, or less emotionally supportive than social contacts abroad.

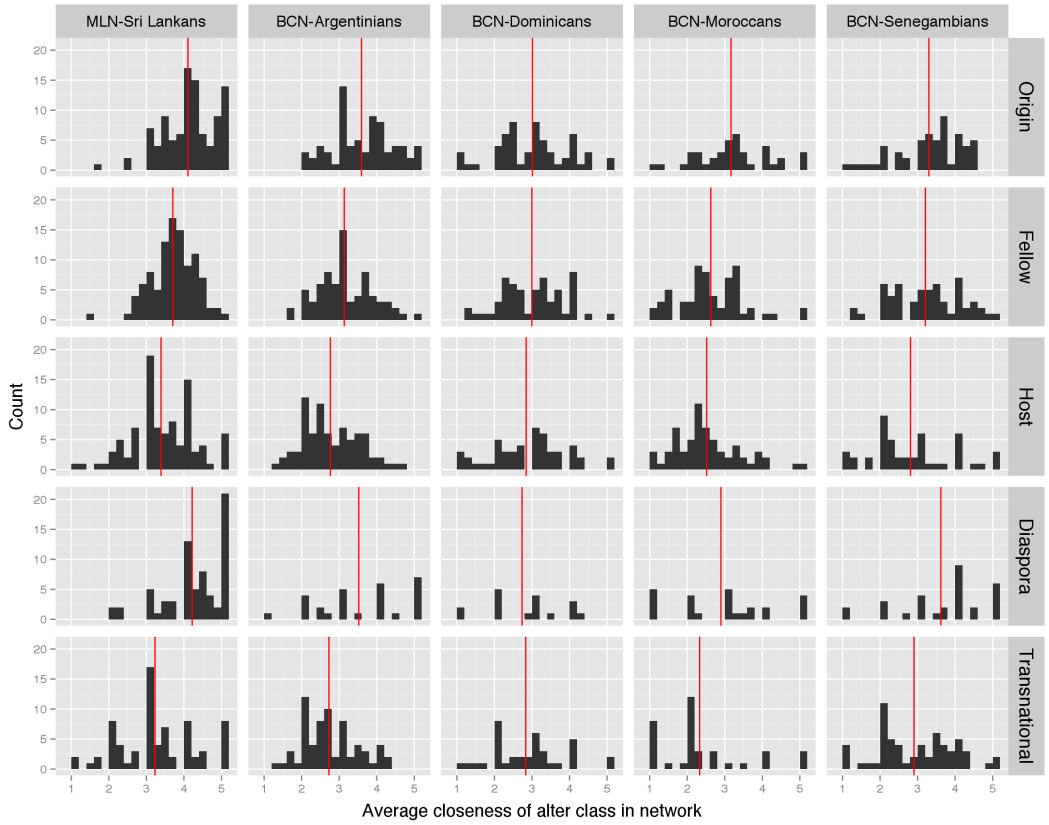

Figure 4.8: Average emotional closeness of alter classes in networks, by surveyed population: non-family relations. Red lines show the mean of each distribution.
NOTE: The unit of analysis is the ego-network: (1) each alter has a 1-5 closeness score given by respondent; (2) in each ego-network, the average score is taken for alters of each class (*Origin*, *Fellow*, *Host*, etc.); (3) the histogram shows the distribution of this average score (for each alter class for each surveyed population).

If outside the family, friends and acquaintances back home are felt to be emotionally closer than those who emigrated, the same pattern holds within the family, although less markedly (it actually disappears for Argentinians): whatever the difference between the meaning of "closeness" for family versus non-family relations, family in the sending community tends to be considered as closer or more intimate than family that emigrated along to the same country.

As expected, friends and acquaintances from the *Host* society are normally less emotionally close to migrants than those in any category of co-national contacts (*Origin*, *Fellow* or *Diaspora*). Interestingly though, this difference becomes much smaller, or even reverses, within the family: while among friends and acquaintances *Host* connections

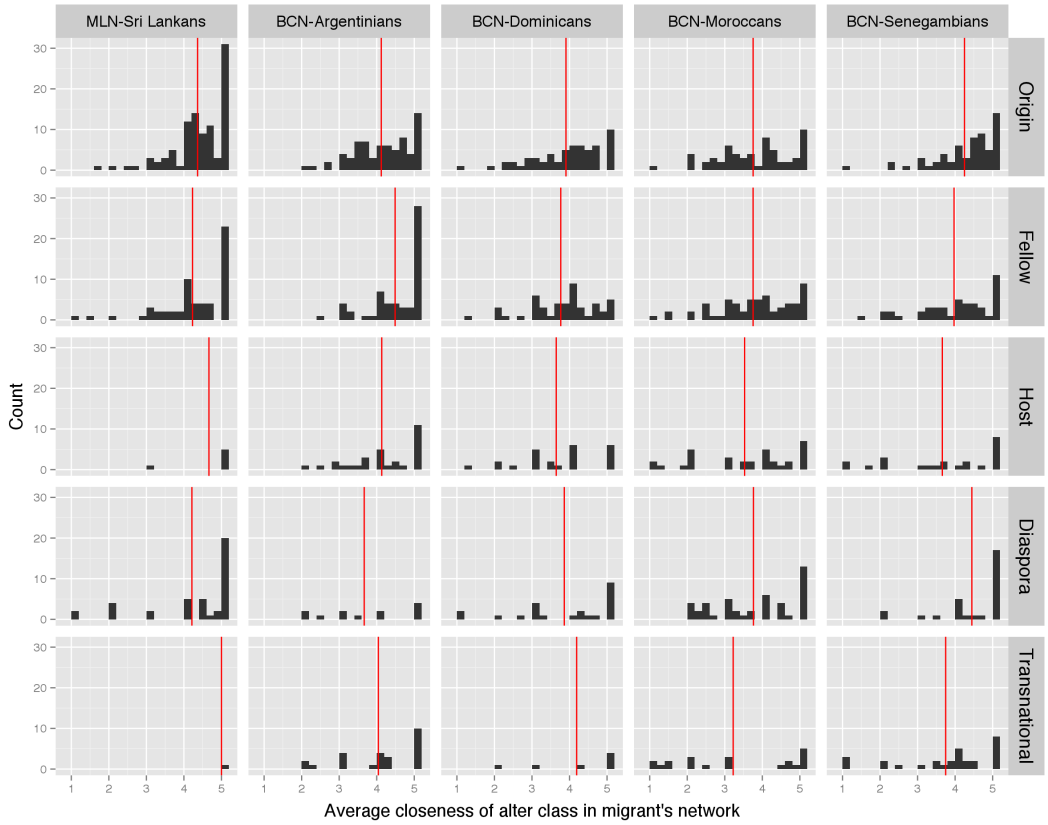

Figure 4.9: Average emotional closeness of alter classes in networks, by surveyed population: family relations. Red lines show the mean of each distribution.
NOTE: The unit of analysis is the ego-network: (1) each alter has a 1-5 closeness score given by respondent; (2) in each ego-network, the average score is taken for alters of each class (*Origin*, *Fellow*, *Host*, etc.); (3) the histogram shows the distribution of this average score (for each alter class, for each surveyed population).

are decidedly the least emotionally close or supportive, being part of the family seems to remove the "disadvantage" of not being co-national, and in the fewer cases in which they are part of the migrant's family, *Host* contacts are no less close than co-national ones. In other terms, nationality does not make a difference in emotional closeness within the family, while it does outside of it.

The low closeness of *Fellow* migrants compared to other co-national alter classes is a surprising result for several reasons. First of all, *Fellows* are on average less close compared not only to *Origin* contacts, but often to *Diaspora* connections as well: that is, to all alter classes who are living in a different country from Ego's. This counters the expec-

tation that more face-to-face social interaction would produce greater levels of closeness among friends and family members, and thus that migrants would feel closer to people who live in the same city and country than to people living thousands of miles away. Secondly, such a result is unexpectedly standard for all the populations considered here, and among both family and non-family relations separately (although with different degrees).

It may be imagined that the greater levels of closeness for *Origin* and *Diaspora* contacts is more of an artifact of data collection, resulting from a sort of "self-selection" in the recollection of social relations: contacts who live far away, with whom respondents interact less, are maybe mentioned *only* if they are very close; whereas people who live in the same country or city as the respondent are recalled more easily and irrespective of how close they are perceived, as Ego usually sees or talks to them daily (or anyway more frequently).

On the other hand, the fixed high number of alters mentioned in interviews (forty-five) hopefully reduces such possible bias. During interviews with Sri Lankans, it was clear that respondents had to fully draw from all the areas of their personal network, in Italy and abroad, to reach the number of forty-five contacts. In the same way such a high a number removes the bias toward stronger ties (see Ch. 3), it should rebalance the bias toward contacts with whom Ego has more face-to-face interaction. Furthermore, within the category of contacts with less face-to-face interaction with Ego (contacts abroad), the number of forty-five alters is expected to reduce the possible bias toward closer ties.

Other more substantive reasons may cause *Fellows* to be so markedly and regularly felt to be less close than *Origin* and *Diaspora* contacts. First of all, there may be a sort of idealization of contacts in the home society, which brings respondents to grant higher "friendship" scores to them. Among Sri Lankans, people in the home country are often seen as the uncorrupted "real" Sri Lankans, who have not succumbed to the appeal of money and material success in a foreign country, and have stayed faithful to their own nation, its traditions and its ways of living. Back in Sri Lanka, migrants are more or less commonly blamed for seeking economic success before everything else, including the unity, sanity, and cultural and moral integrity of their families and children. These accusations are often internalized, and many Sri Lankans in Milan share a sense of guilt for jeopardizing the unity of their families and the good education of their children, and a haunting doubt sets in as to whether they are really making the right choice by relocating thousands of miles away from home. At the same time, Italian and Western culture is often seen as a source of corruption and deviation from good habits and customs,

especially in the domains of family relationships and gender roles: the unequal roles of men and women in the family, the show of respect for and submission to parents (and adults in general) that is expected from children, the display of female body and physical intimacy in public places, etc., are often sources of conflict between Western and Sri Lankans mores.

Such cultural conflicts and ensuing guilt for emigration may then be reflected in an idealization of those who did *not* emigrate and did *not* undermine their cultural and moral integrity, and their family's. The migrant's homesickness may just contribute to this, and result in high closeness scores for people left back in the home country or in the diaspora.

A parallel phenomenon is the deterioration of relationships with co-nationals in the host country, which is the other side of the coin for the idealization of the home community and to the more or less conscious internalization of the "migrant's blames". Just as they tend to perceive those who remain in the home country as the "good" authentic Sri Lankans, Sri Lankan migrants often view their co-national immigrants as quickly forsaking the good old values and habits of Sri Lankan families and communities for the sake of money and material success. As a matter of fact, immigrants are often those who most blame other co-national immigrants for losing their cultural and moral integrity. The common sentiment among Sri Lankans in Milan is that migration *changes* people: Sri Lankans who were friendly, helpful, generous, easygoing and devoted to family in the home country, suddenly become obsessed with working and saving money as soon as they set foot in Italy.

While there is surely an imagined and ideological component to this view of how the Sri Lankan character is affected by migration, it is also undoubtedly true that life in European cities is a constant source of conflict and competition between co-national immigrants, and that – at least for Sri Lankans – life in their native rural villages simply cannot spawn the same kind of contrasts. Continuous reasons for disagreements among friends and family arise in the migrant's everyday struggle for finding a job, making ends meet, perhaps sending children to school, and also consolidating (and normally sending back home) those savings that were the reason for emigrating in the first place.

Many migrants ask co-national family and friends for even very small money loans, many migrants lend money to family and friends, and money intended to be given, kept and returned is a paramount source of disagreement between co-nationals. Competition in the workplace is another common cause of conflict, and most Sri Lankans have stories about arguments, jealousies and alleged unloyalties or double-dealing with employers among co-national colleagues.

Obligations to family members are a common source of misunderstanding and disagreement too. Sri Lankan immigrants may be expected to help immigrant kin in various ways, especially if they have been in Italy longer: hosting immigrant relatives, providing them with a job if they have connections to employers (or if they have their own business), lending them money in emergencies. Such expectations may be unrealistic, and Sri Lankans in Italy may be considered by their kin to be much more wealthy and financially safe than they actually are. Something that a Sri Lankan expects from a relative by virtue of family obligations, like hospitality for long periods, can end up being a true economic sacrifice for a co-national in Italy; money may be asked in exchange, and family conflicts may follow. Family members recently arrived to Italy may be employed by relatives, just to discover that employment in a family business can be even more exploitative than work outside the family. Moreover, in this case, salary, hierarchies in the workplace, and work conditions may counter the solidarity and obligations a migrant expects from family. Pathirage and Collyer (2011) provide a very insightful and deep qualitative investigation into how migration causes family conflicts among Sri Lankans in Italy. This sort of family problems may explain in particular the finding of lower degrees of closeness for *Fellow* family than for family left back home or in the diaspora (Fig. 4.9).

The same contrasts that arise in the family can affect friends too: friends may ask co-nationals for the same kind of help, for example hospitality, even in exchange for money; however, how much to pay and when can become objects of misunderstandings and confrontations.

In sum, migrants' everyday struggles for economic incorporation in the host country, as well as the very project of labor migration as a temporary sacrifice made to save money for a future better life in the home country, inevitably cause money and market exchanges to enter social relations that back in the sending society are centered on reciprocity and non-monetary obligations. This explains both the idealization of social relations in the origin community, which cannot be contaminated by monetary exchange, the sense of "corruption" migrants may feel for themselves and for co-national immigrants, and the tensions in social relations with co-nationals in the host country.

In particular, the finding of a regularly lower level of closeness of *Fellow* contacts among both migrants' family and friends can be read as a quantitative confirmation of the worsening of social relations between co-national migrants that has been documented by qualitative inquires. The reduction of this pattern within the family does not necessarily mean that family relations suffer less from such deterioration of human relationships. It

may derive more from a different interpretation of the "closeness" question when it refers to family members, which is supported by the overall distribution of closeness scores for family alters: as though a family member *has to* be perceived (or labelled in an interview) as fairly close, regardless of the actual emotional intimacy existing with him or her.

In any case, this result contributes an important point to the meaning of "transnational networks": not only do migrants have a significant part of their personal community spread across borders and over long spatial distances; but their contacts in distant countries are often the part of their network to which they feel closest as family or friends.

4.2 The centrality of social contacts: using structure to weight composition

4.2.1 Class frequencies versus class centralities

Measuring the centrality of social contacts in migrants' networks is one of the simplest ways to introduce network structure into the analysis. Among the several existing notions and indexes of centrality (Freeman, 1978), I will focus in this section on the most intuitive, namely degree. The degree centrality of an actor is the number of ties the actor has in the network. In *directed* networks, where ties represent relations with a inherent direction (e.g. "A gives advice to B"), *in*degree (the number of relations that bring *to* an actor) may be distinguished from *out*degree (the number of relations that start *from* an actor). In *undirected* networks like the ego-networks considered here, where ties have no direction by definition (saying that A has a relation to B is the same as saying that B has a relation to A), each actor has only one degree measure, namely the number of relations that connect to him or her. Thus, in our networks, the degree of Alter is the number of relations that Alter has to other alters, that is, the number of Ego's contacts that Alter knows.

In personal networks, alters with higher degrees are more central in the sense that they know more of Ego's other social contacts. In the network graph, these alters are literally more central, that is, they are located in the center of the graph: in Fig. 4.10 A, for example, Isabel has a very high degree centrality, while Javier has a very low one. Given the definition of the ego-networks considered here, the degree of alters in our sample ranges from 0 (Alter knows Ego but does not know anyone else in Ego's network) to 45 (Alter knows everyone else in Ego's network). Alters in Ego's immediate family, particularly Ego's spouse, often have a very high degree because they tend to know almost all of the respondent's other relations (Isabel is indeed the interviewee's wife in Fig. 4.10 A).

Alters whom Ego has met recently, and whom he met randomly or isolatedly rather than in a collective context like the workplace or a group of other friends, are normally people who know very few, if any, other contacts of Ego's, hence with a low degree centrality.

It should be noted that degree alone often does not tell the full story on the centrality of an alter, which is why several other meaningful definitions and indexes of centrality exist besides degree. In particular, an alter with a high degree may actually be in very different positions depending on whether he is the *only* alter with as high a degree, or one of *many* alters with high degrees. In the former case, Alter is a single contact with whom Ego shares many of his other relations (Isabel in Fig. 4.10 *A*). In the latter, Alter is just one of several contacts who know a great part of Ego's relations: frequently in this case, Alter is embedded in a subgroup of contacts who are central altogether in Ego's personal community (Kumar in Fig. 4.10 *B*). These are for Alter two very different structural positions, implying differences in Alter's relevance and power in the network (*hierarchy* in the vocabulary of Burt, 1992), as well as in Ego's dependence on Alter (*constraint* in Burt's vocabulary).

There are a number of ways these two situations could be differentiated, given the same high value of Alter's degree. These include coupling degree with other measures of centrality (e.g. betweenness[4]), recognizing "structural equivalences" between Alter and other connections of Ego's[5], or identifying structural "cohesive" subgroups to which actors belong[6]. This problem will not be further developed here, but for the time being it should be kept in mind that alters with similar degrees, and *categories* of alters with similar *average* degrees, may actually be in quite different structural positions within the network.

Structure opens up many insightful ways to assess the relevance of social contacts, and of particular categories of social contacts, in migrants' personal networks. If centrality is essential to understanding the role of alters in a network, centrality measures can be used to describe the overall weight of migrants' cross-border relations. I will argue in this section that knowing how much of a personal network is composed of alter categories such as *Origin* and *Fellow* is not enough to grasp the relevance of these kind of relations. Rather, going beyond network composition, even simple structural metrics

[4]If Alter is not the only contact with a high degree, he will not be the only actor *between* all other actors, that is, he will have a lower *betweenness* centrality.

[5]If there are other actors whose degree is as high as Alter's, they will likely be *structurally equivalent* to Alter, that is, connected to the same actors as him.

[6]If there are other actors with a very high degree, Alter will likely fall in the same cohesive subgroup as them, like Kumar in figure 4.10 *B*.

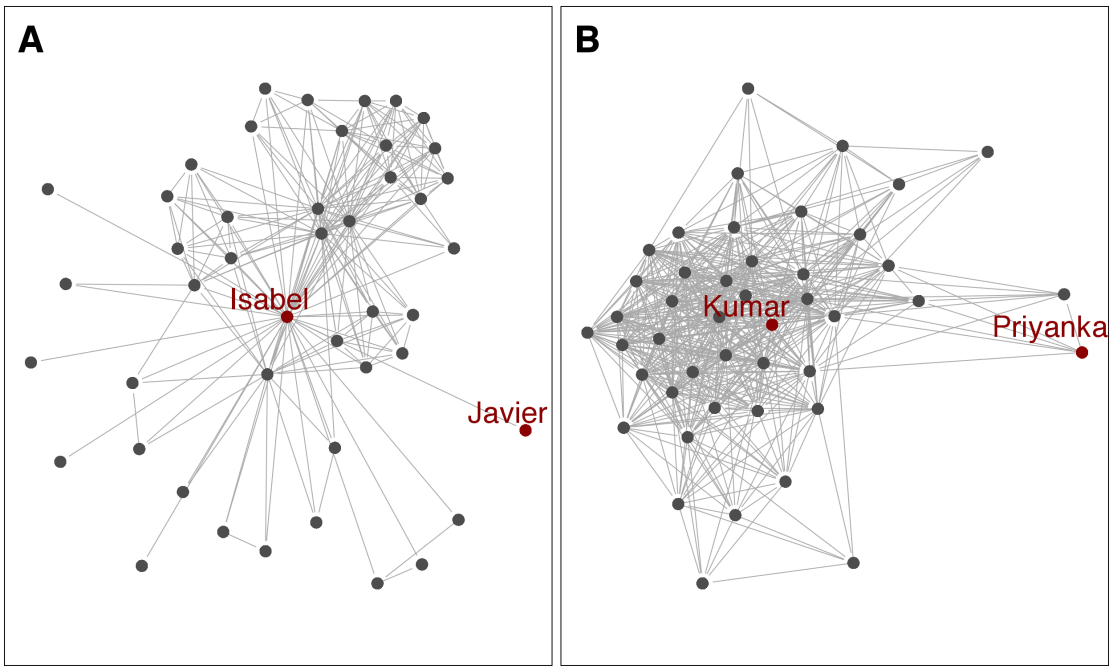

Figure 4.10: An Argentinian ego-network from the Spanish survey (A) and a Sri Lankan ego-network from the Italian survey (B), which illustrate different degree centralities of alters, and different types of alters' embeddedness in structural subgroups. Isabel and Kumar have a high degree centrality in network A and B respectively, while Javier and Priyanka exhibit a low degree centrality in the two networks. Isabel is the only alter with a very high degree in network A, while Kumar is embedded in a whole subgroup of contacts with high degrees in network B.

like node degree can add a lot to our understanding of the role of transnational connections for migrants in Europe.

Table 4.5 aggregates degree centrality for the usual five national-geographical classes of alters. The first thing to highlight in this table is the very high centrality of *Origin* alters, and often of the co-national *Diaspora*, compared to other alter categories. *Origins* are the most central contacts in the average network of Sri Lankans and Senegambians, and for Dominicans and Moroccans they have on average a very close centrality to *Fellows* (the most central class). Relations in the international *Diaspora* follow a similar pattern, being on average more central than contacts in the same residence country as Ego's (*Fellows* and *Hosts*) in the Sri Lankan and Senegambian population, and almost as central for Dominicans and Moroccans. *Host* contacts tend to replicate in their centrality the pattern of their low proportions in networks (cf. Tab. 4.3): in Sri Lankan, Dominican and Senegambian networks they tend to be not simply the fewest, but also the least central alters.

However, the most interesting cases here are those in which degree centralities some-

how contrast the picture of personal networks that may be drawn from frequencies of alter classes in Tab. 4.3. For Sri Lankans, for example, *Origin* contacts are on average less than *Fellows* in the network, but they tend to be decidedly more central, knowing more than one third of respondents' other relations (16.4 out of 45 alters). This pattern is even more striking for *Diaspora* alters, who are relatively few in the average Sri Lankan network (around 3)[7], but know almost 13 other contacts on average.

In Argentinian networks, *Host* alters are almost one third on average, many more than *Fellows* (one fifth), and almost as many as *Origins*. However, their relevance is put into perspective when we see that they tend to be definitely less central than both these classes, knowing on average around 10 other contacts of the respondent. On the contrary, *Fellow* alters are relatively few in the average Argentinian network (less than 9), but they are those who share the most relations with Argentinian respondents (17 relations). Likewise, there are on average many *Host* alters in Moroccan networks (more than 13), but they also are on average less central than any other alter class, knowing about 14 other contacts of Ego's rather than around 20 like all the other categories of Moroccan alters.

While the high proportion of *Host* contacts for Argentinians and Moroccans is in a sense offset by their low average degree, the weight of the international *Diaspora* is very much reappraised by statistics on centrality: as few as they may be, *Diaspora* contacts are often among the most central in the networks of these migrants, knowing on average between one fourth and a half of all other relations of the migrant.

When we look beyond aggregate statistics at the distribution of individual level measures (Figures 4.11, 4.12 and 4.13), the first intuitions on the centrality of transnational relations are substantially confirmed.

In Figures 4.11 and 4.12, points above the blue line are networks where *Fellow* contacts are *less* central than *Origins* and *Diaspora* respectively; in Figure 4.13, points above the blue line are networks with *Origin* alters being on average more central than *Host* alters. Now Sri Lankans in Milan appear as the group with the most transnational networks, given that for the greatest majority of them *Origin* alters are clearly more central than *Fellows*, let alone *Host* contacts. For Dominicans, Moroccans and Senegambians, most networks in Fig. 4.11 are close to the blue identity line, which means that *Origins* and *Fellows* have similar degree centralities. Moroccan and Dominican networks, however, tend to have slightly higher centralities for *Fellows* than for *Origins*, while the

[7] See the proportions in Tab. 4.3, multiplied by the number of 45 total contacts.

	N		Mean	sd	.05	.10	.25	.50	.75	.90	.95
MLN-Sri Lankans	102	*Origin*	16.4	5.7	8.1	9.5	12.3	15.7	20.0	22.3	27.0
	102	*Fellow*	11.8	5.5	3.6	5.3	7.9	11.0	15.9	19.2	20.2
	94	*Host*	4.6	3.5	0.0	1.0	2.0	4.0	6.8	9.1	10.5
	84	*Diaspora*	12.6	6.7	2.3	5.5	8.4	11.6	15.4	21.0	23.5
BCN-Argentinians	76	*Origin*	13.4	5.3	5.4	6.1	10.3	13.0	16.0	19.2	22.0
	79	*Fellow*	17.0	7.9	5.9	8.1	11.2	15.8	21.7	27.3	31.6
	81	*Host*	10.3	6.1	2.9	4.0	6.1	8.6	13.9	18.6	21.0
	34	*Diaspora*	12.5	6.6	4.5	6.1	8.1	11.2	15.2	23.0	23.2
BCN-Dominicans	61	*Origin*	18.6	9.4	6.7	7.6	13.3	17.1	21.3	35.2	36.0
	61	*Fellow*	19.2	10.4	7.7	8.2	10.2	16.7	26.3	34.6	37.7
	50	*Host*	11.6	9.5	2.5	3.2	6.1	9.0	13.7	21.1	35.2
	31	*Diaspora*	18.5	8.8	6.5	7.7	12.5	19.8	23.2	30.0	32.8
BCN-Moroccans	63	*Origin*	19.9	9.7	6.3	8.0	12.0	19.5	26.9	33.2	36.5
	67	*Fellow*	20.8	9.2	7.5	10.5	13.6	20.5	27.0	33.3	36.5
	64	*Host*	13.9	8.6	3.4	4.3	8.9	11.8	17.1	25.4	32.7
	56	*Diaspora*	20.0	10.1	5.4	7.2	11.5	19.0	27.7	32.5	34.7
BCN-Senegambians	63	*Origin*	24.7	11.1	8.4	10.7	15.2	24.4	34.3	40.5	42.2
	62	*Fellow*	21.6	11.3	6.4	8.1	13.1	20.4	29.7	39.7	41.9
	54	*Host*	14.4	11.7	2.5	3.1	5.0	10.8	19.8	31.2	38.9
	44	*Diaspora*	23.4	12.1	5.2	7.0	12.9	22.6	34.2	38.7	39.0

Table 4.5: Average centrality (degree) of alter classes in migrants' networks: mean, sd, percentiles by surveyed population. *NOTE: N* changes for alter classes within the same population because the average degree of a given alter class in a network is missing if there is no alter of that class in the network (for example, out of 102 Sri Lankan networks, only 94 actually have at least one *Host* alter).

distribution between the upper and lower triangle of the panel is more homogeneous for Senegambians. Argentinians are again at the opposite end from Sri Lankans, with most networks displaying higher degrees for co-nationals in the host country than for co-nationals back in the sending country.

On the other hand, all the populations seem definitely more transnational if the centrality of *Host* contacts is compared to *Origins*' (Fig. 4.13). In the greatest majority of Dominican and Senegambian networks, co-national alters in the home country have higher degrees than natives of the host society, just like in Sri Lankan networks. The same pattern holds, yet a little more weakly, for Moroccans and Argentinians. However, although these two populations show, in general, higher centralities for *Origins* than for *Host* connections, relative to the other migrant groups they tend to have not only more *Host* contacts in their networks, but more *central* such contacts as well.

Figure 4.12 confirms that the relevance of *Diaspora* contacts is quite understated when looking only at their frequencies in the networks. When it comes to the centrality

of these connections, their significance is no less than that of *Fellows*. About a half of Sri Lankan networks have *Diaspora* contacts which are actually more central than *Fellows*. This is true also for Argentinians, although their network points are fewer in the plot, which means that they have in fact many networks with *no Diaspora* alters at all[8]. The same result holds true for Dominicans, Moroccans and Senegambians, although their networks are different from those of Sri Lankans in that they tend to have higher values of centrality for *both Fellow* and *Diaspora* contacts (that is, they tend to be more in the top-right of the panels).

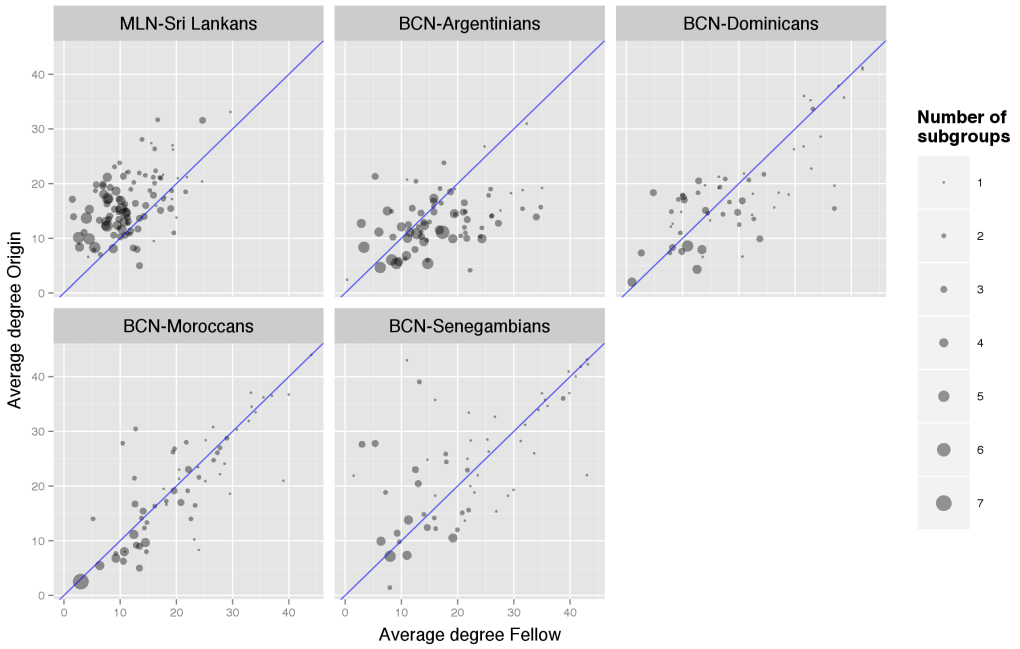

Figure 4.11: Average degree of *Fellow* alters (x) versus average degree of *Origin* alters (y) in networks. Point size is the number of subgroups of relevant size (at least 3 alters) in network. The blue line is the identity line where $x = y$ (Degree *Fellows* = Degree *Origins*).

4.2.2 Anticipating subgroup structure

In Figures 4.11, 4.12 and 4.13, another piece of information is displayed besides the average centrality of alter classes in the networks. The size of network points shows how

[8]The average centrality of a given alter class is missing in a network if it lacks alters in that class. In this case, the network is not mapped in the plot. This is also the reason why the sample size N changes in Tab. 4.5 within the same population (see caption to Tab. 4.5).

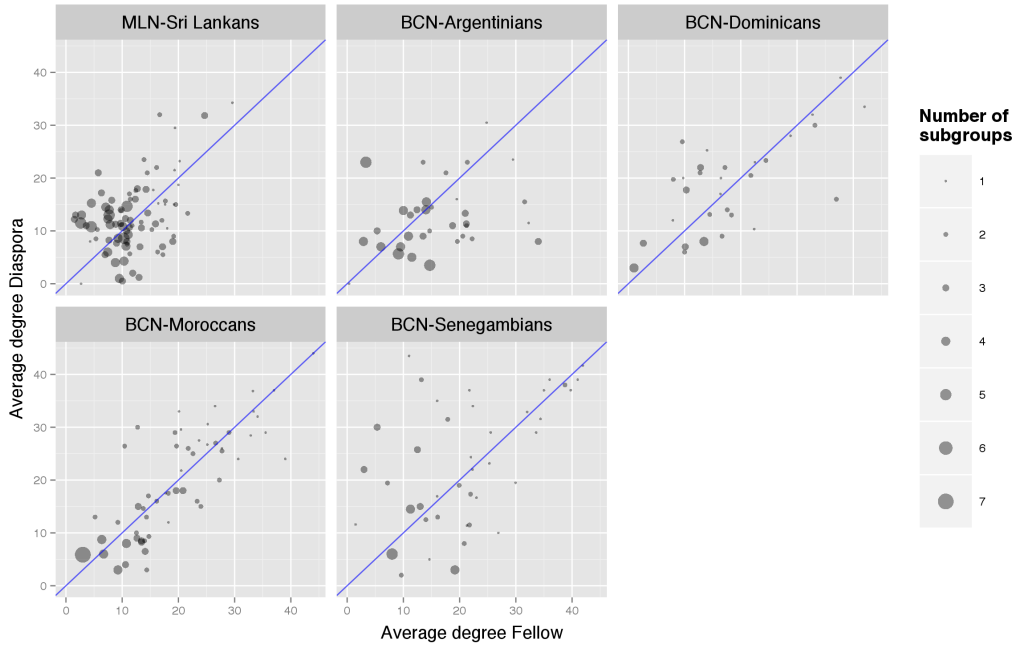

Figure 4.12: Average degree of *Fellow* alters (x) versus average degree of *Diaspora* alters (y) in networks. Point size is the number of subgroups of relevant size (at least 3 alters) in network. The blue line is the identity line where $x = y$ (Degree *Fellows* = Degree *Diaspora*).

many structural subgroups of relevant size (at least 3 alters) can be identified in the network. The procedure used for subgroup extraction and its results will be discussed in Ch. 5, section 5.1. For the time being, it is worth noting that ego-networks with only one relevant subgroup are normally one of two kinds: either they consist of one large very dense network with no clear divides among alters (see Fig. 5.8, A, p. 132), or they have a core-periphery structure with a central dense bulk of nodes opposed to a quite large periphery of unconnected alters with sparse ties to the center (see Fig. 5.8, B). On the contrary, networks with multiple subgroups of relevant size have more of a "factional" structure, with clearcut separations between different densely-knit groups of nodes (see Fig. 5.9, E and F, p. 133).

In Figure 4.11, networks where both *Fellows* and *Origins* have many relations (points in the top-right of the panels), tend to be small points, that is, networks with few structural subgroups, often only one. This is explained by the fact that *Fellow* and *Origin* alters normally make up together the greatest part of a migrant's network in these data. As a consequence, a high average degree (number of relations) for both *Fellows* and *Origins* means that *most* alters in the network have a high number of relations: in other

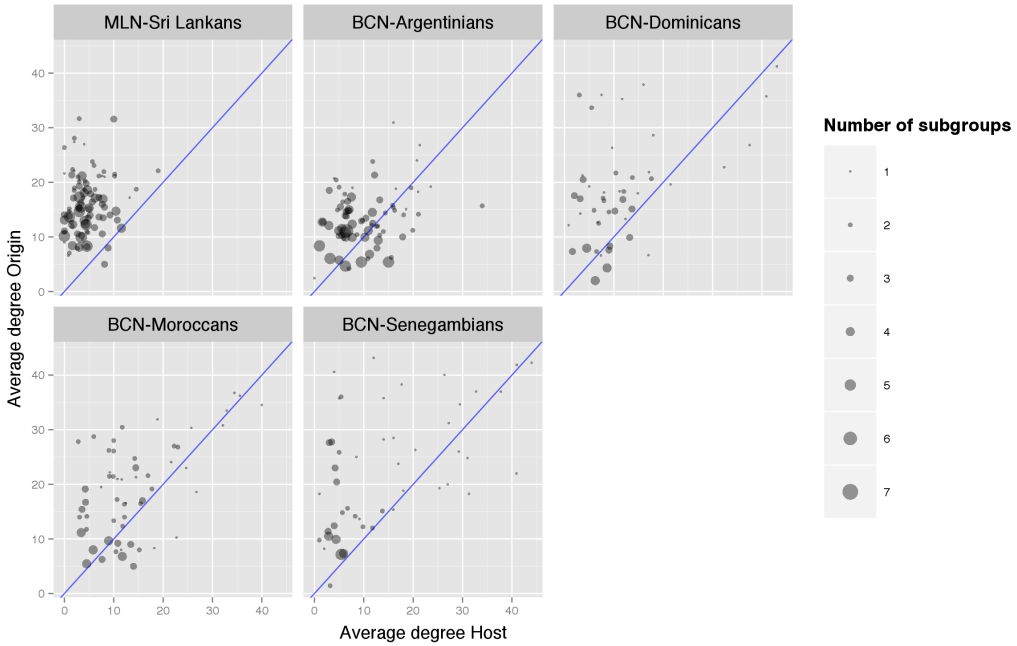

Figure 4.13: Average degree of *Host* alters (x) versus average degree of *Origin* alters (y) in networks. Point size is the number of subgroups of relevant size (at least 3 alters) in network. The blue line is the identity line where $x = y$ (Degree *Hosts* = Degree *Origins*).

words, the network has many ties, a high density overall and a core-centered structure approaching those in Figure 5.8, A or B. Instead, network points with lower values of *Origin* and *Fellow* centrality (more toward the bottom-left of the panels in Fig. 4.11) are clearly larger: they represent less dense networks, with less ties overall and multiple separate subgroups in a structure approaching the "factional" types of Fig. 5.9, E and F.

This pattern of point size is quite weaker in the scatter plots of *Fellow* versus *Diaspora* degrees (Fig. 4.12): here both small and large points are more randomly distributed all over each panel. This is explained by *Diaspora* contacts being on average much fewer than other categories of contacts, *Origins* in particular (see Tab. 4.3). Hence, even when both *Fellow* and *Diaspora* alters have many relations (points in the top-right of the panels in Fig. 4.12), this does not necessarily mean that *most* of Ego's contacts have many relations and that the overall network is very dense. Symmetrically, while low degrees of both *Fellows* and *Origins* together (points in the bottom-left of Fig. 4.11) normally mean that most alters have few relations and the network has a low density (many subgroups), low degrees of *Fellows* and *Diaspora* together are compatible with most alters still having many ties; that is, with a dense, core-centered network.

This digression on the subgroup structure of personal networks suggests something very important on the value of the metrics used so far: two quite simple measures of network composition and structure, the frequency and the average degree of national-geographical classes of alters, when coupled can actually tell quite more than expected, predicting a lot of the *overall* structure of the networks, in particular, of their subgroup structure.

Furthermore, the pattern of point size in Fig. 4.11 as opposed to Fig. 4.12 also reminds us that these are *unweighted* average centralities. If 20 is the average number of relations of *Origin* alters, this probably means that as many as 20 people have around 20 relations in the network; that is, we are observing an overall very dense network. If 20 is the average number of relations of *Diaspora* alters, this may mean that just 3 contacts have about 20 relations in the network, which still leaves room for a low overall density. The conclusion is that similar average degrees could reflect quite different situations depending on the size of the alter class on which the average was taken. In particular, while the centrality of *Diaspora* contacts is more likely to be similar to Isabel's centrality in Fig. 4.10[9], the centrality of *Origin* alters will more frequently be something like Kumar's position. This is another indication that composition and structure should be taken into account *together* if meaningful and complete descriptions of transnational personal networks are to be drawn.

4.2.3 Homophily and heterophily of alter classes

A last point worth noting in Fig. 4.11 is the positive association between the centrality of *Fellows* and *Origins*: networks where *Fellow* alters have more relations are networks where *Origin* alters also have more relations.

This may be due to "homophily", the well-documented tendency of network actors to establish more relations with similar than with dissimilar actors (McPherson et al., 2001). In this case, co-nationals would be more likely to have a relation with each other than with people from a different nationality: therefore, when Ego's co-nationals in the host country (*Fellows*) have more relations (higher centrality), many of these are with co-nationals in Ego's home country (*Origins*), which means that *Origins* have more relations as well.

Yet homophily exists even just within *single* alter classes. *Origins* tend to have more relations with *Origins*, *Fellows* with *Fellows*, *Hosts* with *Hosts*: sharing the same nationality *and* the same country of residence makes it easy to know each other in migrants'

[9] Assuming that alter classes other than *Diaspora* have not as high a centrality.

personal networks. This is immediately shown by the positive association between frequency and centrality of alter classes in Figure 4.14. This association means that when there are more *Origins* in a network, *Origins* also tend to have more relations in that network, and the same holds true for the other alter classes. Homophily offers a simple explanation to this: because *Origins* tend to have more connections to other *Origins*, that is, they tend to know each other, when there are more *Origin* alters in the network these alters also tend to have more relations.

However, one of the most interesting findings from statistics on frequencies *and* centralities of alter classes examined together is that *Origins* are often very central, even more central than *Fellows*, despite their frequencies being actually lower than *Fellows* in the networks. This means that the centrality of *Origins* is not just a homophily effect *within their own class*, whereby *Origins* have many relations when there are many *Origins* in the network simply because they know each other. Rather, *Origin* contacts tend to have relations to Ego's co-nationals in the host country too, and as a result they have more relations when also *Fellows* have more relations. This is reflected in the positive correlation between points in Figure 4.11.

Thus, homophily strictly *within* alter classes is not the only source of class centrality here: *Origin* alters tend to be very central also by virtue of their relations to *other* classes of alters, that is, to alters who live in the host country. In other words, Dominican contacts who live in the Dominican Republic are not central in the networks just because they know each other, but because they know fellow Dominican alters who live in Spain, and maybe Spaniards who live there too.

Such "heterophily" of relations is most striking for *Diaspora* contacts: they tend to have the same centrality as *Fellows*, although they are much less than *Fellows*, which means that they know many alters in respondents' network who *are not* part of the *Diaspora*. To give a numerical example, the average Moroccan network has around 12 *Origins* and 3 *Diaspora* alters, while it has 15 *Fellows*[10]: yet, in the average Moroccan network *Origins* and *Diaspora* contacts have both about 20 relations, just like *Fellows*. Even if all *Origin* alters know each other in the average Moroccan network, this falls short of 20 relations, and the same is true for the *Diaspora*.

As a matter of fact, while indicating homophily within the same alter class, the positive relationship between class frequencies and centralities in Figure 4.14 also confirms that something different is occurring for *Origin* and especially *Diaspora* alters than for

[10] See relative frequencies in Tab. 4.3, multiplied by the number of 45 total contacts.

Fellows. This positive correlation is slightly higher for *Origin* than for *Fellow* alters, and much higher for *Diaspora* than for any other class. Thus, the same growth in the number of alters of a given class increases that class centrality more for *Origin* than for *Fellows*, and much more for *Diaspora* contacts than for other classes. As soon as there is a significant number of *Diaspora* alters in the networks, they quickly become the most central contacts of the migrant's. This may be the combined result of homophily within *Diaspora*, and transitivity (If A is a friend to B and B is a friend to C, A and C tend to befriend each other), another well-documented tendency of social networks (Wasserman and Faust, 1994): when a certain number of *Diaspora* contacts is reached in the network, they tend to know each other (homophily), and they also tend to share friends (transitivity), which makes the whole class highly central in the network.

Finally, the discussion on the "heterophily" of alter classes also suggests that homophily, and the interaction between homophily and transitivity, may not be the only mechanisms behind the positive correlation between frequencies and degree centralities of alter classes in Fig. 4.14. This correlation may also reflect an underlying preference, or propensity of Ego for a certain kind of alter. Respondents who like socializing more with co-nationals in the host country may have a tendency to make these people more central in their network, for example by introducing them to other friends, or by bringing them along more frequently in their own social circles. Likewise, respondents who tend to maintain more relations with co-nationals in the home country may also act in ways that compel these alters to meet more of their network overall. In other terms, having more relations in a certain alter class (*Origin*, *Fellow*, *Host* etc.) and having *more central* contacts of this class may be the result of the same underlying preference for (or possibly constraint to) a given class of alter.

In conclusion, a few points should be retained from this first analysis of a structural variable in migrants' ego-networks.

i) The cross-border component of migrants' networks is relevant not only in its sheer size, but also in its centrality. The migrant's contacts in the home country are not only a significant part of his or her personal network, they are also a central, relevant and active part in the structure of this network. The migrant's connections in the co-national diaspora around the world, although less numerous, are among the most central in his or her personal community.

ii) This centrality is not just a homophily effect among contacts in the same country and of the same nationality (*Origins* with *Origins*, *Diaspora* with *Diaspora*), but

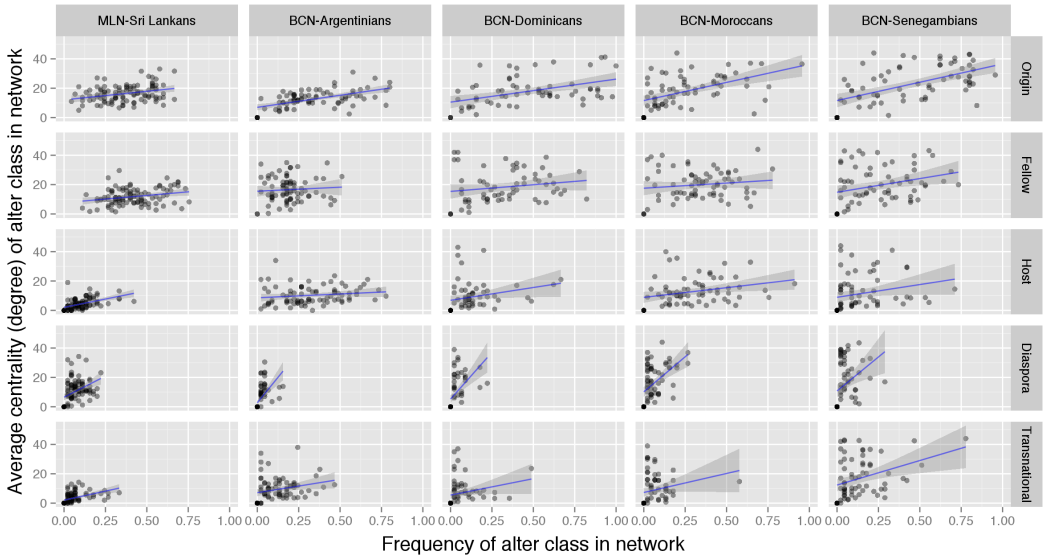

Figure 4.14: Relative frequency of alter classes (x) versus average degree of alter classes (y) in networks. The blue lines are fitted values of a linear regression $y = \beta x$ (the shaded area is the .95 confidence interval).

reveals that transnational contacts are connected to other classes of contacts too. *Both* Ego's *and* alters' relations tend to cross national borders in the networks of transnational migrants.

iii) Simply looking at the composition of the networks can lead to a poor description and assessment of their transnational component. The weight of cross-border relations is very much emphasized by the structural measure of degree centrality. At the aggregate level, populations that did not emerge as particularly transnational from network compositions, like the Sri Lankans and the Moroccans, turn out to share a significant level of transnationalism in network structure.

iv) Coupling even two simple measures from network composition and structure (frequency and average degree of alter classes) can uncover an unexpectedly rich array of network characteristics. For example it can shed much light on network density and subgroup structure. This is another reason, together with the misleading picture that may result from only using compositional measures, why composition and structure should be taken into account *together* when trying to understand the extent of transnationalism in migrants' social relations.

4.3 Conclusions

The goal of this chapter was to introduce a set of notions and measures for immigrant transnationalism based on personal networks. The chapter followed the traditional dichotomy between network composition – the pattern of node attributes –, and network structure – the pattern of relations. However, one of its main arguments has been that both compositional and structural measures need to be combined and taken into account if a complete description of transnational networks is to be gained. In particular, while structure has traditionally been given a limited relevance in personal network studies, this chapter contends that looking at node attributes alone can render a misleading picture of migrants' networks and the role of their transnational connections.

The analysis of networks' composition shows that a relevant amount of transnationalism, as measured by the frequency of cross-border relations in personal networks, characterizes the vast majority of the migrants interviewed in Milan and Barcelona. While in some cases transnationalism essentially means connectedness to the home country, in others the migrant's co-national diaspora around the world is a significant part of the overall transnational relationships as well. Considering the spatial component of personal networks, by analyzing the distances covered by migrants' relations, reveals the importance of the diaspora and helps to distinguish between transnationalism as a relationship to the sending country and transnationalism as a relationship to co-nationals all around the world.

Many of these networks are transnational *family* networks, with cross-border relations being family relations. However, more transnational networks are not necessarily more of a family network, and vice versa: connectedness to the home country can be practiced outside of the migrant's family, and connectedness to the family can be practiced within national borders.

Irrespective of whether transnational networks are family or non-family networks, cross-border connections to people in distant countries are surprisingly often the closest emotionally: both within the family and among friends, co-national social contacts who live in the same country are perceived on average as less emotionally close than co-nationals in the home country and in the diaspora. This means that less face-to-face interaction does not jeopardize the closeness and intimacy of family and friendship relations in transnational networks. Furthermore, this finding most probably also reflects a deterioration of relationships among co-national immigrants in the same country, which has been documented by qualitative research.

A first attempt at linking transnationalism and assimilation on the basis of network compositional measures does not uncover a clear negative or positive association between them. Rather, a variety of combinations between assimilation and transnationalism emerges, at both the aggregate population and the individual level: migrants can be both well assimilated and highly transnational in their social relations, as well as poorly assimilated and not transnational; on the other hand, high levels of assimilation and low levels of transnationalism can be observed together, as well as low levels of assimilation and high levels of transnationalism combined.

Bringing structure into the analysis at the node level, by examining the degree centrality of alter classes, reveals the potential of structural measures for the study of migrants' transnational relations. Simultaneously, it warns against the partial picture of migrant transnational networks that can be returned by compositional analyses alone.

Transnational contacts stand out as not only a large part, but often the most central part of migrants' networks as well. This is not simply a consequence of homophily between alters of the same nationality and in the same country of residence. As a matter of fact, these networks are transnational not simply in Ego's but also in alters' relations: the connections of alters to each other cross national borders, in patterns of "heterophily" of relationships between contacts living in different countries.

The cross-border component of networks, particularly the international diaspora, is often reappraised, while the within-border component is put into perspective, by the analysis of alters' centrality. The suggestion is that a much better understanding of the nature of national and transnational relations is obtained when we consider not only how many people the migrant knows within and beyond national borders, but how these people know each other; in other words, the pattern of connectivity within migrants' personal networks.

Simple compositional and structural measures like the frequencies and average degrees of alter classes, when combined can reveal more than expected on migrants' networks; for example, they can help predict their overall subgroup structure. This also reminds us that degree is a very basic structural measure, which can actually hide quite different structural positions of actors. Following this route, the identification of cohesive subgroups is proposed in the following pages as a better way to study the structure of transnational networks. Besides being interesting in its own right, the analysis of network subgroups can be combined with compositional variables to examine the pattern

of cohesion versus segregation of actor attributes in personal networks: this is the goal of the next chapter.

Chapter 5

Diversity, cohesion and segregation in network structure

In the previous pages, the analysis of network composition described the weight of national (country of birth) and geographical (country of residence) categories of social contacts in migrants' personal networks (Ch. 4, section 4.1). Such categories are defined exclusively by alter attributes, while compositional analyses ignore the *pattern of relations* between alters. The pattern of relations is precisely where this chapter begins, by focusing on network structure only, specifically on the *subgroup* structure of personal networks. Section 5.1 illustrates the richness of the information that can be extracted by an algorithm for subgroup identification, namely the Girvan-Newman procedure, and discusses how this can be used to recognize typical structures in migrant networks.

The separate descriptions of composition and structure in migrant networks are both insightful in their own right, but they leave one question unanswered: what is the pattern of connectivity between nationalities and countries of residence in the social networks of transnational migrants?

When we look at how alters know each other in migrant networks, is there cohesion and integration, or rather separation and segregation between actors of different nationality and living in different countries? Do social contacts from different countries, and currently located in different countries, know each other or do they fall into separate subgroups in migrants' social life? Is the transnational migrant more of a broker between different worlds – alters of different nationality and living in different countries –; or rather is he embedded in dense and cohesive networks where everyone knows each other, his co-national friends know his friends from the host country, and his contacts

in the home country know his contacts in the receiving country? To what extent do structural subgroups follow national-geographical divides in the networks?

This is, in fact, a specific formulation of a classical problem in social network analysis: the question of how much network structure is shaped, guided, or constrained by actor attributes. In this case, by network structure we specifically mean the *subgroup* structure of the network, while actor attributes consist of nationality and country of residence.

There are many ways to approach this problem, and many metrics and models can be used to operationalize connectivity between attribute-defined categories of actors. The approach proposed here starts from network structure, that is, from cohesive subgroups identified with no reference to actors' attributes; then, it looks at attribute diversity *within and across* these subgroups.

In fact, the problem of cohesion versus separation between national and geographical classes of alters may be stated in terms of the correspondence between a structure-based and an attribute-based partition of alters (Fig. 5.1). The pattern of connectivity (network structure) defines one partition, A, of actors into structural subgroups. Alter attributes (where alter were born and where they live) define a second partition, B, of the same set of actors and divides them into national and geographical categories. Now, if alters from different nationalities and countries of residence are structurally separate in the network, each structural subgroup will include only one nationality (or one country of residence): each group in A will correspond to one single group in B, in a match between the structural partition A and the attribute-based partition B. On the contrary, if there is structural cohesion between alters from different nationalities or countries of residence, multiple nationalities (or multiple countries or residence) will come together in a single structural subgroup: each group in A will correspond to multiple groups in B, in a mismatch between the structural partition A and the attribute partition B.

As Fig. 5.1 makes clear, the problem of a match between these two partitions can be reduced to a problem of diversity within the groups of partition A, on the classification given by partition B. In simpler terms, there is a match between structural subgroups and national-geographical classes, if we observe *no* national-geographical diversity *within* structural subgroups, that is, if structural subgroups are homogeneous in alters' nationality and country of residence (the left panel in Fig. 5.1). Conversely, there is mismatch between structural subgroups and national-geographical classes to the extent to which we observe national-geographical diversity within structural subgroups (the right panel in Fig. 5.1).

Therefore, this is fundamentally a problem of national-geographical diversity or ho-

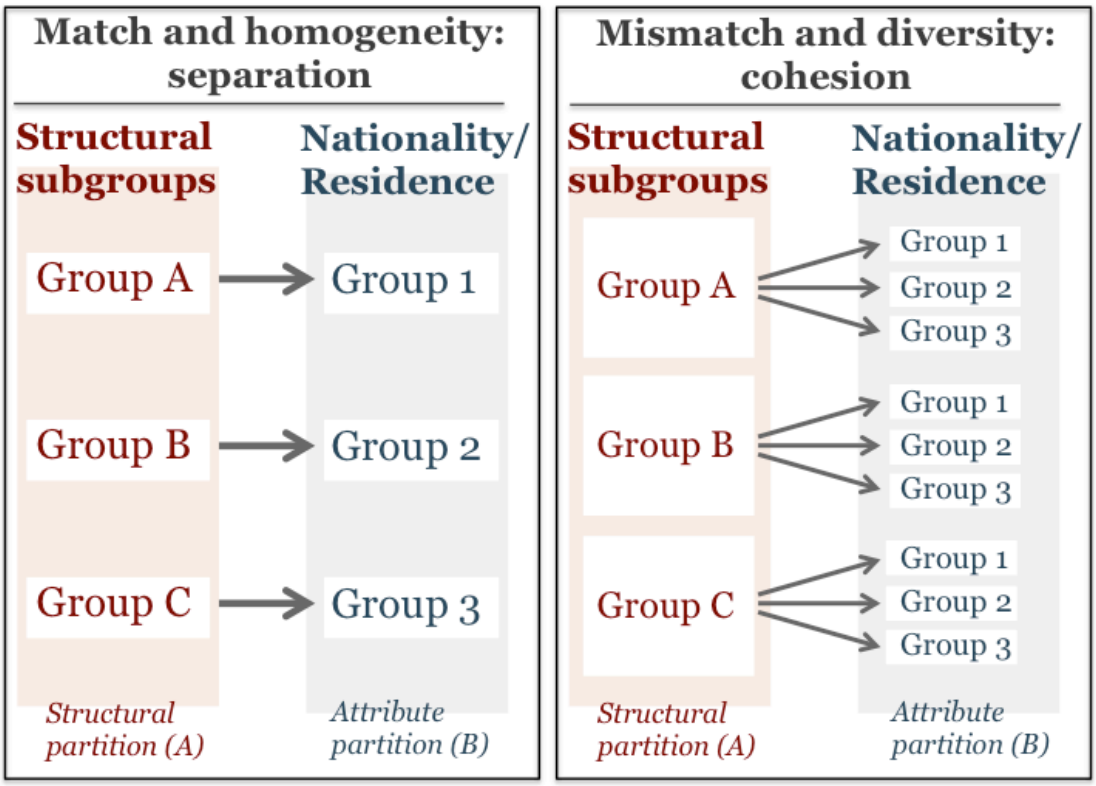

Figure 5.1: In the left panel, structural separation between nationalities or countries of residence in the network implies a *match* between a structural partition of actors into Girvan-Newman subgroups (A), and an attribute-based partition of actors into nationalities or countries of residence (B). This also means that there is no national (or geographical) diversity within structural subgroups: one nationality (country of residence) for each structural subgroup. In the right panel, on the contrary, structural cohesion between nationalities or countries of residence in the network implies a *mismatch* between the structural partition A and the attribute partition B. This means national (or geographical) diversity within structural subgroups: multiple nationalities (or countries of residence) within each structural subgroup.

mogeneity, that is, of national-geographical segregation, in the structural subgroups of personal networks. On the other hand, diversity within structural subgroups cannot be considered by itself, as it is obviously constrained by the overall diversity of the whole network: there may be no more diversity in the part (subgroup) than there is in the whole (personal network).

We may imagine three extreme cases as far as the interaction between network and subgroup diversity is concerned:

i) A situation of "**Total homogeneity**", in which there is no diversity in the whole network in the first place, thus there can be no diversity within network subgroups either (Fig. 5.2, A).

ii) A situation of **"Maximum segregation"**, with a high degree of national-geographical diversity in the whole network, but no diversity within subgroups (Fig. 5.2, B). This corresponds to the *match* between structural partition and attribute-based partition of network actors in the left panel of Fig. 5.1.

iii) A situation of **"Minimum segregation"**, with a high degree of national-geographical diversity at *both* the network *and* the subgroup level (Fig. 5.2, C). This is equivalent to the *mismatch* between structural partition and attribute partition in the right panel of Fig. 5.1.

It is my argument that the difference between these three extreme cases, when applied to real-world networks, represents a real difference between types of migrant transnationalism and social integration. For example, in Fig. 5.3, the composition of the networks is always the same, but networks in the left panels approach the "Maximum segregation" case, whereas those in the right panels are closer to the scenario of "Minimum segregation". Two essentially different varieties of transnationalism emerge: the migrant may be a broker between the people in his home country and those in the host society (Fig. 5.3, A); or he may be embedded in a dense network of ongoing relationships between his social contacts here and there (Fig. 5.3, B). Similarly, different types of social integration depend on whether co-nationals and natives in the host country are two completely separate parts of a migrant's social life (Fig. 5.3, C), or they form a single, well-integrated social group in migrant's network (Fig. 5.3, D). Although it would be hard to determine which is the most transnational network between A and B, and which is the most socially integrated one between C and D, it is much clearer that these networks imply for the migrant fundamentally different kinds of transnational social life, power and dependence relationships with his contacts, resources and constraints from his network, and ultimately different types of social capital.

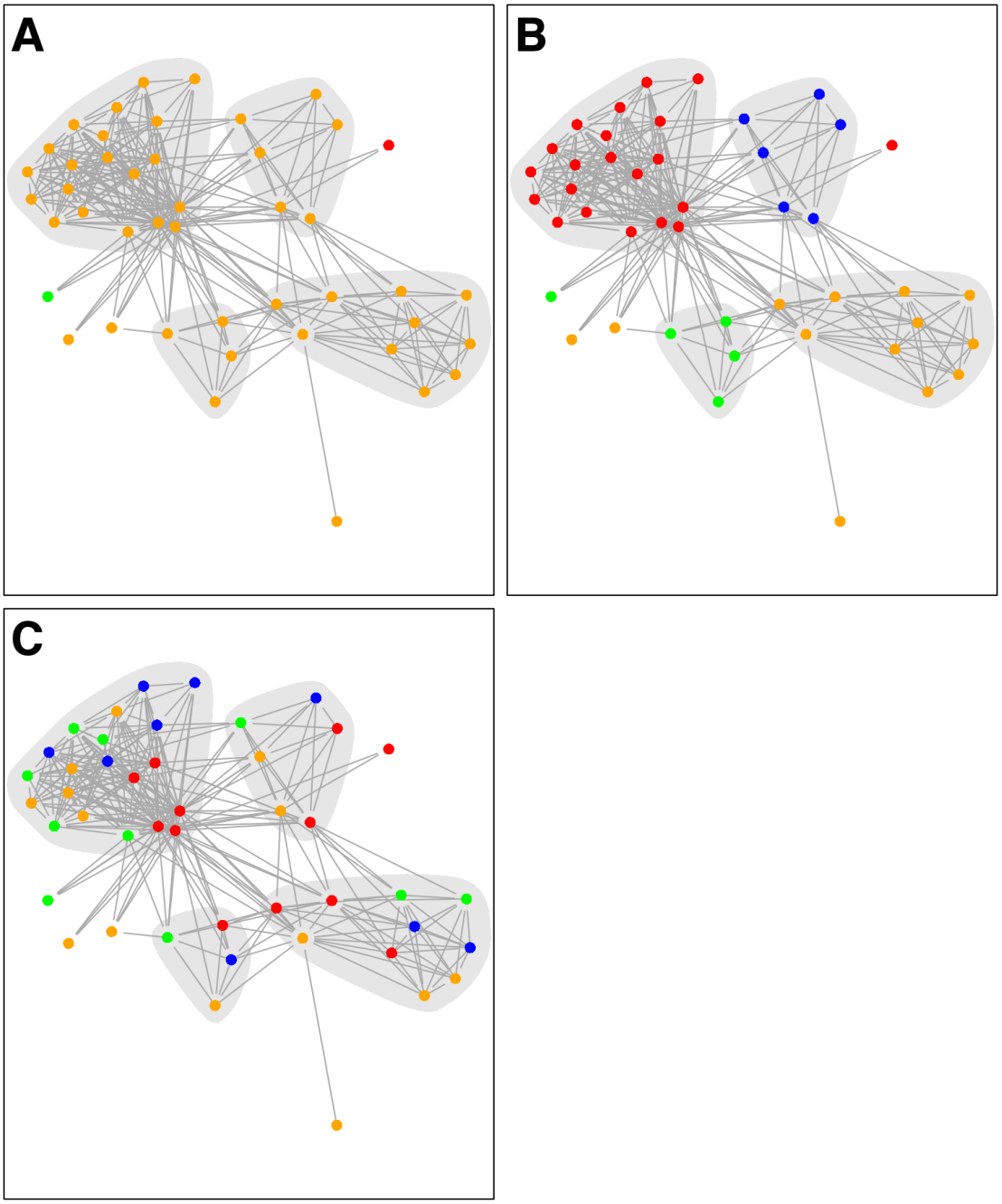

Figure 5.2: Three simulated ego-networks representing extreme cases of diversity and segregation patterns in the network and its subgroups. Network A is the case of "Total homogeneity": no diversity in the network and in its subgroups. Network B is the case of "Maximum segregation": high diversity in the network, no diversity in the subgroups. Network C is the case of "Minimum segregation": equally high diversity in the network and in its subgroups.

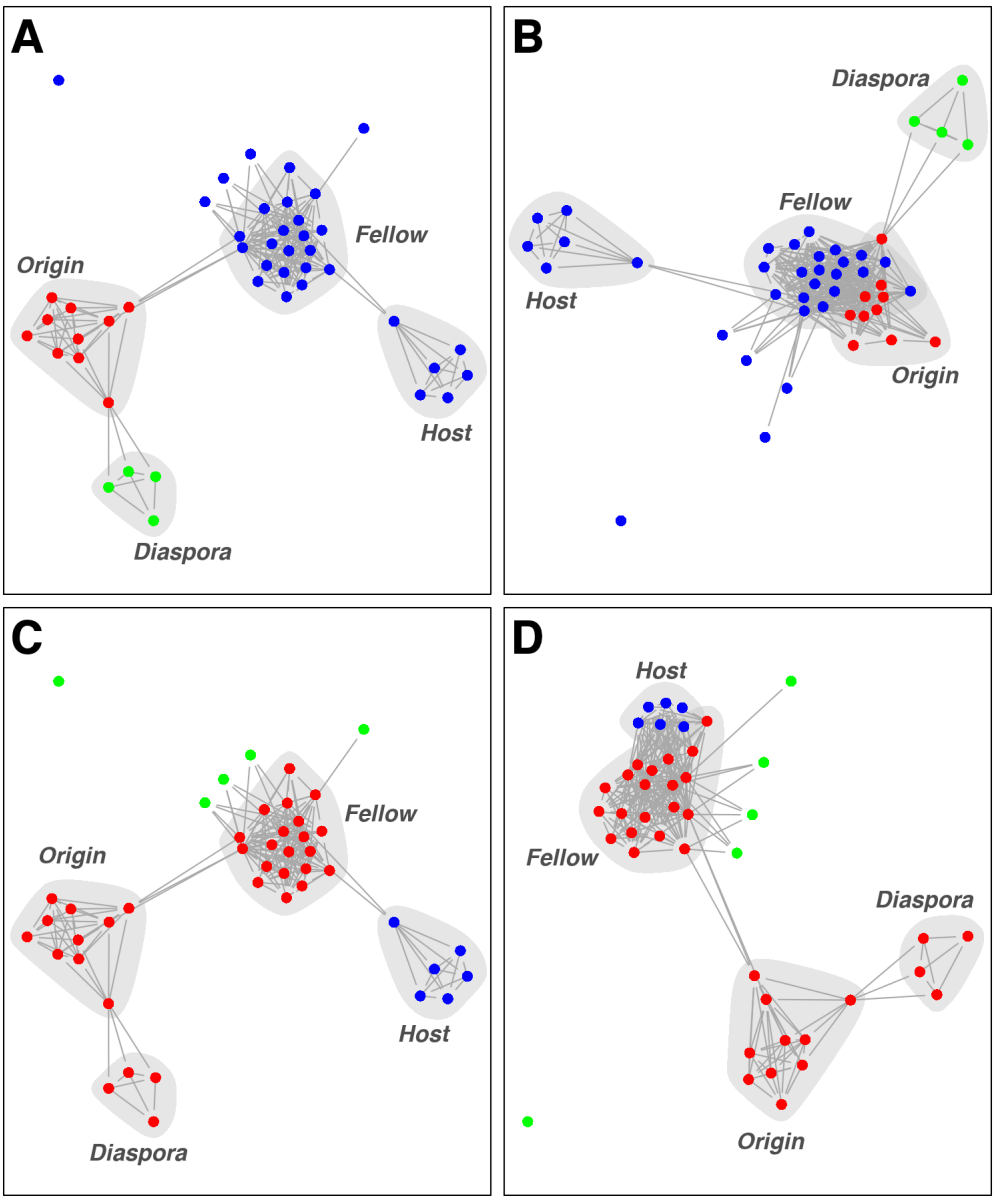

Figure 5.3: Four simulated ego-networks representing how the difference between "Maximum segregation" and "Minimum segregation" in Fig. 5.2 may translate into different types of transnationalism (A and B) and social integration (C and D). The four networks have the same composition of alter attributes, but those in the left panels (A and C) approach the "Maximum segregation" case, while those in the right panels (B and D) are closer to the extreme of "Minimum segregation".

In networks A and B, red nodes are alters living in the home country, blue nodes are living in the host country, green nodes are living in a third country. A and B have the same composition, but in A *Origin* and *Fellow* alters fall into two separate subgroups, whereas in B they form a single cohesive subgroup. In networks C and D, red nodes are migrant's co-nationals, blue nodes are natives of the host country, green nodes are alters of a third nationality. C and D have the same composition, but in C *Host* and *Fellow* alters fall in two separate subgroups, whereas in D they form a single cohesive subgroup.

A and C represent the "brokering" type of transnationalism and social integration respectively. B and D represent the "cohesive" type of transnationalism and social integration.

5.1 Cohesive subgroups in transnational networks

The discussion on alters' degree centrality in the previous chapter has shown the relevance of network structure, that is, the pattern of relations between actors in describing and measuring the transnationalism of migrant networks. Actor centrality is of course just one aspect of network structure, that can be measured at the individual (actor) level. Another way of looking at the pattern of network relations, which focuses on the network level rather than on the actor's, is identifying the subgroup structure of a network.

In the most intuitive definition, a "cohesive" subgroup is a group of nodes that are densely connected to each other, but sparsely connected to nodes outside the group. This idea of tracing subgroups based on the comparison between *within-group* and *between-group* connectivity dates back to the 1970s, and has been called the "centripetal-centrifugal" definition of structural subgroups (a discussion on the history and meanings of the concept can be found in Wasserman and Faust, 1994).

Given this intuition, many definitions and operationalizations of structural subgroups are possible in practice, some focusing more on the internal cohesion of groups, others on the "centripetal-centrifugal" dimension (Borgatti et al., 1990). In Fig. 5.4, A, for example, everyone would agree that the grey areas mark different subgroups in the network. However, not everyone would agree that those areas represent the only possible subgrouping of the graph. In general, not all networks have such a clear subgroup structure, and not all nodes clearly fall into one single subgroup.

5.1.1 Identifying cohesive subgroups: the Girvan-Newman algorithm

The Girvan-Newman algorithm (Newman and Girvan, 2004) offers an intuitive yet powerful operationalization of the concept of structural subgroup, based on the "centripetal-centrifugal" notion of comparing within-group versus between-group connectivity. The basic idea of this procedure is to use edge-betweenness to identify regions of the network that are at the same time cohesive *within* and separate *between* each other. Edge-betweenness is a measure of the extent to which an edge in the network falls *in between* all nodes. It is indexed by the number of shortest paths between two nodes that pass through the edge: given all the shortest paths between all pairs of nodes in the network (990 shortest paths in each ego-network considered here[1]), edge a is as *between central*

[1] In a network with N nodes there are $N(N-1)/2$ unordered pairs of nodes, thus $N(N-1)/2$ shortest paths (if the direction of edges is not defined or not considered): in our ego-networks, this number is $45 * 44/2 = 990$. More precisely, in these networks, the shortest paths are *at least* 990: between two nodes more than one shortest paths of equal length may actually exist.

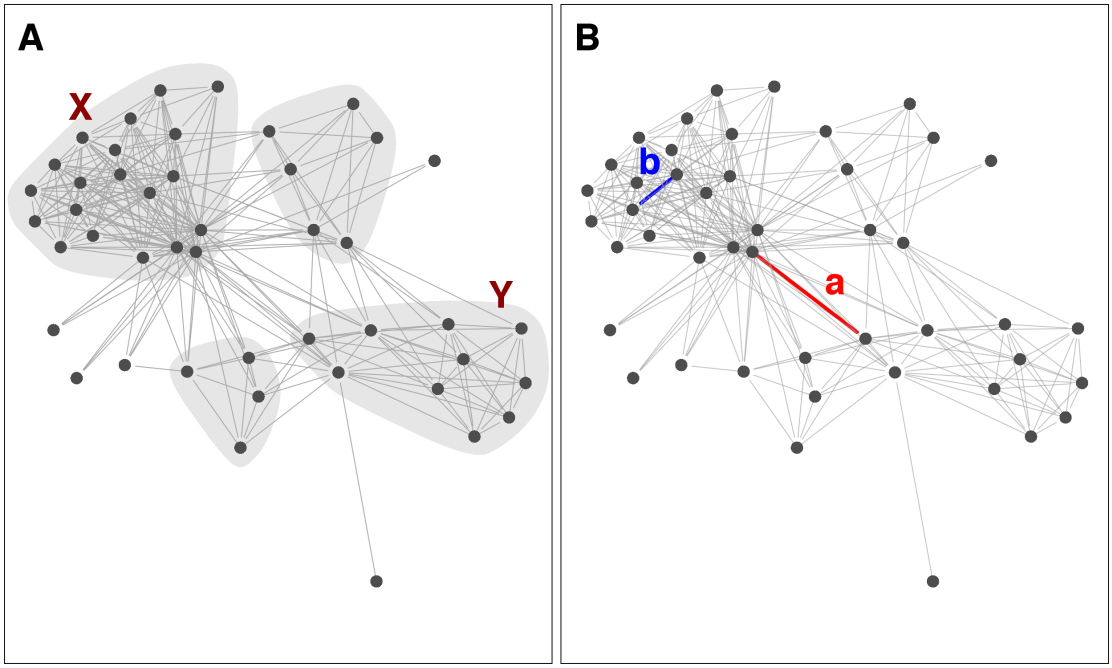

Figure 5.4: A Sri Lankan ego-network from the Italian survey. Panel A shows the Girvan-Newman subgroups of relevant size (at least 3 nodes) in the network. Y and X are two of these subgroups. Panel B shows an edge *within* a subgroup (b, within subgroup X) and an edge *between* subgroups (a, beetween subgroups X and Y).

as many of these paths pass through it.

Girvan and Newman's intuition is that if an edge bridges two separate cohesive subgroups, it must have a very high betweenness, like edge a in Fig. 5.4, B; whereas if it falls *within* a subgroup it will have a lower betweenness, like edge b in the same figure. The reason is that all shortest paths between pairs of nodes taken from two different subgroups will necessarily pass through between-group edges like a, making them very between central. On the contrary, within-group edges like b will never fall on such paths. Furthermore, edges like b will never fall on the shortest path between two nodes both located in a different subgroup than theirs: b will never fall on the shortest path between two nodes both outside subgroup X in Fig. 5.4, A. As for the shortest paths between two nodes both belonging to the subgroup of an edge like b (subgroup X), the high within-density of a cohesive subgroup implies that many redundant shortest paths exist between such nodes, thus b will not be very between central in its own subgroup either: it will not always fall on the shortest path between two subgroup nodes, or it will often fall only on *one* of several possible shortest paths between them[2]. In sum, within-subgroup edges

[2]When an edge falls on one of the shortest paths between two nodes, but multiple shortest paths are actually possible in that pair, the edge's betweenness is weighted downward so as to be lower, the higher is

like b will always have lower betweenness than between-subgroup edges like a.

The Girvan-Newman procedure uses this intuition to extract network subgroups by iteratively removing the edges with the highest betweenness in the network. The algorithm step consists in calculating all edge-betweenness values in the network, and removing the edge with the highest betweenness[3]. After a certain number of edge removals, a network will typically split into two unconnected components[4]. Subsequently, the more edges are removed (in the order given by edge-betweenness), the more separate components will split apart in the network, until each single node has split apart into a separate component (in other words, all edges have been removed). Thus, the algorithm is *divisive*, which means that it starts with assigning all nodes to one single subgroup (the whole network), and subsequently separates the nodes into an increasing number of subgroups: each time it splits the existing subgroups into smaller parts, until it reaches a partition where there is one subgroup for each node (45 subgroups in our personal networks), and no more subgroups are possible.

Therefore, when executed on a network, the Girvan-Newman procedure ends up with *several different* partitions of its nodes into subgroups. Each partition has one subgroup more than the previous one: a new partition arises each time a new subgroup splits apart from the rest of the network as a result of an edge removal. Figure 5.5 shows two such consecutive partitions extracted from the same network.

The final step of the process consists in picking the *best* partition among all those that have been generated. The best partition would be the one that best fits the intuitive definition of a structural subgroup: a set of nodes that is both *cohesive* within, and *separate* from the rest of the network. The Girvan-Newman procedure translates this criterion into a measure called *modularity*, whose detailed derivation can be found in Newman and Girvan (2004). Essentially, modularity indexes the number of *within-group* edges (directly) and the number of *between-group* edges (inversely) as proportions of the total number of edges existing in the network: it increases with the number of *within-group* edges and decreases with the number of *between-group* edges. The Girvan-Newman subgroup partition of a network is the partition with *the highest modularity* among all the partitions generated by the algorithm on that network. In Fig. 5.5, B is the best network

the number of "competing" shortest paths between the two nodes.

[3] After each removal, the betweenness centralities of all the remaining edges are recalculated, which Newman and Girvan (2004) emphasize as being crucial to the success of the algorithm.

[4] If the network already consisted of separate components, the bigger component will typically split into two distinct components.

partition, with the highest modularity, while A is a "worse" partition with lower modularity. The modularity criterion seeks partitions that at the same time maximize within-group cohesion and minimize between-group connectivity: the two top subgroups in Fig. 5.5, B, have high enough a cohesion within, and high enough a separation between each other, that modularity is higher in partition B, and B is chosen over A by the Girvan-Newman algorithm.

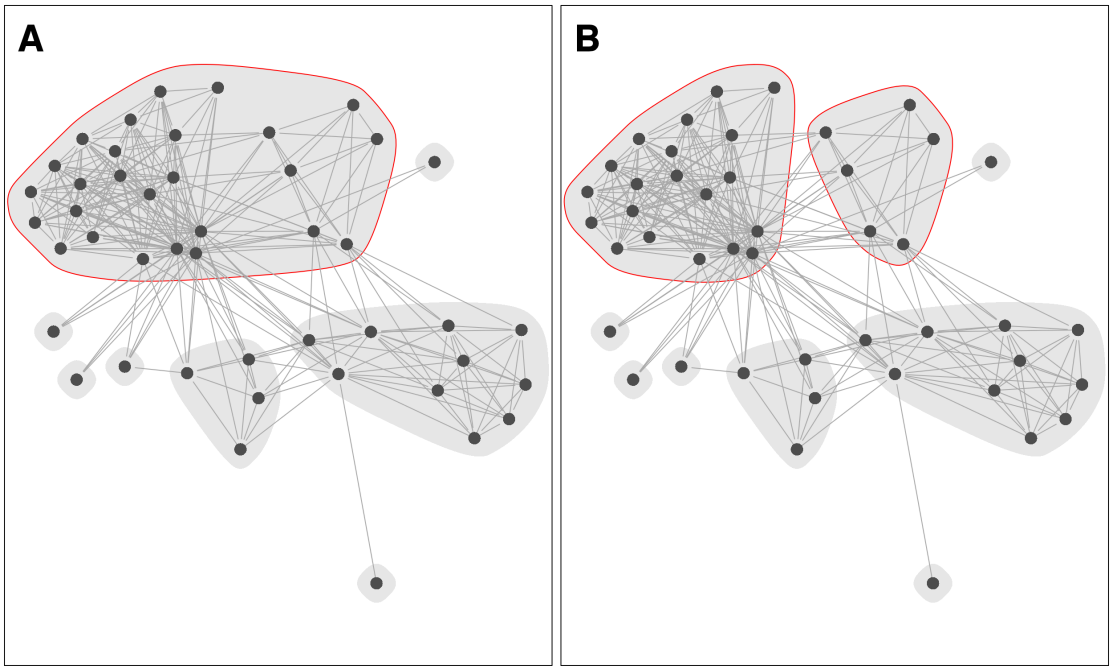

Figure 5.5: Two partitions of the same network (a Sri Lankan network in Milan) obtained from the Girvan-Newman algorithm. Partition B is the one selected by the algorithm, having the highest modularity, while partition A is worse than B on the modularity criterion. The two partitions differ in that B splits A's top subgroup into two separate subgroups. The Girvan-Newman algorithm output 17 partitions overall for this network. Partition A was obtained after the removal of the first 55 edges with the highest betweenness, and has modularity $= 0.24$. Partition B is the following one, obtained after the removal of the first 75 edges with the highest betweennes, and has modularity $= 0.3$. (Note that all network edges are plotted here).

5.1.2 Using the Girvan-Newman algorithm to trace typical ego-network structures

The previous section shows where the modularity of the Girvan-Newman partition of a network comes from: it is the highest modularity that can be extracted from that network; in other words, the modularity of the partition of the network that has the highest cohesion within subgroups and the highest separation between subgroups. As a rule of thumb, a modularity in the range between 0.3 and 0.7 indicates a strong subgroup struc-

ture, while in real-world networks it is hard to find subgroup structures with a modularity higher than 0.7 (Newman and Girvan, 2004).

Besides this measure, other relevant pieces of information can be gained from the results of the Girvan-Newman algorithm. Figures 5.6 and 5.7 display four network measures deriving from the Girvan-Newman procedure: modularity (point size), the number of relevant Girvan-Newman subgroups, i.e. subgroups with at least 3 nodes (x position of the point), the number of within-subgroup edges (as a proportion of the total number of edges, y position in Fig. 5.7), and the number of dyads and isolates in the Girvan-Newman partition of the network (the subgroups of less than 3 nodes, the y position in Fig. 5.6)[5].

The two plots show quite clearly what kind of network characteristics are being indexed by modularity; they are very helpful in understanding how modularity should be interpreted when predicting the subgroup structure of a network:

i) Modularity has consistently the lowest values when only one relevant subgroup is found in the network.

ii) Modularity generally increases when the number of relevant subgroups grows.

iii) Given the same number of relevant subgroups, the proportion of within-group ties affects modularity, with lower proportions (more between-subgroup relations) associated to lower modularities, and higher proportions (more cohesive subgroups) associated to higher modularities.

iv) Given the same number of relevant subgroups, also the number of dyads and isolates affects modularity, which tends to be lower when many small subgroups (less than 3 nodes) have been found in the network. This is consistent with the previous point, because more dyads and isolates normally imply more between-group relations, that is, a lower number of within-group ties as a proportion of the total number of ties[6].

[5] In the following, I will often use the terms "dyads" and "isolates" to refer to Girvan-Newman subgroups of 2 or 1 node respectively. However, these subgroups are not necessarily unconnected from the rest of the network (in fact they are often linked to other nodes in other subgroups), so technically they may not be "isolates" in the usual network definition of this word.

[6] As already noted, the one- or two-node subgroups are normally *not* really isolate from the rest of the network, but sparsely connected to it. Any edge that connects to a node in a small subgroup is always a between-group edge (except for the single edge between two nodes in the same dyad), hence more dyads and isolates normally mean more between-group ties.

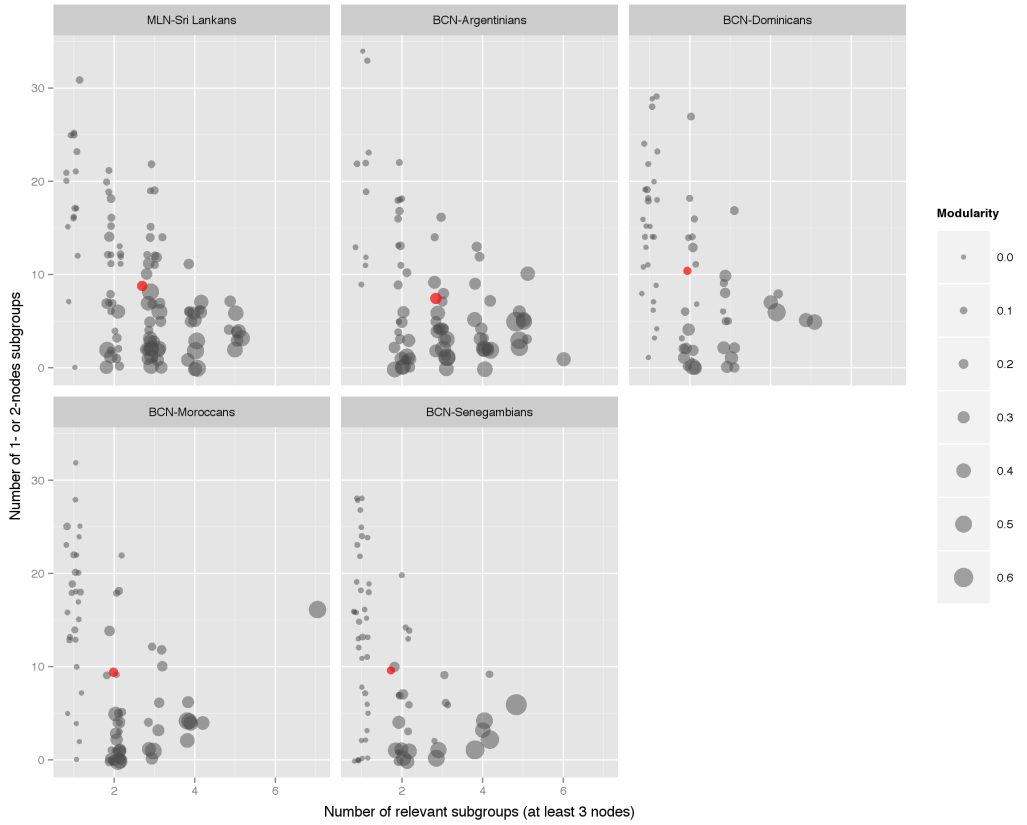

Figure 5.6: Number of Girvan-Newman subgroups of relevant size by number of Girvan-Newman subgroups with only 1 or 2 nodes. Point size is modularity. Red points represent population means.
NOTE: The x coordinates of points are slightly jittered to avoid over plotting.

In the plots, modularity is always lower than 0.1 for networks with a single relevant subgroup, that is, points in the extreme left of the panels ($x = 1$): as a consequence, these points have the same (smallest) size in the plots[7]. However, among those equally sized points, actual modularity values vary: they come closer to 0 the less the dyads and isolates, and the higher the proportion of in-group relations in the network. In fact, among networks with one single relevant subgroup, at least two structural types may be distinguished:

i) Networks with a very high overall density, where the greatest majority of actors fall in one single dense community: these have one large subgroup and few dyads or isolates, as well as a high proportion of within-group ties. Fig. 5.8, A is an

[7] 0-0.1 being the smallest modularity interval mapped into point size.

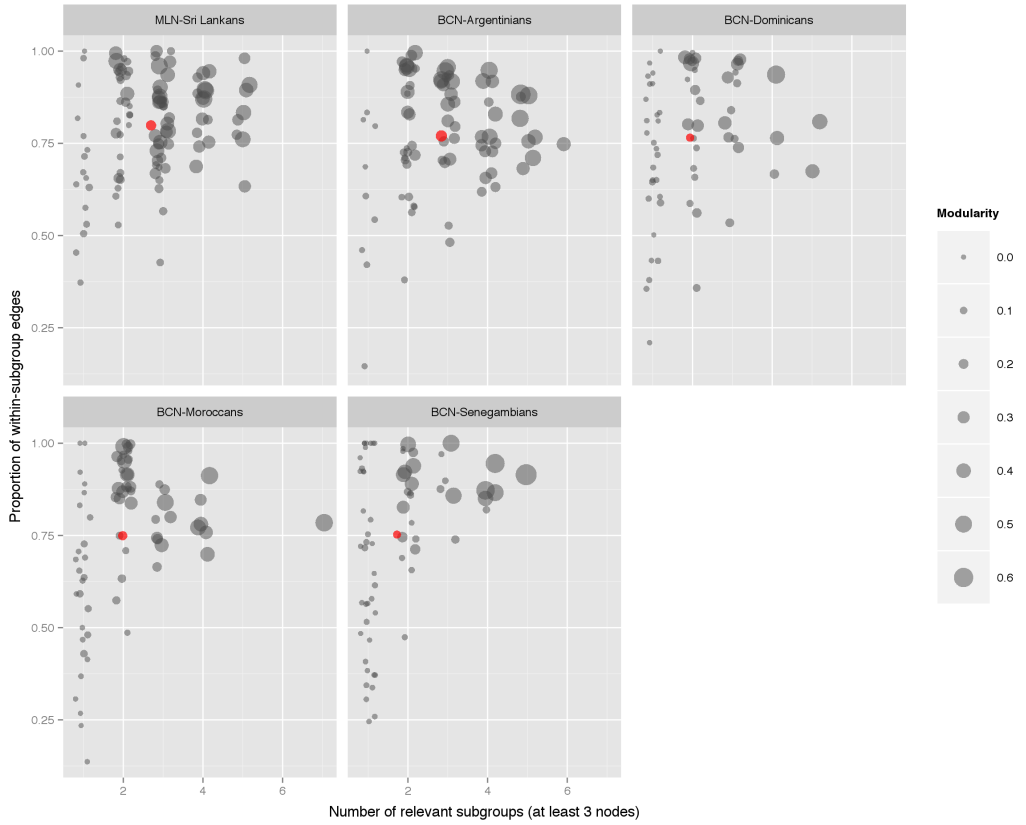

Figure 5.7: Number of Girvan-Newman subgroups of relevant size by number of within-subgroup edges (as a proportion of the total number of edges in network). Point size is modularity. Red points represent population means.
NOTE: The x coordinates of points are slightly jittered to avoid over plotting.

example of this structural form. I will call it the "closed community" structure in the following.

ii) Networks with a classical core-periphery structure (Borgatti and Everett, 2000): a dense central core opposed to a wide periphery of actors. Nodes in the periphery are sparsely connected to the core and have similarly few or no connection with each other. Networks of this kind normally have only one relevant Girvan-Newman subgroup, just like the previous structural type, but many more dyads and isolates, and normally a lower proportion of within-group ties. Fig. 5.8, *B* gives an example.

Modularity is very low (below 0.1) for both these types, yet it is lower for the "closed community" structure: in the extreme case, when all actors fall into one single subgroup

(no dyads and isolates, and 100% relations are necessarily within the single subgroup), modularity is strictly 0. The number of dyads and isolates, and the proportion of within-group ties, also help differentiate between these two kinds of network.

Fig. 5.8, C shows a hybrid structural form between A (closed community) and B (core-periphery). In networks like C, the bigger dense subgroup is not large enough for a closed community structure to emerge. At the same time, the rest of the nodes (dyads and isolates) have too many connections with both one another and the large subgroup to form a standard "periphery" set; however they do not have enough relations to each other, and have too many relations with the large subgroup, to form separate cohesive subgroups. As a consequence, the Girvan-Newman algorithm identifies these nodes as dyads and isolates, while they are clearly not much of a periphery like the B type's isolates and dyads. The result is a halfway network structure, which has something of both the A and the B form, but not enough of either to fall into those categories.

This "hybrid core-periphery" structure cannot be differentiated from A and B on the basis of the number of relevant subgroups, always 1. However, it can be distinguished from the closed community type for the presence of many dyads and isolates (y coordinate in Fig. 5.6), and from the core-periphery type for the higher density of relations between these dyads and isolates. This latter characteristic often (but not always) translates into a lower proportion of within-subgroup ties (y coordinate in Fig. 5.7) and lower modularity than in B.

As networks shift from a core-centered structure like A, B and C (Fig. 5.8), and approach more of a "factional" structure with multiple cohesive and separate subgroups, both modularity and the number of relevant Girvan-Newman subgroups increase in Figures 5.6 and 5.7. In a sort of continuum from core-centered types to clearcut factional structures like E and F (Fig. 5.9), some networks seem again to be located halfway. Network D in Fig. 5.9 is an example: it has a core-periphery structure, with a wide loosely connected periphery around a denser core, but unlike networks A and B, it shows *two* separate cores (although with a certain number of connections to one another), which are identified as two separate subgroups by the Girvan-Newman procedure. Networks of this kind, with a sort of *double*-core structure, can be distinguished from the A and B types because they feature more than one subgroup, and a higher modularity. However, their modularity is still lower than in networks with a real faction structure, like E and F in Fig. 5.9.

In fact, the highest values of modularity are observed on personal networks like E and F, whose structure most closely approaches the factional model – most nodes falling into

at least 2 subgroups, as cohesive and separate as possible. In Figures 5.6 and 5.7, given a certain number of relevant subgroups (normally between 2 and 4), modularity tends to be higher with the proportion of within-group edges, and lower with the number of dyads and isolates. In other words, once a significant number of subgroups can be extracted by the Girvan-Newman algorithm, modularity indexes the extent to which these subgroups adhere to the factional ideal type of high within cohesion and high between separation.

Many personal networks in our sample have this factional structure. Some of these can be split into just 2 factions, like network E in Fig. 5.9. Others reveal several factions, like network F in the same figure. Modularity is high in both cases, although on average higher with more factions. Thus, the E and the F types can be differentiated by modularity, and of course by the number of relevant subgroups traced by the Girvan-Newman algorithm.

Finally, some networks are similar to the F type in the number of relevant subgroups. However, these subgroups cannot truly be categorized as factions, in that they are not very cohesive and not very separate from each other. This "weakly factional" structure is marked by low modularities even in the presence of many relevant subgroups (G in Fig. 5.9).

Two things should be added about the difference between core-like structures (Fig. 5.8) and faction-like structures (Fig. 5.9).

First of all, networks with a good factional structure, but just two factions (E), are intuitively different from what I have labelled double-core networks (D), insofar as most of their nodes fall into subgroups of relevant size. To the contrary, in the double-core structural type there is still a wide periphery of dyads and isolates that signals the existence of a specific core area. This is reflected by a lower modularity in D than in the two-faction model E, due to a higher number of dyads and isolates and a higher proportion of between-group ties.

Secondly, sometimes networks with multiple relevant subgroups (high x values in Figures 5.6 and 5.7) are in reality more of a core-periphery structure. These are networks where a periphery does exist in contrast to a dense central core, but few small relevant subgroups, normally hardly above the threshold of 3 nodes, have emerged within this periphery. These types of core-periphery structures will be close to factional structures as points in Figures 5.6 and 5.7, but their lower modularity and higher number of dyads and isolates will establish their difference. In other words, these networks will tend to be smaller points, more toward the top of Fig. 5.6 and the bottom of Fig. 5.7.

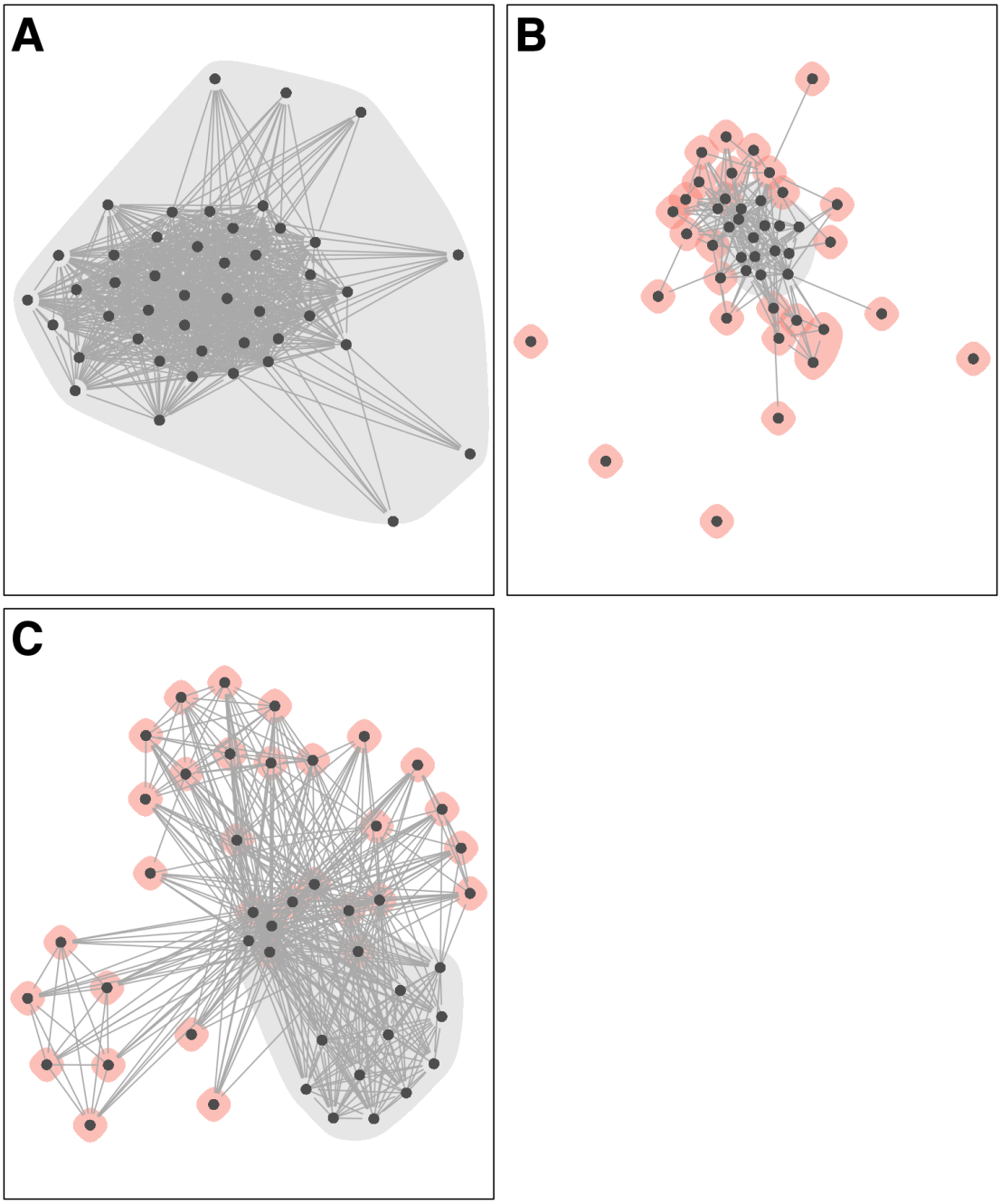

Figure 5.8: A sample of typical ego-network subgroup structures. Grey polygons are Girvan-Newman subgroups of relevant size (at least 3 nodes), light red polygons are Girvan-Newman subgroups of 1 or 2 nodes.
Network A (Sri Lankan) shows the "closed community" type: a single dense subgroup that includes the whole network. Network B (Moroccan) is a typical core-periphery structure, with a wide sparse periphery around a central dense core. Network C (Argentinian) has a hybrid structure between A and B, not enough dense overall to fall in the closed community type, but not enough sparsely connected to be in the core-periphery category. Modularities are 0 for A, 0.02 for B, 0.04 for C.

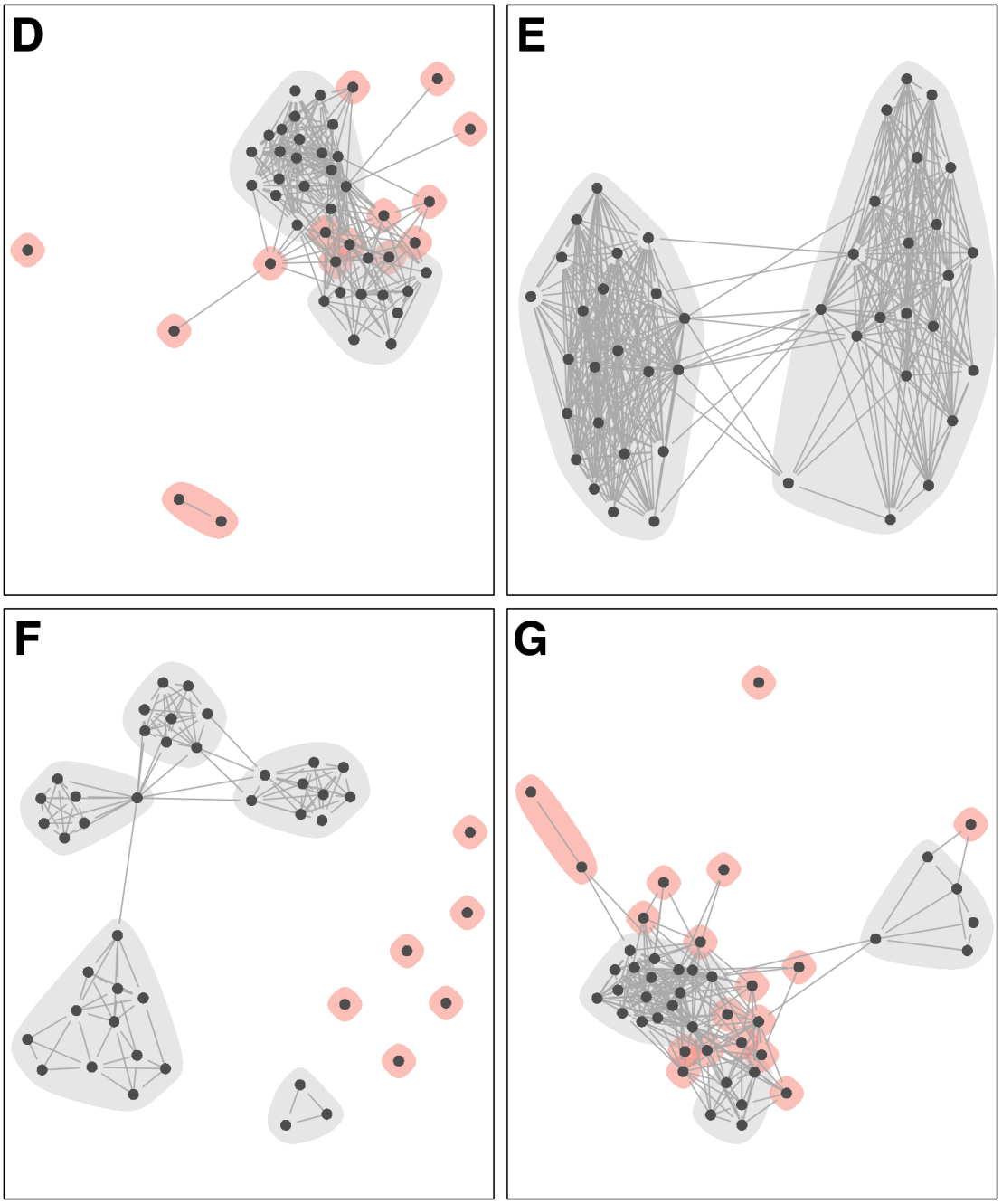

Figure 5.9: A sample of typical ego-network subgroup structures. Grey polygons are Girvan-Newman subgroups of relevant size (at least 3 nodes), light red polygons are Girvan-Newman subgroups of 1 or 2 nodes.
Network D (Sri Lankan) approaches the core-periphery structure, but with a "double" core in which the Girvan-Newman algorithm identifies two subgroups. Network E (Dominican) has a clear-cut factional structure, with just two factions. Network F (Senegambian) has a factional structure too, with several factions. Network G (Dominican) has several subgroups emerging, but a weakly factional structure (low within-group cohesion and between-group separation). Modularities are 0.21 for D, 0.46 for E, 0.67 for F, 0.15 for G.

To sum up, the Girvan-Newman algorithm provides us with many pieces of information, which can be meaningfully combined to discern different structural types, or, in other words, index the position of an ego-network between typical structural forms. Figure 5.10 outlines a map to link Girvan-Newman results to typical subgroup structures.

In this map, a low modularity may point out:

i) A closed community structure with almost the whole network falling into a single large dense subgroup (the A type in Fig. 5.8).

ii) A core-periphery structure with a clear central core and a wide surrounding periphery (B).

iii) A hybrid core-periphery structure like C.

Modularity is slightly higher in B than in A networks. Moreover, the number of dyads and isolates, the density of relations between them, and the proportion of within-group ties help differentiate between these three structural types (Fig. 5.10).

Conversely, a high modularity indexes two things:

i) The existence of multiple subgroups.

ii) The good cohesion within the subgroups and separation between them. This normally also indicates a low number of dyads and isolates.

In other words, the Girvan-Newman modularity tells us the degree to which a network lends itself to a factional structure, as opposed to at least three different situations: (1) The closed community structure, with one big dense subgroup making up the whole network; (2) the core-periphery structure in its different varieties; (3) The absence of a significant subgroup structure, with a few relevant subgroups emerging, but not really cohesive and separate from each other (the "weakly factional" type G in Fig. 5.9).

Using the subgroup structure map just outlined, some general observations may be made for the differences between the surveyed populations in Figures 5.6 and 5.7. The Sri Lankan and especially the Argentinian networks seem to be generally closer to a factional subgroup structure, with multiple relevant subgroups and higher modularities on average. The Argentinian sample, in particular, has many networks with multiple subgroups and high modularities, and also the fewest networks with only one relevant subgroup.

In contrast, Dominicans, Moroccans and Senegambians tend to have more networks with only one large subgroup. These one-subgroup networks also show a wider variance

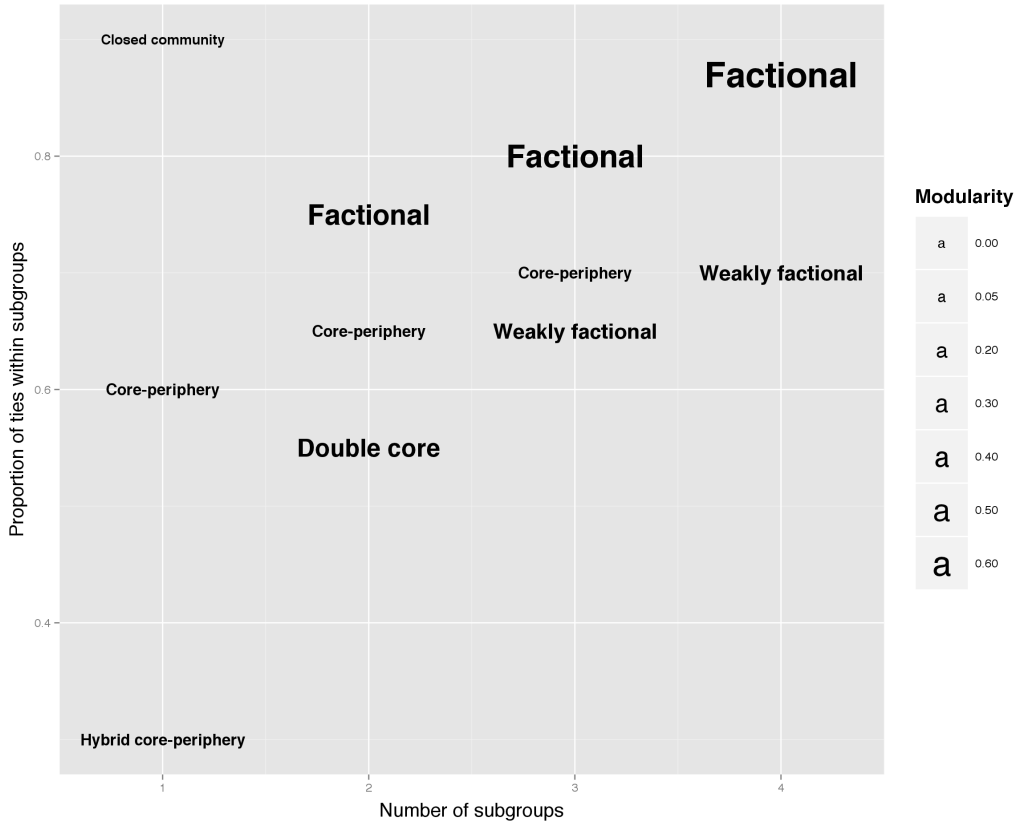

Figure 5.10: A map for tracing typical structural forms based on results from the Girvan-Newman algorithm: number of subgroups, proportion of within-subgroup ties, and modularity. "Subgroups" are Girvan-Newman cohesive subgroups with at least 3 nodes.
The typical subgroup structures are discussed in the text: Closed community (A in Fig. 5.8), Core-periphery (B in Fig. 5.8), Hybrid core-periphery (C in Fig. 5.8), Double core (D in Fig. 5.9), Factional (E and F in Fig. 5.9), Weakly factional (G in Fig. 5.9).

than the corresponding Sri Lankan and Argentinian networks in the proportions of in-group ties and in the number of dyads and isolates, thus covering all the three structural typologies of closed community, core-periphery, and hybrid core-periphery.

Outside of the one-subgroup network category, the Moroccans stand out for their many two-faction personal networks, with just two relevant subgroups and most relations falling inside them (high modularities). Finally, the Senegambians have the fewest networks with multiple subgroups, but these few networks tend to have a good factional structure (high modularities).

What this whole discussion suggests is that the Girvan-Newman algorithm generates variables which can be usefully incorporated into individual-level analyses of ego-

networks. Together with compositional variables, these can help distinguish fundamentally different types of transnational personal networks.

5.2 The index of subgroup segregation

5.2.1 Entropy as a measure of diversity

The main goal of this chapter is to examine the problem of cohesion and segregation between nationalities and countries of residence in the networks of international migrants. As discussed in the introduction to this chapter, this problem can be approached as a matter of national and geographical diversity and segregation in network subgroups. Thus, the identification of cohesive subgroups in the previous section was the starting point to this approach. The following step is defining a measure of diversity. I will use here a common and intuitive measure of population diversity: the entropy index, also called the Shannon index (White, 1986).

For a population divided into K categories, the entropy index is:

$$-\sum_{k=1}^{K} p_k \ln p_k$$

where p_k is the relative frequency or proportion of category k in the population, and ln is the natural logarithm.

In the following, entropy will be calculated on two kinds of populations: whole personal networks, and structural subgroups. Two kinds of alter categories will be considered:

i) The "national" classification, with three categories ($K = 3$): (1) alters born in migrant's home country, (2) alters born in migrant's receiving country, (3) alters born in a third country.

ii) The "geographical" classification, with three categories ($K = 3$): (1) alters who live in migrant's home country, (2) alters who live in migrant's receiving country, (3) alters who live in another country.

Entropy is a measure of diversity in two distinct dimensions:

i) the "abundance" dimension: the sheer number of categories that are present in the population;

ii) the "evenness" dimension: the evenness of the population's distribution in these categories.

These two dimensions are simply illustrated by Figure 5.11: population B is more diverse than A because it includes one category more than A ("abundance"); population C is more diverse than B because, given the same number of categories, it is more evenly distributed between them ("evenness").

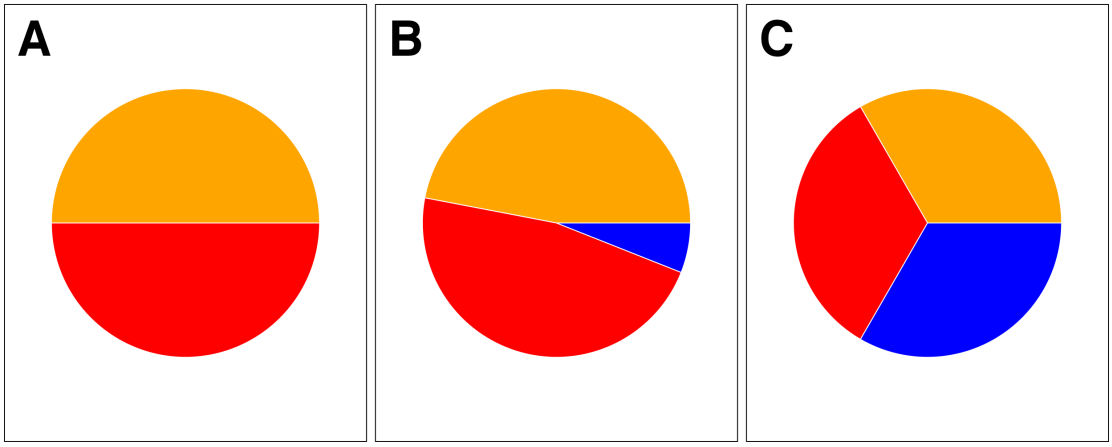

Figure 5.11: Three pie charts representing three populations with different compositions. Population B is more diverse than A on the "abundance" dimension (number of categories in the population). Population C is mode diverse than B on the "evenness" dimension (evenness of population distribution in the categories).

Consistently with the notion of diversity based on both abundance and evenness, two essential properties of the entropy index are worth noting here. First of all, given a constant number of categories in the population, entropy reaches its maximum when the proportions of these categories are perfectly equal ("evenness" is maximum). Secondly, between two populations whose distribution is perfectly even across their categories, the population with one more category will have higher diversity ("abundance" is higher). In particular, this implies that if K categories exist, a population with all K categories equally represented will have the highest possible entropy (the highest diversity): its entropy value will be $\ln(K)$.

As for our two classifications, the entropy index allows first of all for comparisons between two ego-networks, i.e. it can be used to establish which is more geographically or more nationally diverse between two networks. Secondly, since the geographical and the national classification have exactly the same number of categories ($K = 3$), also comparisons between these two dimension of diversity *on the same network* are possible and meaningful: entropy can be used to tell whether a network is more diverse geographically (in the country of residence of contacts) or nationally (in the country of birth of contacts).

5.2.2 An entropy-based index of segregation in network structure

The index of subgroup segregation that I propose here is based on the *reduction in diversity* that is observed when passing from the network level to the subgroup level. If we observe high diversity in the whole network, but all this diversity is lost within the subgroups (that is, network subgroups are very homogeneous); this means that categories are highly segregated in the subgroups: such circumstance would correspond to network B in Fig. 5.2. On the contrary, if we observe the same diversity at the network and the subgroup level, this means that no segregation is taking place within subgroups: this would approach network C in Fig. 5.2.

More precisely, we can measure diversity at the network level as the whole network entropy:

$$H^* = -\sum_{k=1}^{K} P_k \ln P_k$$

where P_k is the proportion of category k in the whole personal network. Subsequently, subgroup diversity can be measured simply as an average of subgroups' entropy, weighted by subgroup sizes:

$$\hat{H} = \sum_{i=1}^{I} \frac{n_i}{N} H_i^* = -\sum_{i=1}^{I} \frac{n_i}{N} \sum_{k=1}^{K} p_{ik} \ln p_{ik}$$

where i indexes the network's structural subgroups (I is the total number of structural subgroups in the network), H_i^* is entropy in subgroup i, n_i is the number of actors in subgroup i, N is the number of actors in the whole network (here 45 for all networks), and p_{ik} is the proportion of category k in subgroup i.

Then, a measure of segregation based on the reduction of entropy from the total network to its subgroups would be:

$$H = \frac{H^* - \hat{H}}{H^*}$$

that is, how much diversity is lost when "zooming in" from the network level (H^*) to the subgroup level ($\hat{H}$), as a fraction of diversity at the network level (H^*).

The operationalization of segregation as a reduction of diversity from the whole to its parts is not a new idea to the social sciences, and has been already employed in urban studies to measure spatial segregation. In studies of residential segregation, the entropy segregation index has been formulated in exactly the same way as above (White, 1986; Reardon and O'Sullivan, 2004): in that case, the whole is the city, whereas here it consists of the whole personal network; the parts are the city neighborhoods, while here they are the network subgroups. In networks like B in Fig. 5.2, a high network entropy (H^*)

and low subgroup entropy ($\hat{H}$) imply the highest values for H. In networks like C, a high network entropy H^* is compared to a similarly high subgroup entropy $\hat{H}$, which translates into values of H close to 0.

Comparing entropy at the network and at the subgroup level accounts for an obvious observation: we are interested in diversity within subgroups, but this diversity is constrained by network diversity. In particular, as already mentioned, there cannot be more diversity in the part than in the whole: network diversity is an upper limit for subgroup diversity. If the whole network is highly homogeneous in the first place, its single subgroups will necessarily be homogeneous as well: this is the situation of "total homogeneity" in Fig. 5.2, A.

Figure 5.2 shows how *both* the segregation index H *and* the whole network diversity H^* are needed to discriminate among the cases of "Total homogeneity", "Maximum segregation" and "Minimum segregation". In general, network diversity and the segregation index combined, or equivalently, network diversity and subgroup diversity combined, can be used to index the position of a personal network among the three limit cases:

i) **Total homogeneity**: low network diversity H^* and low subgroup diversity $\hat{H}$ (highly variable segregation index).

ii) **Maximum segregation**: high network diversity H^* and low subgroup diversity $\hat{H}$ (high segregation index).

iii) **Minimum segregation**: high network diversity H^* and high subgroup diversity $\hat{H}$ (low segregation index).

Fig. 5.12 displays the location of these extremes in a cartesian plane where network diversity H^* is the x and average subgroup diversity $\hat{H}$ is the y coordinate. In this figure, only the lower triangle (below the identity line) should be considered, because in principle no network point can lie above the identity line: subgroup diversity cannot be higher than network diversity (more on this below). Fig. 5.12 also shows how in the area of "Total homogeneity" (very low network diversity) the segregation index is less meaningful than in the presence of relevant network diversity: because network diversity H^* is the denominator in H, when H^* takes very low values, H varies dramatically on small changes of subgroup diversity, but this variation does not map significant changes in subgroup diversity and segregation. On the contrary, the variation of H in the presence of a significant degree of network diversity does measure a real variation in the distribution of alter attributes across subgroups, that is, in the position of a network on the

continuum between "Minimum segregation" and "Maximum segregation".

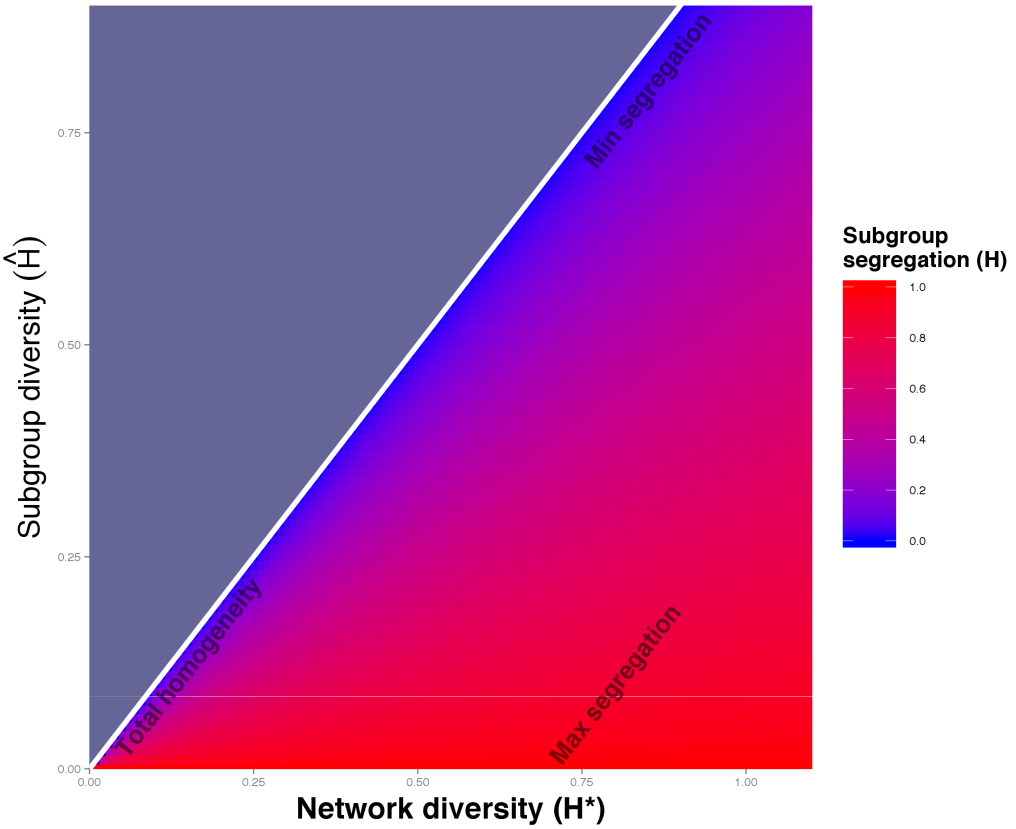

Figure 5.12: The cartesian plane of subgroup segregation. An ego-network can be located on the plane based on his network diversity H^* (x coordinate) and subgroup diversity $\hat{H}$ (y coordinate). These two values imply a certain level of subgroup segregation H. The white line is the identity line, where $x = y$, that is, network diversity equals subgroup diversity. If subgroups are exhaustive of the the whole network, points cannot lie in the area above the identity line (the average diversity of subgroups cannot be higher than the diversity of the whole network). The extreme cases of network "Total homogeneity", "Maximum segregation" and "Minimum segregation" (see Fig. 5.2) correspond to specific areas in the plane.

A final consideration should be made on the comparison between network diversity and subgroup diversity. I noted that only the lower triangle ($x > y$) should be considered in Fig. 5.12, because subgroup diversity cannot be higher than network diversity. Indeed, if diversity in the part can never be higher than diversity in the whole, the *average* diversity of the parts (the average subgroup diversity $\hat{H}$) can never be higher than diversity in the whole (the whole network diversity H^*). This means that in principle segregation H can never be *negative*, as it would be for network points in the upper triangle of Fig. 5.12 ($x < y$). However, this is strictly true only if the parts (subgroups)

are exhaustive of the whole (the network). In the following analyses, this will not necessarily be the case: when taking the average of subgroup diversity ($\hat{H}$), only subgroups *of relevant size* (as usual, at least 3 actors) will be considered. Dyads and isolates will be excluded from average subgroup diversity, because according to the definition of subgroup used here, they do not really form a subgroup. Still, dyads and isolates will always contribute to the diversity of the whole network. As a result, in some cases the average subgroup diversity will be calculated on a subset of the alters that generated network diversity, excluding dyads and isolates. In practice, this means that segregation H will be able to take negative values in the following analysis (more on this in section 5.3.3).

5.3 Diversity and segregation in migrant networks

5.3.1 The meaning of subgroup segregation and the link to bridging social capital

Figures 5.13 and 5.14 show the network points from the Italian and Spanish surveys on the cartesian planes of geographical and national segregation respectively. As in Fig. 5.12, network and subgroup diversities (H^* and $\hat{H}$) are mapped by the x and y coordinates, while the resulting subgroup segregation index H is mapped by point color. The application of these measures to real-world personal networks confirms that the segregation index grasps something that neither compositional nor structural metrics alone can capture, namely the *degree of structural cohesion* among migrant's social contacts who live in *different* countries (geographical dimension), or among migrant's social contacts of *different* nationality (national dimension).

High diversity and segregation in the geographical dimension indicate a situation of *separation* among contacts in different countries: although many different countries of residence are represented among Ego's contacts, only his alters who live within the same national borders know each other and fall in the same cohesive subgroup. Especially when coupled with a high modularity, that is, a faction-like structure of the network, this means that Ego is in a brokerage position among contacts in different countries. In this case, not only is the migrant located in a transnational network, he *is* the transnational connection in the network[8]. Fig. 5.15, A, gives an example of a similar situation in a Senegambian network, with a high geographical segregation index ($H = 0.9$): alters in

[8]To be more precise, Ego is *one* of the possible transnational connections among his contacts. Because only ego-networks and not whole sociocentric networks are mapped here, we do not know whether there are other shared contacts between Ego's alters that Ego does not know. These other shared contacts may represent further cross-border bridges among Ego's alters.

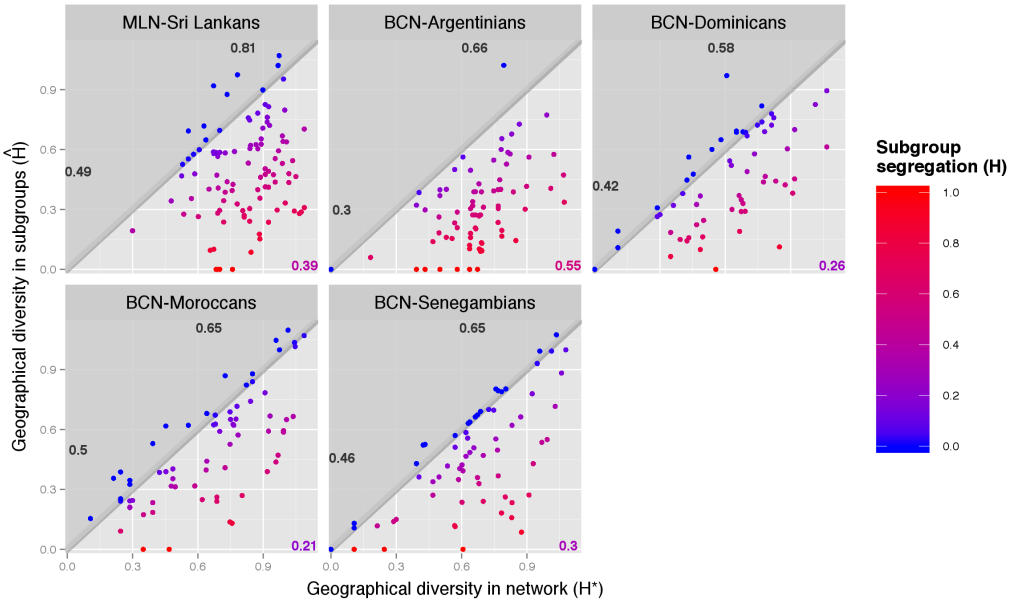

Figure 5.13: Network diversity H^* (x coordinate), subgroup diversity $\hat{H}$ (y coordinate) and the index of subgroup segregation H (point color) in the geographical dimension (countries of residence) for the Italian and Spanish networks. Numbers printed in black on the x axis (top) and on the y axis (left) are point means of x and y respectively. Colored numbers in the bottom-right corner of panels are means of the subgroup segregation index H (point color). *NOTE*: Points can lie above the identity line (subgroup diversity > network diversity) because subgroups are not necessarily exhaustive of the whole network.

different countries fall into separate subgroups of the network (in this case, even separate components), so that Ego is the only link in his network (or one of the very few) among people located in different residence countries.

On the other hand, a low geographical segregation index H describes a good degree of cohesion between contacts in different countries, particularly migrant's home and host countries. In some cases, such cohesion is observed in a network where a big dense subgroup of contacts exists in the origin country, which is typical of many migrants' personal communities in the Italian and Spanish sample. The large *Origin* subgroup may then also include people who live in the same country as the migrant, normally *Fellow* immigrants, who thus create a connection between Ego's social circles at home and in the destination of migration. The Sri Lankan network in Fig. 5.15, B, displays this pattern, with a very dense core of contacts in Sri Lanka, and few *Fellow* migrants connecting the core to a wide periphery of contacts in the respondent's current country of residence. In this case, the structural cohesion between alters in Sri Lanka and in Italy determines a geographical diversity of the larger subgroup, therefore a low segregation

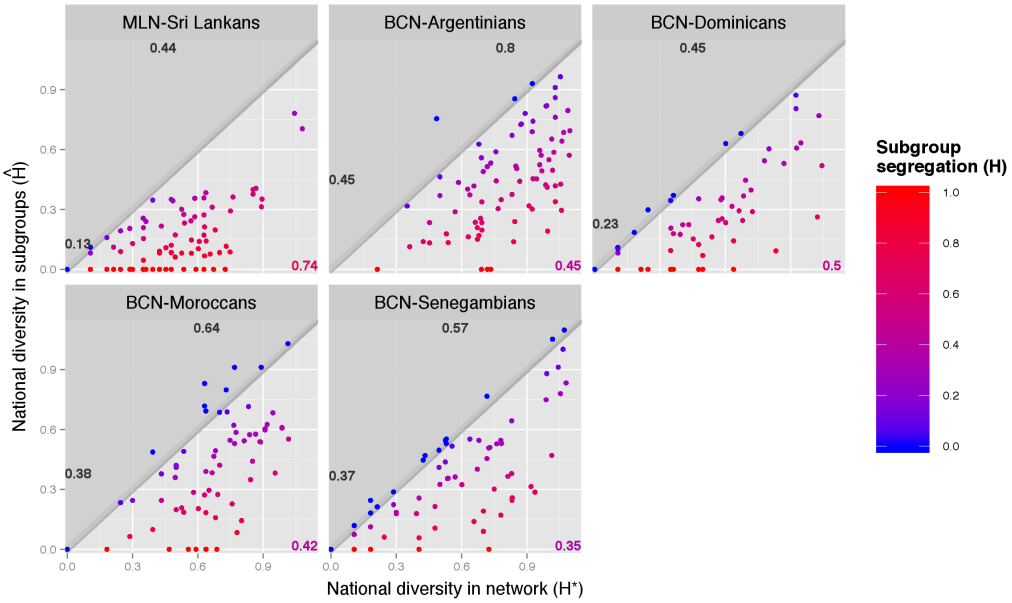

Figure 5.14: Network diversity H^* (x coordinate), subgroup diversity $\hat{H}$ (y coordinate) and the index of subgroup segregation H (point color) in the national dimension (countries of birth) for the Italian and Spanish networks. Numbers printed in black on the x axis (top) and on the y axis (left) are point means of x and y respectively. Colored numbers in the bottom-right corner of panels are means of the subgroup segregation index H (point color). *NOTE*: Points can lie above the identity line (subgroup diversity > network diversity) because subgroups are not necessarily exhaustive of the whole network.

index ($H = 0.26$).

In a network like B, transnational cohesion takes place in a context where the country of residence is still a powerful source of homophily and continue to guide subgroup formation. We can still recognize a large *Origin* core, although it also stretches to alters in the host country. In other cases the transnational cohesion is even higher, in that the country of residence cannot in any way be considered a structuring mechanism in the network. There is neither an *Origin* subgroup with bridges to the migrant's receiving country, or a *Fellow* subgroup with bridges to the migrant's sending country, but rather a generalized integration among alters in the two countries throughout the network. This yields an even lower H index, as in the Dominican network in Fig. 5.15, C ($H = 0.12$).

As is already visible in Figures 5.15, B and C, frequently a low geographical segregation also points out structural cohesion between *Origin* and *Diaspora* social contacts. It is not uncommon for networks in our sample to feature a large dense subgroup of *Origin* family and friends, which also includes co-nationals who emigrated to a third country other than respondent's. The Sri Lankan network in Fig. 5.15, D, is an example, reveal-

ing how the *Diaspora* can even be in some of the most central positions among migrant's contacts (consistently with findings in Ch. 4, section 4.2).

These figures make clear that different values of geographical segregation, given the same geographical diversity of the network, correspond not to different *degrees*, but to different *types* of transnationalism. A network like A in Fig. 5.15 is not more or less transnational than one like C. However, while in A the migrant is a *transnational broker* between people in separate countries who do not know each other, in C he is embedded in a flow of many transnational relations within his personal network. In A only Ego's relations are transnational, in C alters' relations are as well. Network A might be considered as more of a transnational migrant's network because it is the migrant (Ego) who *creates* the transnational link in the network; on the other hand, network C might be considered as more transnational because it features a higher number of transnational relations overall. Geographical segregation is simply measuring a dimension of transnationalism – that may be called *transnational cohesion* –, which escapes more straightforward compositional measures, like the frequency of alters in the home country or the geographical diversity of the network.

In analyses of transnational cohesion, the segregation index and the diversity measures should always be coupled with metrics on subgroup structure. In fact, the same level of segregation can reflect quite different situations, depending on whether the personal network is more core-centered or is more of a factional form (cf. Fig. 5.8 and 5.9 in Ch. 4). A high segregation in a core-centered network reveals a community where Ego is embedded in a very homogenous core, which is opposed to a more diverse periphery. On the other hand, in factions structures, high segregation describes a situation where Ego is not part of a central homogeneous core, but rather mediates among equally important, smaller and homogenous cliques like in Fig. 5.15, A.

Segregation may display very different patterns at the geographical and at the national level. In particular, for networks with low geographical segregation, cohesion among contacts in different countries is often also cohesion among contacts of the *same* nationality, that is, *Origin*, *Fellow* and *Diaspora* alters. Cohesive subgroups that are diverse in actors' countries of residence, turn out to be homogenous in actors' nationality. In this cases geographical cohesion is paralleled by national segregation, or perhaps by national homogeneity of the whole network: while actors in different countries are connected, actors of different nationalities are separate in network structure, or the whole network actually consists of the same nationality (Ego's nationality) in the first place. The Sri Lankan network in Fig. 5.16 shows this kind of pattern: its central subgroup is very

diverse in alter's country of residence, with a negative geographical segregation index of -0.05; however, the same subgroup is completely homogeneous in nationality, resulting in a high national segregation index of 1.

Just like the geographical segregation index with transnationalism, the national segregation index captures a different dimension of social integration from compositional measures such as the frequency of co-nationals and natives of the host society in the network.

Given the same proportions of *Fellow* and *Host* alters, a high national segregation reveals that Ego is in a brokerage position between co-nationals and natives, like in the Senegambian network in Fig. 5.17, A. On the contrary, a low segregation index describes a network in which the migrant is embedded in a flow of multiple relations between co-nationals and natives, similarly to what occurs with the Moroccan network in Fig. 5.17, B. It may be argued that a network like B is a more socially integrated one, by virtue of a greater cohesion among people from different national groups. On the other hand, a personal network like A, while more segregated along nationalities, for this very reason provides Ego with brokerage advantages that may prove useful to his own social and economic incorporation into the host society.

The notion of brokerage in personal networks links the segregation measure introduced here to consolidated results on "bridging" social capital, that is, on the benefits that accrue to Ego from spanning the *structural holes* between otherwise unconnected areas of his network. Ronald Burt (1992), who put forward the idea of structural separation between cohesive subgroups ("structural holes") as a source of social capital, argued that the transmission of information is one of the main mechanisms behind the advantages of a brokerage position (see Ch. 2). While redundant and old information circulates within the boundaries of cohesive subgroups, new and diverse information flows *among* separate subgroups along the bridges that connect them.

In the framework used here, the more Ego has a geographically or nationally segregated network, the more he is a bridge among non-redundant sources of information, namely cohesive subgroups located in different countries, or belonging to different national groups. This effect is higher, the more Ego's network lends itself to a subgroup partition (multiple subgroups and high modularity), as opposed to what I have called a "closed community" structure (see Fig. 5.8, A, in Ch. 4). In other words, whenever Ego is the only link (or one of few links) between separate subgroups in the network, and whenever these subgroups coincide with different nationalities or different countries of residence, there is potential for Ego to broker information and other resources

between social circuits that are separate from each other, but have much to benefit from connecting to each other.

In a Sri Lankan network, Sri Lankans in Italy (*Fellow* alters) represent a unique source of information and resources for their countrymen back in the island (*Origin* alters) who want to emigrate. Whenever a new law opens the Italian borders to more migration influxes, only Sri Lankans in Italy can inform, guide and sponsor co-nationals in their home country who want to apply for a visa to Italy. Migration from Sri Lanka to Italy is virtually impossible without a (normally co-national) connection in Italy: a characteristic typical of international migrations and their "chain" development, as discussed in Ch. 2. On the other hand, *Fellows* can also benefit considerably from connections to *Origin* contacts: Sri Lankans in the island are the only source of information and opportunities for buying a house, making an investment or launching a business in Sri Lanka, something that many Sri Lankans in Italy are eager to do as they plan to ultimately return to Sri Lanka. Likewise, Italians (*Host* contacts) are an essential source of information for Sri Lankans in Italy (*Fellow* alters) on a wide array of matters and circumstances. A Sri Lankan in Italy may need information or help from an Italian when looking for a job, dealing with bureaucracies and legal issues, reading a contract, enrolling his children into school, etc. At the same time, Italians can gain from connections to Sri Lankan immigrants, who have access to information on job vacancies, people looking for jobs, and business deals within social circles normally foreign to Italian natives.

These examples suggest how migrants' networks have a high potential for brokering and bridging between non-redundant resources and mutually useful social circuits. Such potential depends on both (1) the structure of the network, and (2) how resources (alter attributes) are distributed over this structure, that is, diversity and segregation in the network. In this light, the metrics proposed here can be used as measures of bridging social capital, as they capture:

i) network structure: number of relevant Girvan-Newman subgroups and modularity;

ii) network diversity and segregation: network diversity H^*, subgroup diversity $\hat{H}$, subgroup segregation H^9.

On the other hand, a *high* segregation of attributes in network structure is not the same as purely *structural* brokerage of Ego in the network. Likewise, a *low* segregation in network structure is not the same as *structural* closure in the traditional sense. Rather,

[9]Of course, only two of these three measures may be used together, because two of them completely predict the third, as shown in section 5.2.2.

the index of subgroup segregation combines structure and composition to measure brokerage and closure *between different attributes* in the personal network. In other words, a high index of subgroup segregation indicates that Ego is not only a broker, but a broker between actors *from different nationalities* or *in different countries*. This condition is what I call "brokerage between differences". Similarly, a low index of subgroup segregation describes not simply structural closure, but closure or high connectedness among social contacts *from different nationalities* or *in different countries*. I label this situation as "diversity within closure".

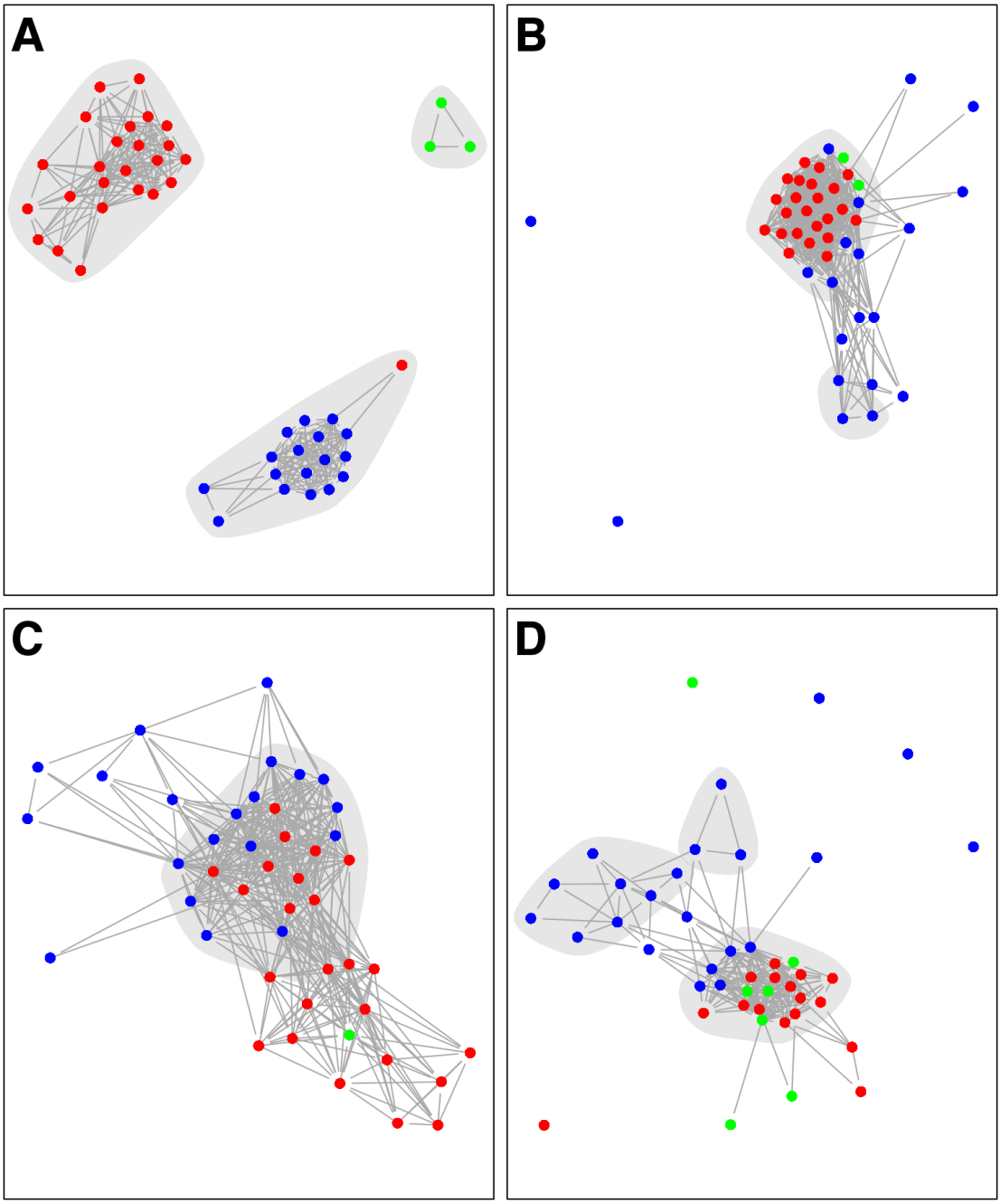

Figure 5.15: Four real-world personal networks showing different patterns of cohesion and segregation between alters who live in different countries. Red nodes live in migrant's home country (normally *Origin* alters), blue nodes live in migrant's host country (*Fellow*, *Host* or *Transnational* alters), green nodes live in a third country (normally the *Diaspora*). *A* (Senegambian) is an example of segregation in network structure between alters who live in different countries (H =0.9). *B* (Sri Lankan) is an example of cohesion between *Origin* and *Fellow* alters, with few *Fellows* linking the core of *Origin* contacts to alters in migrant's host country (H =0.26). *C* (Dominican) is an example of generalized cohesion between *Origin* and *Fellow* alters (H =0.12). *D* (Sri Lankan) is similar to *B*, but shows how the *Diaspora* may fall into the *Origin* dense core with the most central positions (H =0.37).

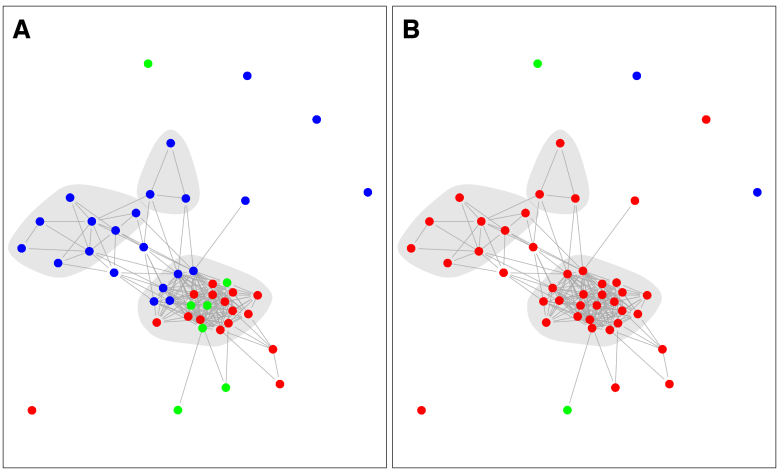

Figure 5.16: A Sri Lankan network showing how diversity and segregation may have very different patterns in the geographical and national dimension, within the same network. *A* shows diversity and segregation in the geographical dimension: red nodes are alters who live in migrant's home country (normally *Origin*), blue nodes live in migrant's host country (*Host*, *Fellow* and *Transnational* alters), green nodes live in a third country (normally *Diaspora*). In *A* geographical diversity is 1.01, geographical segregation is 0.37. *B* shows diversity and segregation in the national dimension: red nodes are migrant's co-nationals (*Origin*, *Fellow* and *Diaspora*), blue nodes are natives of migrant's host country (*Host*), green nodes are from a third nationality (*Transnationals*). In *B* national diversity is 0.36, national segregation is1.

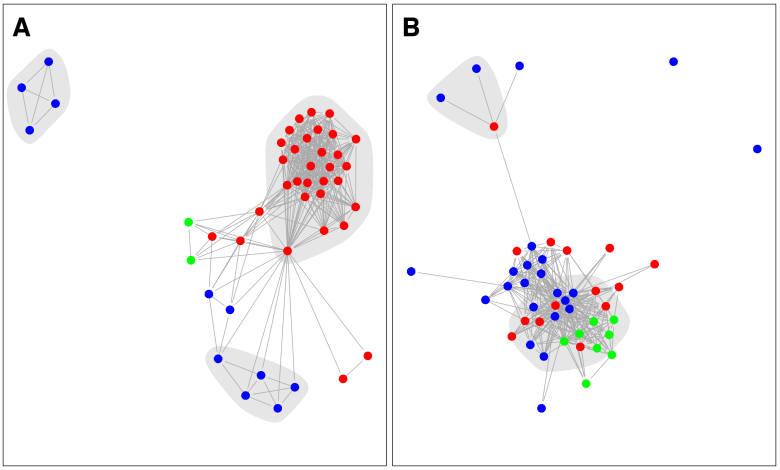

Figure 5.17: Two real-world personal networks showing different patterns of cohesion and segregation between alters from different nationalities. Red nodes are migrant's co-nationals (*Origin*, *Fellow* and *Diaspora*), blue nodes are natives of migrant's host country (*Host*), green nodes are from a third nationality (*Transnationals*).
A (Senegambian) is an example of segregation in network structure between alters from different nationalities (H =1).
B (Moroccan) is an example of cohesion between alters from different nationalities (H =-0.02).

5.3.2 Is segregation predicted by network composition?

This section will examine how network diversity and subgroup diversity translate into the segregation index in real-world personal networks. Using the Italian and Spanish networks, I will argue that given network composition (as measured by entropy), the segregation index maps a variability that does exist in real-world networks, yet is not captured by purely compositional metrics.

When network points are mapped in the plane of geographical or national segregation (Fig. 5.13 and 5.14), a certain degree of positive association emerges between network and subgroup diversity, both geographically and nationally: as may be easily predicted, networks that are more diverse overall, also tend to be more diverse within their single subgroups. In fact, network diversity sets the range for subgroup diversity. On the one hand, network entropy determines an upper limit for subgroup entropy, in that subgroup diversity cannot be much higher than network diversity itself (points cannot be much above the identity line in the figures)[10]. On the other hand, past a certain degree network diversity also establishes a lower limit for subgroup diversity: if a high degree of entropy exists in the network, it has to appear within network subgroups too, thus average subgroup entropy will necessarily by above a certain level.

The general positive relationship between network and subgroup entropies H^* and $\hat{H}$ is the logical consequence of their being essentially the same diversity index observed first on the whole, then on its subparts. The interesting point revealed by figures 5.13 and 5.14, however, is that in spite of such positive relationship a great variability exists in subgroup diversity, given the *same* level of network diversity as a starting point. This means that in real networks alter attributes can be distributed very differently across subgroups, the composition of the network being equal: given the same diversity in the whole, some networks also show diversity within subgroups, other have more homogeneous subgroups. This variation in how network diversity flows into subgroups or rather is segregated within them, is exactly what the segregation index captures, as is reflected in color variation of network points in the figures. Thus, Figures 5.13 and 5.14 show that a variation in segregation of alter categories actually exists within personal networks,

[10] As explained in section 5.2.2, in principle there cannot be more diversity in the average subgroup than in the whole network. However, this is strictly true only if subgroups are exhaustive of the whole network: in this case average subgroup diversity $\hat{H}$ cannot be higher than network diversity H^*, and network points cannot be located above the identity line in Fig. 5.13 and 5.14. Here this is not always the case: subgroups are not necessarily exhaustive of the network, because dyads and isolates are not considered as relevant subgroups. As a result, whenever there are dyads and isolates in the network, the average diversity in subgroups $\hat{H}$ can technically be greater than diversity in the whole network H^*, with network points located above the identity line in the figures.

and that this variation is measured by the entropy-based segregation index.

Figure 5.18 makes this last point clearer. In both the geographical and the national dimension, the same level of network diversity (x coordinate) may correspond to different levels of network segregation (y coordinate). Furthermore, no clear pattern exists between these two variables: more diverse networks are not more segregated, or less segregated than others. In other terms, the positive association between network diversity and subgroup diversity that is suggested by Fig. 5.13 and 5.14 is not strong enough that more diverse networks are also regularly less segregated (as a consequence of their subgroups being more diverse too).

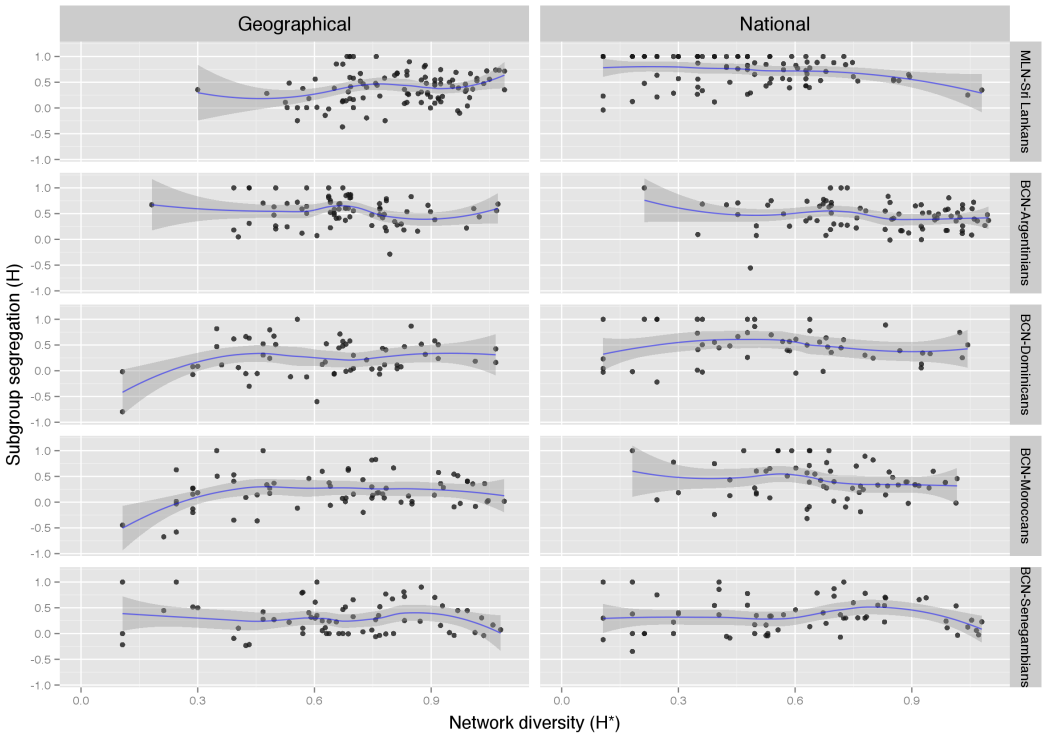

Figure 5.18: Network diversity (H^*) and the segregation index (H) as x and y coordinates in the geographical and national dimension. The blue lines are fitted values of a polynomial local regression (the shaded area is the corresponding .95 confidence interval).

To sum up, these graphs show that given the same composition of a network (network diversity), there is a significant variation in structural cohesion between alters in different countries of residence, or from different nationalities: there are networks where alters in different countries are connected to each other and networks where they do not know each other. This variation cannot be grasped by compositional measures alone,

but emerges from an index that combines network composition and network subgroup structure. The variation in the y coordinates of Fig. 5.18, or the variation in point colors of Fig. 5.13 and 5.14, given the same x coordinate, is what indexes the position of a network between the "Minimum segregation" and the "Maximum segregation" cases in Fig. 5.2.

5.3.3 Is segregation predicted by network structure?

The main argument in the previous section was that network composition alone cannot predict network segregation: the same composition (diversity) can give place to very different levels of segregation. One may ask at this point the complementary question, whether *network structure alone* can predict network segregation. Figures 5.19 and 5.20 provide some insights on this matter. These figures are the same scatter plots as in Fig. 5.13 and 5.14, and show network diversity versus subgroup diversity. However, in this case, point color displays the number of subgroups (of relevant size) in the network, for a given network and subgroup diversity (x and y coordinates). The lighter a point, the less subgroups in the network, with white points representing one-subgroup networks, that is, the core-centered structures in section 5.1.

These plots show one clear pattern as far as the relationship between subgroup structure and segregation is concerned: networks with zero segregation (points on the identity line) are in most cases networks with one single subgroup, that is, more core-centered structures. This is easily understood if we recall the definition of the segregation index as the difference between entropy in the whole network H^* and entropy in the subgroups $\hat{H}$. In core-centered structures, there is in fact one single subgroup: if this subgroup is large enough, it covers the whole network, which means that the network and the subgroup are in fact *the same set* of nodes. Of course, this implies that their diversity is the same ($H^* = \hat{H}$), and segregation is null.

At the same time, all networks with *negative* segregation only have one subgroup as well. These are core-centered structures where the single core subgroup *does not* include the whole network, but leaves out a good number of dyads and isolates. Whenever these dyads and isolates are homogeneous (non-diverse) in their nationality or country of residence, while actors in the core group are more diverse, the part of the network outside the single subgroup actually diminishes, rather than increases, diversity. In all these cases, subgroup diversity, that is, the diversity of the core, will be higher than network diversity, which also takes into account dyads and isolates: the result is a negative segregation index.

Thus, a negative index of segregation is recording something substantial on the mi-

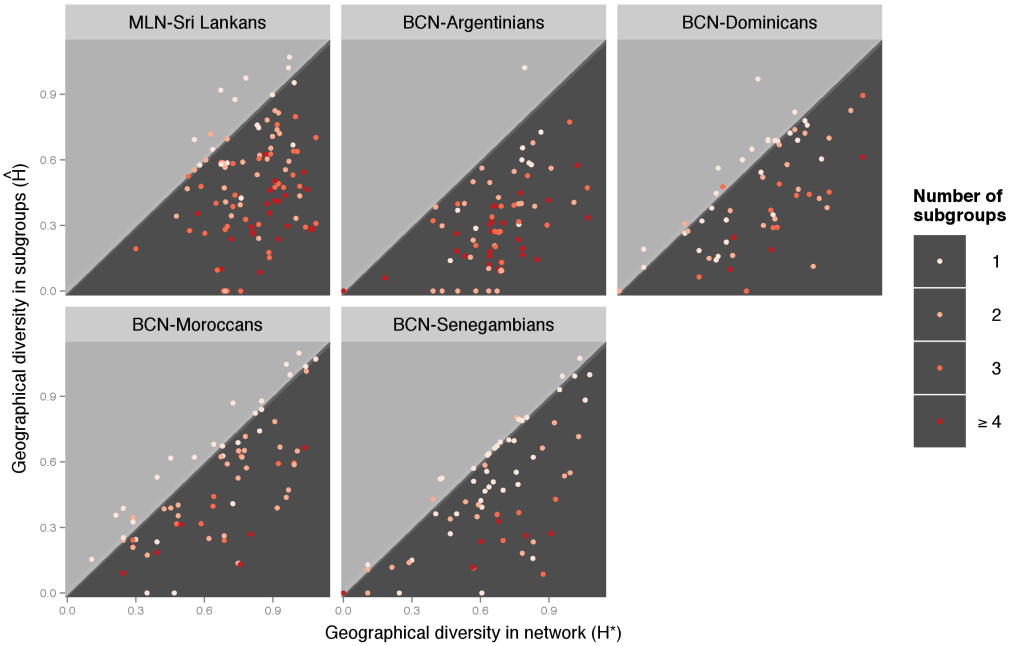

Figure 5.19: Network diversity H^* (x coordinate) and subgroup diversity $\hat{H}$ (y coordinate) in the geographical dimension (alters' countries of residence) for the Italian and Spanish networks. Point color represents the number of cohesive subgroups of at least 3 nodes in the network.

grant's personal network: the network is a core-centered structure, and its core is *more diverse* than the whole. This is a somewhat unexpected situation, which counters the common way of imagining the core of a personal network as a dense homogeneous group of family and friends; therefore, it is worth being captured by the segregation index.

Summing up, networks with zero or negative segregation are in general core-centered structures. From this standpoint, the fact that less network points are on or above the identity line in the Sri Lankan and Argentinian panels is consistent with these populations having less core-centered and more faction-like personal networks than the other three (see Fig. 5.6 and 5.7).

On the other hand, there seem to be many exceptions to this relationship between single-subgroup networks and zero or negative segregation. Figures 5.19 and 5.20 make clear that core-centered networks, with one single structural subgroup, may also have a higher diversity in the whole network than in the subgroup, thus a *positive* segregation index. These cases are those in which dyads and isolates contribute to network diversity: here, more in line with common expectations on the nature of the dense core in a personal network, the single dense subgroup is a homogeneous set of actors who all live in

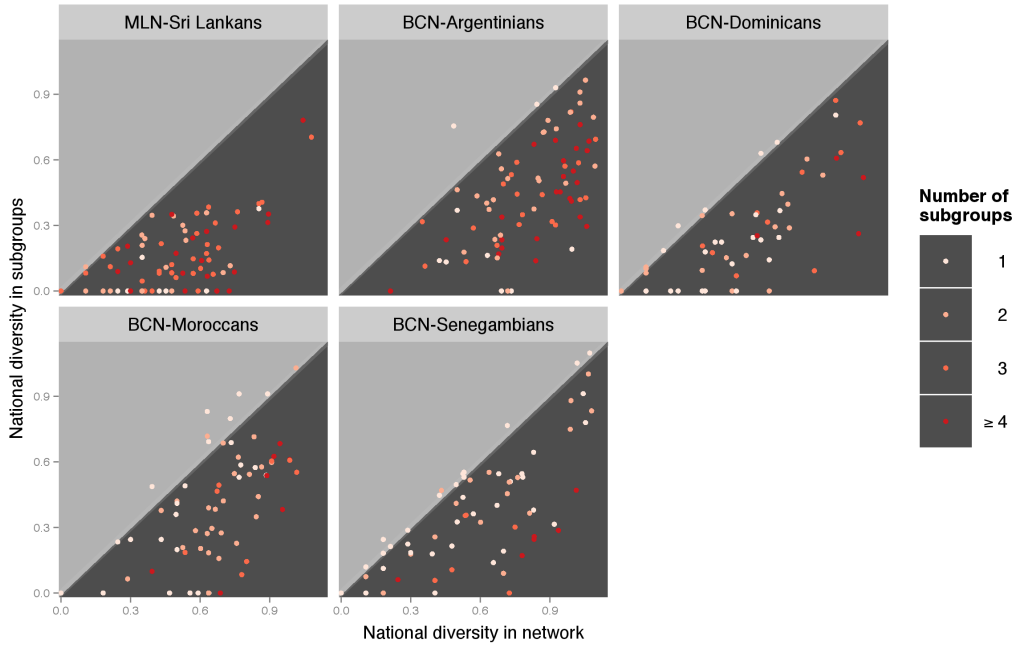

Figure 5.20: Network diversity H^* (x coordinate) and subgroup diversity $\hat{H}$ (y coordinate) in the national dimension (alters' nationalities) for the Italian and Spanish networks. Point color represents the number of cohesive subgroups of at least 3 nodes in the network.

the same country, or are from the same nationality; the network includes also alters in a different country (or a different nationality), but they are dyads and isolates out of the core.

Figures 5.19 and 5.20 also suggest that points with more subgroups are further from the identity line and more to the bottom-right, with higher subgroup segregation. When there are many subgroups in the network, these also tend to be more homogeneous in alter attributes, which results in more segregated networks.

Still, there is a relevant variation in both network diversity and segregation that is *not* predicted by the number of structural subgroups. Similar subgroup structures (similar colors in the figures) show different levels of network diversity and segregation. This is true within a single dimension, geographical or national, but also becomes apparent when comparing the two dimensions. The same subgroup structure may correspond to very different patterns of segregation when comparing countries of residence versus countries of birth. The Sri Lankan panel in Fig. 5.19 and 5.20 makes this very clear: in the same set of Sri Lankan networks (thus, in the same set of network structures) the levels of national segregation are markedly higher than the levels of geographical segregation.

In particular, there are no networks with zero or negative segregation at the national level, while there are at the geographical one. The comparison between geographical and national segregation will be the subject of the next section.

In conclusion, negative and null values of the segregation index are normally associated with core-centered structures, but core-centered structures do not necessarily have negative or null segregation. High segregation values are frequently linked to multiple-subgroup "factional" structures, yet among these structures a relevant variation of the segregation indexes is observed. The basic point emerging from this discussion is that structure alone does not predict segregation levels in real-world networks; network composition alone fails to do so as well. Again, compositional and structural metrics have to be combined to capture the pattern of cohesion and separation between contacts with different attributes in the network.

5.3.4 Geographical diversity versus national diversity in transnational networks

The histograms in Figure 5.21 represent the distribution of geographical and national diversity in the whole pooled sample of migrants' networks in Italy and Spain. As network diversity H^* and subgroup diversity $\hat{H}$ are mapped separately, the figure shows a typical finding in all segregation analyses: there tends to be clearly more diversity in the whole than in its subparts. Entropy measured on whole networks (H^*) is overall higher than entropy measured in networks' structural subgroups ($\hat{H}$), both geographically and nationally.

A second finding from the histograms is less obvious: migrants' networks are markedly more diverse in countries of residence than in nationalities. Although both the geographical and the national classifications have 3 categories, which makes them comparable in terms of diversity, entropies in the geographical dimension tend to be both higher on average and more homogeneous around the mean. *Origin* and *Diaspora* contacts are arguably the main source of this difference between geographical and national diversity: they contribute to geographical diversity by living in the home country and in third countries other than home and host; however, they do not contribute to national diversity, because they are from the same nationality, which is also *Fellows*' nationality.

On the other hand, the *Transnational* class contributes to national diversity without increasing geographical diversity: *Transnationals* are from a third nationality different from all the other classes', but they live in the same country as *Fellow* and *Host* alters. Yet, as can be anticipated from the relative frequencies of alter classes in the networks (cf. Table 4.3 in Chapter 4), the proportions of *Transnationals* are not high enough to

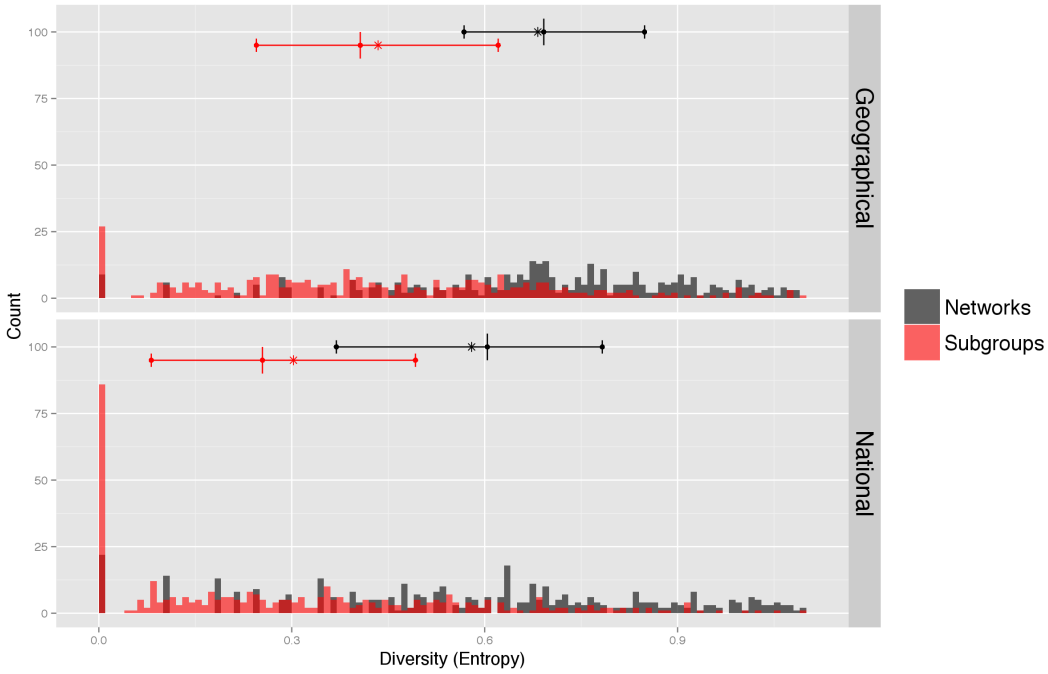

Figure 5.21: Geographical and national entropy, all populations pooled. The black histogram represents entropy in whole whole ego-networks (H^*). The red histogram represents average entropy of subgroups in the ego-networks ($\hat{H}$, only subgroups of at least 3 nodes, average weighted by size).
The points above the histograms are the .25, .50 and .75 percentiles (vertical segments), and the mean (star point) of the distributions.

balance the effect of *Origin* and *Diaspora* alters, and make national diversity comparable to geographical diversity. Higher diversity in residence countries than in origin countries of contacts seems to be a defining feature of transnational migrants' personal networks.

Diversity and segregation patterns can be compared between populations and between the national and geographical dimension going back to the scatter plots in Fig. 5.13 and 5.14. These figures confirm that diversity in countries of residence is generally higher than diversity in nationalities, in both whole networks and network subgroups, even when the five populations are considered separately. In particular, the "Total homogeneity" area of the plots (bottom-left corner), that is, the region of very low diversity in both networks and subgroups, has densely clustered points in the national dimension, whereas it is much more empty in the geographical one. In other words, while it is easy to find migrant networks that are very homogeneous in the nationality of actors, it is much harder to find networks that are very homogeneous in actors' countries of residence.

Zooming in on the subgroup level, the much higher national than geographical homogeneity means that cohesive subgroups which are homogeneous in the nationality of actors, turn out to be diverse in their country of residence. These are typically subgroups that bring together *Origin* and *Fellow* alters, or *Origin* and *Diaspora*: people of the same nationality who live in different countries. It is much harder to find cohesive subgroups that bring together contacts of different nationality, which translates into lower subgroup diversity (lower y position) and higher segregation (more red colors) in the national than in the geographical plots (Fig. 5.14 versus Fig. 5.13). Conversely, there are many more networks with zero or negative segregation (blue points on or above the identity line) in the geographical than in the national graphs: core-centered networks may have a geographically diverse core, but very rarely do they have a nationally diverse core.

The different patterns of diversity at the geographical and national level are most apparent for Sri Lankans. Sri Lankan networks are remarkably diverse in alters' countries of residence, for both the network and the subgroup level. In the plane of geographical segregation, Sri Lankans display many networks in the "Minimum segregation" area, with high values of both network and subgroup diversity, but virtually no network in the region of "Total homogeneity", with low values of both. As a matter of fact, in the geographical dimension, Sri Lankans have the highest average diversity in whole networks and the second highest average diversity in subgroups among the five populations. Not only are Sri Lankan networks very diverse geographically, they have a variety of segregation levels in alters' countries of residence, covering the whole continuum from "Minimum segregation" to "Maximum segregation" in Fig. 5.13.

Thus, if Sri Lankans are not the most transnational population in regards to the proportion of *Origin* contacts in the network (see Chapter 4, section 4.1); however, they are definitely the most transnational when it comes to the spread of social contacts in many different countries. This was anticipated by the spatial reach of Sri Lankan networks being one of the highest on average (cf. Fig. 4.6 in Chapter 4), and by the significant weight of the *Diaspora* in Sri Lankan networks.

Nevertheless, the diversity of Sri Lankan networks drops dramatically from the geographical to the national level. In the plane of national segregation, the greater part of Sri Lankan networks is in the "Total homogeneity" area. Sri Lankans now show the lowest average diversity among the five populations, in both subgroups and whole networks. This is consistent with findings on the frequencies of alter nationalities, with Sri Lankan networks having the highest co-national composition (see Chapter 4, section 4.1).

At the national level, Sri Lankan networks are not only the least diverse, but also the most segregated in subgroup structure (more red points). By and large, segregation is much higher nationally than geographically for Sri Lankans. There is virtually no Sri Lankan network in the "Minimum segregation" region of the national segregation plot, which becomes most evident when comparing the Sri Lankan panel to the other populations (in particular the Argentinian distribution). Furthermore, several Sri Lankan networks have zero or negative segregation at the geographical level (blue points on or above the identity line), while no such case exists in the national dimension. Recalling how zero and especially negative segregation cases derive from core-centered structures, this means that in core-centered Sri Lankan networks the core is always made up of co-national Sri Lankans, but in some cases these co-nationals live in different countries. Thus, in Sri Lankan "closed community" or core-periphery networks, cores are never more diverse than the rest of the network (negative segregation) in nationality, whereas sometimes they are in countries of residence: presumably *Origin*, *Fellow* and *Diaspora* contacts fall in these cores, determining national homogeneity, but geographical diversity of the network central subgroup.

Moroccans and Senegambians seem to cover wider ranges of both network and subgroup diversity than other populations, in both nationalities and countries of residence. However, they also adhere to the general pattern of less diversity and more segregation in the national dimension, with more points to the bottom-left, and more red colors in the national segregation plots (Fig. 5.14). The same holds true for Dominicans, who have clearly more cases of zero and negative segregation at the geographical than at the national level. This means that among Dominicans, like in the Sri Lankan sample, there are networks with core structures, whose dense central subgroup is homogeneous in the nationality of alters, but diverse in their country of residence.

Compared to Argentinians and especially Sri Lankans, Dominicans, Moroccans and Senegambians show more networks closer to the "Total homogeneity" area in the geographical plots. On the other hand, these populations also tend to have more core-centered networks than Sri Lankans and Argentinians (cf. Fig. 5.6 and 5.7 in Ch. 4). This may contribute to the higher geographical homogeneity, given that core-centered networks appear to be on average less diverse than faction structures (cf. Fig. 5.19 and 5.20).

In the pattern of more geographical and less national diversity, Argentinians are an

exception, with higher network and subgroup diversity in nationality than in the country of residence. This reflects the higher proportions of *Host* and *Transnational* contacts in Argentinian networks, and the lower proportion of *Fellow* and *Diaspora* alters (cf. Table 4.3 in Ch. 4). Such composition explains the greater national diversity: *Host* and *Transnational* contacts bring two different nationality categories into the network, while *Fellow* and *Diaspora* alters have one single nationality (the same as *Origins*'). It also explains the lower geographical diversity, since *Host* and *Transnational* contacts share the same country of residence (the same as *Fellows*'), while the *Diaspora* brings geographical diversity.

However, what subgroup diversity reveals in the Argentinian plots, which cannot be read in the proportions of alter classes in Tab. 4.3, is that *Host* and *Transnational* contacts are more, and *Fellows* and *Diaspora* are less, both in whole networks and *within the single subgroups*: as a result, Argentinian subgroup diversity is the highest nationally and the lowest geographically. This means that *Host* and *Transnational* alters, although from a different nationality than Argentinians, not only are in their networks, but are well connected and fall in the same cohesive subgroups, possibly with *Fellows* too. From this standpoint, Argentinians in Barcelona are again at the opposite end from Sri Lankans in Milan.

On this point, it is interesting that while Moroccans have almost as high an average frequency of *Host* relations in their networks as Argentinians (29% versus 33%, see Tab. 4.3 in Ch. 4), they display clearly less national diversity in both subgroups and networks. At the same time, they have more geographical diversity in subgroups (but not in whole networks) than Argentinians.

This reflects the different weight and connectivity of all other alter classes in Moroccan and Argentinian networks, the frequency of *Host* contacts being equal. Argentinians have on average less co-national networks than Moroccans (cf. Table 4.2 in Ch. 4). Moreover, Argentinians' co-national connections are much more *Origin* than *Fellow* alters, while the opposite is true for Moroccans, who have a strikingly low number of relations still in the home country. While less co-nationals overall imply more national diversity, more *Origins* than *Fellows* mean more geographical diversity in Argentinian than in Moroccan networks. At the same time, Moroccan networks include many more *Diaspora* alters, while Argentinian ones include many more *Transnationals* on average: the *Diaspora* brings national homogeneity and geographical diversity to Moroccan networks, while *Transnationals* bring geographical homogeneity and national diversity to the Argentinians'.

A counterintuitive finding is that in the geographical dimension Moroccans show more diversity *only* at the subgroup level, but the same diversity as Argentinians at the whole network level. This reveals something interesting about how contacts in different countries are connected to each other in Moroccan versus Argentinian personal communities. When whole networks are considered, Moroccan respondents have more relations to their international *Diaspora*, but Argentinians have more connections to *Origins* in their home country: both these classes increase geographical diversity, thus their effects offset network-wise and Moroccan and Argentinian whole networks end up being equally diverse in geography. However, in Moroccan networks the *Diaspora* must frequently fall in the same subgroups as *Origin* and *Fellows*, thus bringing geographical diversity right into cohesive subgroups; on the contrary, in Argentinian networks *Origins* must usually form their own separate subgroups and be more sparsely connected to alters who live in Spain. This results in higher *subgroup* diversity for Moroccans than for Argentinians. Such patterns may also reflect overall structural differences between Moroccan and Argentinian networks: Moroccans have more core-centered networks (cf. Fig. 5.6 and 5.7 in Ch. 4), where subgroups are less and subgroup diversity tends to be higher.

In general, Argentinians have the lowest geographical diversity of cohesive subgroups among the five populations, although the geographical diversity of their whole networks is no lower than others. This translates into geographical segregation levels which are on average the highest in Argentinian networks, that is, Argentinians are more often than others in a brokerage position among different countries. In the comparison with Dominicans, Moroccans and Senegambians, this can also be a consequence of Argentinians exhibiting more factional rather than core-centered structures in their networks (cf. Fig. 5.6 and 5.7 in Ch. 4). However, this argument cannot be used in the comparison with Sri Lankans: Argentinian networks are structurally much more similar to those of Sri Lankans, but they are still more geographically segregated.

In sum, Argentinians are closer to the model of *transnational brokerage* in section 5.3.1 (Fig. 5.15, A), with *Origin* and *Fellow* alters more separated into different subgroups, in the context of more factional structures. Moroccans seem to more closely approach the model of *transnational cohesion* (Fig. 5.15, B and C), with a *Diaspora* well connected with people in their host and home countries (*Origins* and *Fellows*), which brings geographical diversity into the cohesive subgroups of more core-centered networks. Sri Lankans are similar to Moroccans in the transnational cohesion of their networks, nonetheless they follow a structural pattern similar to Argentinians, with more factional structures rather than core-centered networks.

Thus, similar structural patterns result in different positions of transnational brokerage for Sri Lankans and Argentinians. This is another indication that structure alone does not predict segregation in the network. In other words, higher segregation and more brokerage potential for Ego are not purely consequences of network structure; they are something inherent within how subgroups form in migrants' personal communities. In this case, subgroup formation is more guided by country of residence for Argentinians; less so for Sri Lankans, whose subgroups tend to span different countries.

5.4 Conclusions

This chapter has drawn on traditional analyses of network composition and structure to introduce a new dimension to the the study of migrant networks: the cohesion and segregation among alter attributes. My main argument has been that structural cohesion between contacts in different countries of residence, or from different nationalities, determines different types of migrant transnationalism and social integration, with a variation that cannot be captured as long as network composition and network structure are examined separately.

In the approach proposed here, identifying cohesive subgroups in personal networks is the starting point to studying cohesion and segregation between actors with different attributes. To this end, the results of a well-known algorithm for subgroup identification, the Girvan-Newman procedure, have been presented, showing the manifold pieces of information that can be obtained from this procedure, and combining them to uncover a wide variation of structural forms among migrant networks. Such variation can be described with the aid of a continuous "map" of network structures, in which different locations correspond to more core-centered versus more factional network types.

Combining network composition and structure, a new measure has been proposed to index the dimension of cohesion and segregation between actor attributes: the index of subgroup segregation, which I called "geographical" or "national", depending on whether it measured the structural cohesion/segregation of alters in different residence countries, or from different nationalities. The compositional component of the subgroup segregation index is represented by attribute diversity (entropy), while the structural component is represented by the Girvan-Newman cohesive subgroups: the index of subgroup segregation is the reduction in attribute diversity that is observed when passing from the whole network to the subgroup level.

The analysis of network and subgroup entropies has shown that the networks of

transnational migrants are markedly more diverse in the countries of residence than in the nationalities of alters. Within this geographical diversity, however, the subgroup segregation index captures different levels of segregation of contacts in different countries: in the cases of *transnational cohesion*, alters in different countries have a dense flow of relationships with each other; in the cases of *transnational brokerage*, Ego is a broker among alters in different countries, who do not know each other. Likewise, cohesion or brokerage between alters from different nationalities are captured by the *national* index of subgroup segregation: given the same level of national diversity of the network, a measure of migrant's social integration, the national segregation index differentiates between a *cohesive* versus a *brokering* type of social integration.

The difference between the cohesive and the brokering types of transnationalism and social integration may also be illustrated by means of a continuous map of networks, which I called the "plane of subgroup segregation", where different locations (x and y coordinates) of network points correspond to different levels of diversity at the whole network and the subgroup level (Fig. 5.12). Three extreme cases can be located and distinguished on this map: "Total homogeneity", the characteristic of networks with very low geographical or national diversity, at both the whole network and the subgroup level; "Maximum segregation", the case of networks with high values of geographical or national diversity at the network level, but low diversity at the subgroup level, that is, a high degree of attribute segregation in network structure; "Minimum segregation", the case of networks with high levels of geographical or national diversity in both the whole network and its cohesive subgroups, that is, with a low degree of attribute segregation in structural subgroups. The next chapter will discuss the empirical relevance of these three extremes, how they reflect a brokering versus a cohesive type of transnationalism and social integration, and how they relate to immigrant assimilation patterns.

A link can be drawn here to the notion of brokerage as social capital, arguing that metrics on subgroup structure (number of relevant cohesive subgroups and modularity) and metrics on segregation (the subgroup segregation index) measure together the "bridging" social capital that migrants can extract from their intermediary position between countries and nationalities. The following pages will explore this link, and how it helps interpret the effects of personal networks on immigrant assimilation outcomes.

Finally, this chapter has shown evidence that, besides being logically a third dimension distinct from composition and structure, subgroup segregation is also non-redundant in the data with respect to the other two dimensions. The variation of the subgroup segregation index cannot be predicted by compositional or structural measures alone in real-world networks: it extracts new information from the data. In other words, there

is something inherent to how alters with similar or different attributes connect to each other in migrants' networks, and that cannot be measured by composition or structure alone: the same composition or the same structure gives place in actual data to different levels of segregation and Ego's brokerage.

Concluding this chapter, it should be noted that the approach proposed here is only one of several possible in the study of cohesion among attribute-based alter classes. It starts from cohesive subgroups (structure), and measures the distribution of attributes in these subgroups (composition). An inverse approach to the same problem is suggested by Brandes et al. (2010) (see also Molina et al., 2012): they start from attribute-based alter categories (composition), and measure the density of relations between them (structure). The latter approach has the advantage of being more intuitive than a study of subgroup segregation indexes, as it defines a number of alter classes like *Origin*, *Fellow*, *Host*, etc. in the network, and measures cohesion in each pair of classes. The segregation approach, however, has the advantage of returning one single measure, that can be easily interpreted in terms of Ego's brokerage between different attributes. If the underlying goal is linking measures of transnationalism to assimilation outcomes, the subgroup segregation index offers a single measure that can be incorporated into quantitative models, and intuitively read in terms of "bridging" social capital.

Besides the decision on whether approaching the cohesion/segregation problem by measuring composition given structure, or rather structure given composition, another critical choice is whether or not to combine geographical and national categories of alters in a single classification. The geographical-national classification of contacts into *Origin*, *Fellow*, *Host*, *Diaspora* and *Transnational*, that I drew from Brandes et al. (2010), is constantly referred to when interpreting the results of the last two chapters in terms of real-world migrant networks. However, if diversity and segregation are measured with reference to the alter classes of *Origin*, *Fellow*, *Host*, *Diaspora* and *Transnational*, the same degree of diversity and segregation may originate from a network of equal numbers of separate *Origin* and *Fellow* alters, or from a network of equal numbers of separate *Fellow* and *Host* alters: the effect of countries of residence cannot be distinguished from the effect of nationalities. Still, this chapter proves that geography and nationality can have very different patterns of diversity and segregation within migrant networks. Similarly, they may have different patterns of association with migrants' path of assimilation to the host society: for this reason, in the analysis of diversity and segregation of alter attributes I choose to separate the geographical and national dimensions.

Chapter 6

Transnational networks and patterns of immigrant assimilation

The previous chapters put forward a social network approach to analyzing transnational migration. The personal networks of international migrants were described, and different metrics were proposed to measure migrant transnationalism and social integration with network data. The traditional dichotomy in social network analysis between network composition and network structure was followed, focusing on the pattern of actor attributes (composition) and on the pattern of connectivity (structure) separately. Yet, I also argued for a combination of network composition and network structure into measures that could index the pattern of connectivity between attributes, that is, the degree of *segregation* versus *cohesion* of actor attributes in network structure. In particular, two actor attributes were taken into consideration, namely nationality and country of residence; and an index of *national* and *geographical* segregation in the network was proposed, which measures the extent to which different nationalities or different countries of residence are separated or connected in migrant networks. Segregation of attributes in an ego-network means Ego's brokerage between attributes: thus the segregation indexes were used to differentiate between two fundamentally different types of transnationalism and social integration, a "brokering" versus a "cohesive" type (see Fig. 5.3 in Ch. 5, p. 122).

The description and measurement of transnational networks were intended to prepare the tools for exploring the association between migrant networks and patterns of assimilation: this topic is tackled in the current chapter. Given the variety of the information collected in the Spanish and the Italian surveys, two different aspects of migrant assimilation will be taken into consideration: cultural adaptation and economic incor-

poration.

In section 6.1, cultural assimilation is measured among Moroccan and Senegambian migrants in Barcelona, using an index that draws on the Acculturation Rating Scale for Mexican Americans II (ARSMA-II), an individual scale which has been widely used and tested in anthropological and psychological research (Cuellar et al., 1995). Argentinian and Dominican respondents were excluded from this analysis, because their linguistic and cultural proximity to Spain as a host country significantly altered the questionnaire items used in their interviews, in comparison to the standard ARSMA-II items. While a comparable index of cultural assimilation could not be constructed for Sri Lankans in Milan, the Italian survey collected accurate data on the labor market position of respondents, which allows us to explore the link between personal networks and migrant economic incorporation in section 6.2.

In this analysis, migrant assimilation is modelled as a dependent variable predicted by network characteristics, while controlling for standard individual variables. All the network dimensions discussed in the previous chapters are accounted for: composition, structure, geographical and national diversity and segregation. These are incorporated in the models by means of network typologies in the analysis on cultural assimilation, and by means of the original continuous network variables in the analysis on economic incorporation. The reasons for and the implications of these different modelling strategies are discussed in the following sections.

The ultimate goal of the study presented here is to examine whether and how migrant networks affect assimilation patterns in the host country. Is there a specific network effect on assimilation outcomes? Does the degree of connectedness to the host society, co-national immigrants, and the home country, affect migrant assimilation? Besides the degree of connectedness, does the way in which migrants' contacts know each other, and the way different nationalities and different countries of residence are connected in migrants' network, also matter to adaptation to the host society?

In this analysis, particular attention will be given to the *transnational* component of personal networks, that is, to the pattern of migrants' relations to co-nationals outside their current country of residence. The underlying question is whether transnationalism is positively or negatively associated to assimilation: are the most transnational immigrants also the most marginalized, or rather the best integrated ones, in the host country? Does having part of one's network still in the home country imply being less assimilated in the receiving society? Does assimilation require to severe the migrant's connections to his home country? Besides the *degree* of transnationalism, does the *type* of transna-

tionalism, in particular "brokering" versus "cohesive" transnationalism, also play a role in how migrants are incorporated into the receiving country?

As discussed in Ch. 2, the relation between transnationalism and assimilation is a major subject in recent studies of transnational migration. In the existing research, however, transnationalism is normally conceived of as a dependent variable, and measured by indexes on behaviors or cultural preferences of migrants, like cross-border economic practices, political activities in the home country, or transnational ethnic identifications (e.g. Guarnizo et al., 2003; Snel et al., 2006). These are then related to independent variables measuring assimilation patterns in the host society. I propose here an opposite empirical strategy, whereby assimilation is treated as a dependent variable and transnationalism as an independent predictor. This proceeds from the way in which I conceptualize and operationalize transnationalism in this study, namely as *structural* or *social* transnationalism embodied in the degree and pattern of migrants' connections to their co-nationals in the home country and in the transnational diaspora. Transnationalism is viewed here as a feature of migrants' social networks, and measured by multiple network-based variables, which cannot be compressed into a single index to be modeled as a dependent outcome.

Thus, in this study variables on transnationalism do not index individual behaviors, decisions and preferences, as in existing approaches to the topic. Rather, they capture more "structural" aspects of migrant transnationalism, which are less subject to individual planning, manipulation or rational choice. Network variables like the number of relatives still in the home country, the number of friends in the host society, or the patterns of connections between these different categories of contacts, are certainly affected by individual decisions. Still, compared to transnational behaviors like making an investment or financing a political party in the home country, they are much more of a structural condition, and only in part lend themselves to conscious, and possibly rational, manipulation. Network measures capture more the "structure" than the "agency" component of migrant transnationalism, hence they are best treated as independent variables affecting other outcomes in migrants' life.

6.1 Transnational networks and cultural assimilation

6.1.1 The Acculturation Rating Scale as a measure of cultural assimilation

Migrant acculturation is measured in this section by means of an Acculturation Rating Scale (*ARS* in the following) based on the Acculturation Rating Scale for Mexican Americans (ARMSA), in the revision which Cuellar et al. (1995) called ARSMA-II. *ARS* is a

continuous measure of acculturation constructed from the means of a set of Likert-type scores, each ranging from 1 to 5. Each score is the respondent's self-evaluation of the intensity or frequency with which he practices certain behaviors or attitudes, or has certain preferences or tastes, that are relevant to the acculturation process: for example, "I enjoy speaking my native language", "I enjoy Spanish TV", "I read books in my native language", "I like to identify with Spain". The respondent assigns an intensity or frequency score to each behavior or preference, from 1 ("Not at all") to 5 ("Extremely often or almost always")[1]. As explained by Cuellar et al. (1995), the behaviors or preferences mentioned by *ARS* items refer to one of four factors: (1) Language use and preference; (2) Ethnic identity; (3) Cultural heritage and ethnic behavior (tastes on movies, books, food etc.); (4) Contact and interaction with host society and co-nationals. On each of these four factors, separate items give a 1-5 score to the respondent's closeness and inclination toward the origin culture, and to his closeness and inclination toward the host culture. For example, within the language factor, one question measures how much the respondent enjoys speaking his native language from 1 to 5; a different question indexes how much he enjoys speaking the host language from 1 to 5.

Thus, the notion of cultural assimilation underlying *ARS* is not a single-dimension, unidirectional one, whereby approaching the host culture implies giving up the origin culture, and maintaining the origin culture implies rejecting the host culture. Rather, closeness to the origin and to the host culture are measured independently by *ARS* items, through separate questionnaire entries, consistently with Berry's multidimensional view of acculturation that distinguishes the two principles of (1) cultural maintenance and (2) contact and participation with the host culture and society (see Ch. 2). *ARS* questions allow for the possibility that the migrant might remain close to her origin culture, while accepting practices, values and preferences of the host culture (high scores on both the dimensions of cultural maintenance and closeness to host culture); or conversely, the possibility that the acculturation process leads her to refuse both, possibly conflicting, cultures (low scores on both cultural maintenance and closeness to host culture).

Scores on *ARS* items that express maintenance of the origin culture are averaged to produce an "Origin Orientation Subscale"; so are scores that measure closeness to the host culture, whose average represents a "Host Orientation Subscale"[2]. As averages of Likert-type scores, these two subscales are themselves scores on a scale from 1 to 5. The

[1] The complete scale is: (1) Not at all, (2) Very little or not very often, (3) Moderately, (4) Much or very often, (5) Extremely often or almost always. Cuellar et al. (1995) list all the questionnaire items used for ARSMA-II.

[2] In the original ARSMA-II scale for Mexican-Americans, the two subscales are termed "Mexican Orientation Subscale" and "Anglo Orientation Subscale" respectively.

Acculturation Rating Scale is then obtained by subtracting the Origin Orientation Subscale from the Host Orientation Subscale. Hence, negative values of *ARS* express a higher closeness to the origin than to the host culture, whereas positive values express a higher inclination toward the host culture than the origin culture. High absolute values of *ARS* reflect a large difference between inclination to the host and the origin culture, while values close to zero result from similar orientations to the origin and the host culture.

In the population of Moroccans and Senegambians interviewed in Barcelona, *ARS* has a distribution which is very close to normal, around a mean of about -1, with a standard deviation of 1 (Fig. 6.1, see also Tab. 6.10). The negative mean indicates that closeness to origin culture as measured by *ARS* items is on average higher than closeness to host culture among these respondents, as expected from a population of first generation immigrants who mostly migrated within the last 10 years (see "Time since migration" in Tab. 6.10). On the other hand, the distribution of *ARS* in Fig. 6.1 also shows a good deal of variation in the acculturation scores of respondents. In particular, a fairly large part of the population has *ARS* values close to 0 or higher, which points to a good degree of cultural integration for first-generation migrants, with similar scores on the two dimensions of attachment to origin and host culture (or even higher values on the Host Orientation Subscale than on the Origin Orientation one). Conversely, for a relevant proportion of the sample, *ARS* values are around -2 or lower: an average 2 point difference between Origin Orientation and Host Orientation scales, which means that the host culture is decidedly less accepted or enjoyed than the origin culture.

6.1.2 Identifying typologies of transnational networks

The goal of *ARS* as used in this section is to measure cultural assimilation as a dependent variable to be explained by characteristics of migrant personal networks. Specifically, in the following cultural assimilation is modelled on each of the four network dimensions introduced in Chapters 4 and 5: composition, structure, geographical diversity and segregation, national diversity and segregation. Each dimension is described by a set of different metrics discussed in the previous chapters.

Network composition in terms of contact nationalities and countries of residence is measured by the relative frequencies of alter classes: the proportions of *Host*, *Fellow*, *Origin* and *Diaspora* contacts in the network. The alter class of *Transnationals* is omitted, because it is a marginal and residual category, and because the analysis here is intended to focus on categories of social contacts directly related to migrant transnationalism and social integration. The weight of family relations in the migrant's network is also accounted for, with the frequency of family members among the 45 alters listed.

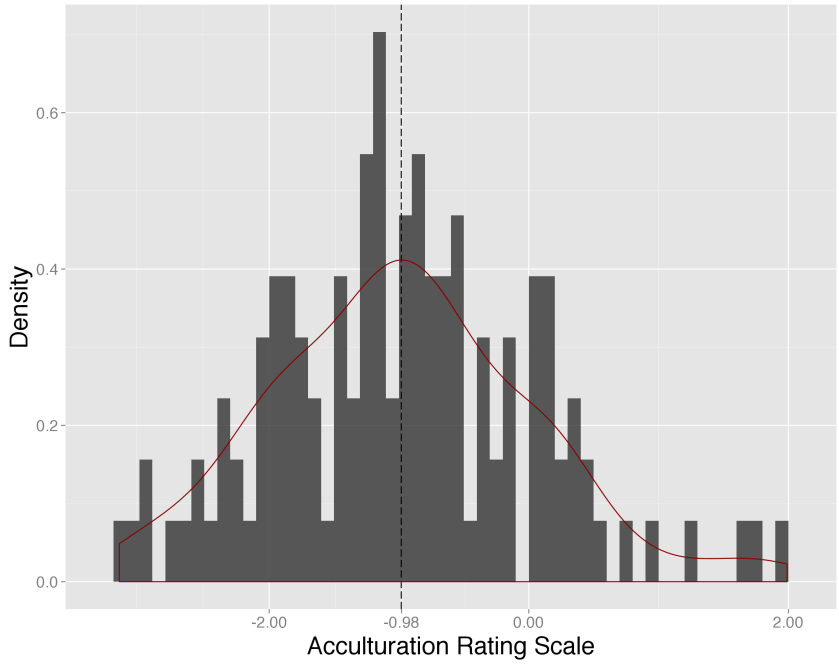

Figure 6.1: Actual distribution and estimated density curve of the Acculturation Rating Scale (*ARS*) among Moroccan and Senegambian respondents in Barcelona (N=128). The dashed vertical line is the sample mean.

Network structure is indexed by four variables: the number of structural subgroups of relevant size, the number of dyads and isolates, modularity, and overall network density[3]. As shown in Ch. 5 (section 5.1.2), these measures taken together capture the structural type of the network on an ideal map between more core-centered structures and more factional ones (see Fig. 5.10, p. 135).

Finally, network diversity in alter national origins and countries of residence, and the segregation versus cohesion of diversity in the network, are indexed by the measures illustrated in Ch. 5 (section 5.2): overall network diversity (the H^* measure in Ch. 5), subgroup diversity (the $\hat{H}$ measure), and the subgroup segregation index (H), on the geographical and national dimensions separately.

Although each of these measures is theoretically relevant to describing personal net-

[3]Like in the previous chapter, by "subgroups of relevant size" I mean the cohesive subgroups of at least 3 actors identified by the Girvan-Newman algorithm in the network. "Dyads and isolates" is a convenient expression to indicate Girvan-Newman subgroups of only 2 or 1 node, although they are not necessarily unconnected from the rest of the network (see Note 5 on page 127). "Modularity" is the Girvan-Newman modularity.

works, in practice their direct use in regression models is problematic because network metrics on the same dimension (e.g. composition) are highly correlated. As shown in Chapters 4 and 5, in some cases they are correlated pairwise, in other cases two or more of them can predict another very well. Among compositional measures, for example, a high proportion of both *Origin* and *Fellow* contacts is normally associated to a low proportion of *Host* alters in the network, as a natural consequence of these three numbers being proportions of the same whole. As far as structure is concerned, the number of relevant subgroups and the number of dyads and isolates together have been shown to predict the Girvan-Newman modularity quite well (see Ch. 5, section 5.1.2). As for diversity and segregation, diversity at the network level H^*, and diversity at the subgroup level $\hat{H}$, *determine* together the value of the subgroup segregation index H.

The strategy adopted in the following to deal with this problem is to identify clusters, or types, of personal networks based on each set of metrics. Network typologies, rather than the original measures, are then used as categorical predictors of cultural adaptation. Network types are extracted separately on each dimension (composition, structure, geographical diversity and national diversity) by a K-means cluster analysis on each set of variables. This kind of analysis uses dissimilarities (distances) between data points on a set of metrics to distinguish clusters, that is, groups of points that are similar (close) on that set of metrics (Johnson and Wichern, 2001). In this case, data points are ego-networks, and clusters are network types, e.g. on compositional variables. The K-means procedure requires the number K of desired clusters or types to be specified *a priori*, and assigns each observation i to the cluster to whose centroid i is closest[4]. In this way, the N observations are partitioned into the K most cohesive, homogeneous and separate clusters, in the sense that each observation is closer to the centroid of *its own* cluster than to the centroid of any of the other $K-1$ clusters.

In this strategy for typology extraction, a critical decision is what number K of types to consider the most appropriate in each network dimension. Should we look for 4, 5, or 10 different and homogenous compositional types of networks? How many structural types of networks should we try to recognize? Theoretical arguments should guide the choice, which means that the resulting clusters should be sufficiently *interpretable* in terms of *types* of networks identified by *a priori* theoretical statements. Besides this

[4]The centroid of a cluster is the cluster mean point on all the variables used in the analysis. The optimal K centroids are derived by an algorithm of this kind: (1) Assign the observations to K random initial clusters. (2) Proceed through each observation i, and re-assign it to the cluster to whose centroid it is closest. If the reassignment has actually caused the observation to change cluster, re-calculate the centroid for the cluster which has received the observation, and for the cluster that has lost it. (3) Repeat step (2) until no more reassignments occur (Johnson and Wichern, 2001).

norm, also a technical quantitative criterion is normally used to guide the choice of K: the clustering *silhouette*, a summary measure of how well the data points fit a given partition into clusters (Kaufman and Rousseeuw, 1990). Intuitively, silhouette is high if most observations are very similar to their own cluster, and very different from other clusters; it is low if many observations are in "grey areas" between clusters, that is, they are quite similar to two or more clusters of the partition at the same time. Thus, a clustering with high silhouette fits the data well in the sense that data points are very similar *within* each cluster, while they are very dissimilar *between* the clusters.

In the following analysis, among the solutions with the highest silhouettes, the partition is chosen which yields the clusters more clearly interpretable as a typology of networks. The criterion whereby clusters should be interpretable in terms of a typology, implies, in particular, that solutions with only 2 clusters, or with too many clusters, are excluded irrespective of the silhouette measure. The typologies are extracted on the whole pool of ego-networks available, that is, by running cluster analyses on all the 369 networks from all the five populations surveyed in Milan and Barcelona.

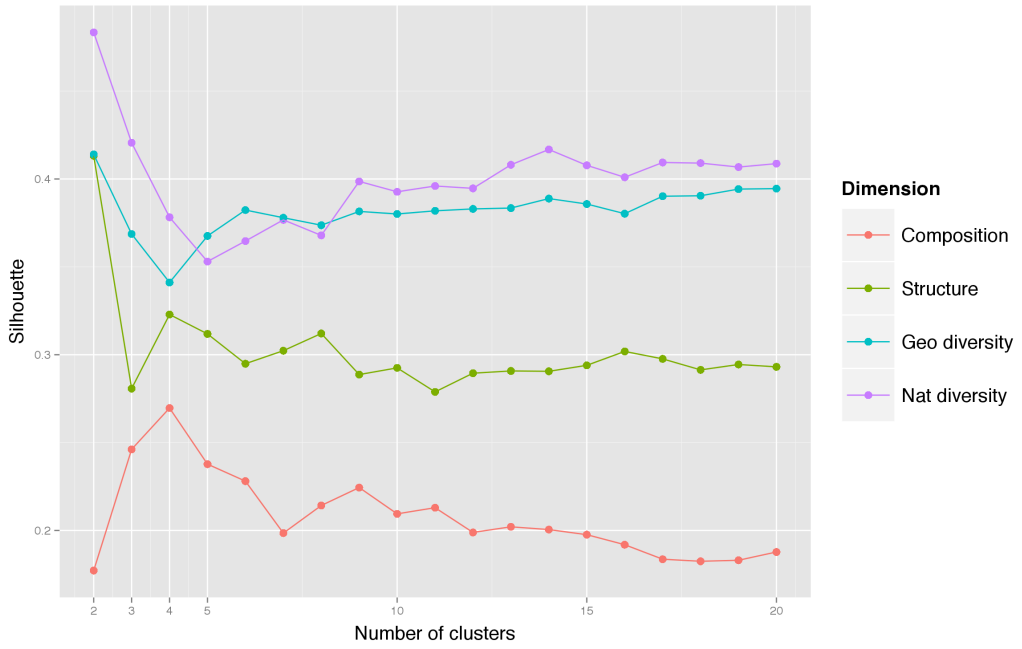

Figure 6.2: Silhouette indexes of different partitions (from 2 to 20 clusters) from cluster analyses on personal networks in the four dimensions of network composition, structure, geographical diversity, and national diversity. The chosen partitions are: 4 clusters for network composition and structure; 3 clusters for geographical and national diversity of networks.

Compositional typology

When networks are clustered on compositional variables, the partition with the highest silhouette index (Fig. 6.2) turns out to also be the most easily interpretable in terms of network types. It identifies four network clusters (Table 6.1), three of which can be linked quite straightforwardly to classical modes of migrant acculturation studied in cross-cultural psychology. In this interpretation, connectedness to the home country (frequency of *Origin* alters) is seen as reflecting the principle of cultural maintenance into Ego's personal relations, while connectedness to the host society (frequency of *Host* alters) is seen as the ego-network equivalent of the principle of participation in the host culture and society.

The 4 clusters on compositional variables are:

1) *Transnational-Origin* ($N = 106$). Networks in this cluster are the most unbalanced toward the migrant's origin country. They have the highest proportions of *Origin* alters, with a mean frequency of *Origins* of 65%, almost two times the second highest value. At the same time, they show the lowest mean proportion of co-nationals in the receiving country (*Fellow* contacts), as well as a very low proportion of alters born in the host country (*Host*). Very high proportions of family members in the networks are another feature of this type. In terms of Berry's four modes of migrant acculturation, this cluster would be closest to the "Separation" mode, characterized by a high attachment to the origin culture and a low tendency to connect with the host society.

2) *Transnational-Diaspora* ($N = 82$). These are very transnational networks too, with on average almost half of all contacts located in a country other than Ego's country of residence. But in this case, although the percentage of *Origin* contacts is still high, the main characteristic is the very high frequency of *Diaspora* alters (around 13%) compared to other networks. The proportion of co-national contacts in the receiving country (*Fellow*) is quite high too (around 30%), which is another relevant difference from the *Transnational-Origin* type. The latter is similar to this cluster, however, in the high frequency of family contacts.

3) *Marginalized* ($N = 98$). Networks of this type have a low incidence of *Origin* alters (around 23% on average), but at the same time a low proportion of *Host* contacts too. On the other hand, these are the networks with the highest percentages of *Fellow* connections, more than a half (54%) in the average network. Following the suggestion by Brandes and colleagues (2010), this cluster can be interpreted as

embodying the "Marginalization" mode of acculturation: a low inclination to both maintaining the origin culture and assimilating with the host society.

4) *Assimilated* ($N = 83$). These networks have the highest frequencies of *Host* contacts, almost a half (45%) on average. On the other hand, they show the lowest mean frequency of *Origin* alters (19%), and a somewhat low proportion of *Fellows* too. This type also records the lowest percentage of family in the network (slightly more than one quarter). Following Berry's framework, such a network composition can be read as reflecting the "Assimilation" mode of acculturation, with low inclination to culture maintenance, and high disposition to contact and participation in the host society.

Cluster n.	N	% Origin	% Fellow	% Host	% Diaspora	% family	
1	106	65	17.8	7.7	2.6	36.9	*Transnational-Origin*
2	82	36.7	30.2	12	12.6	37.6	*Transnational-Diaspora*
3	98	23.5	54.4	13.6	2.5	29.8	*Marginalized*
4	83	19	21.5	45.2	1.8	25.3	*Assimilated*

Table 6.1: Network clustering on compositional variables, partition with 4 clusters: mean of relevant variables by cluster.

While the first, third and fourth compositional types can be easily related to the "Separation", "Marginalization" and "Assimilation" classical strategies, a particular, more diasporic, kind of transnational networks emerges from the second cluster, labelled here as *Transnational-Diaspora*. Networks in this type show a high overall number of connections to Ego's co-nationals abroad, like in the first cluster, yet they share these connections more evenly between the home country and the international diaspora. Compared to the "separated" *Transnational-Origin* cluster, the *Transnational-Diaspora* one is also characterized by a higher tendency to connect with people in the migrant's receiving country, be they co-nationals (*Fellow*) or natives (*Host*).

A separate note should be made on the third compositional cluster, labelled as "Marginalized" in this section. In Berry's framework, marginalization is a lack of both assimilation with the host society and attachment to the origin culture and society. In network terms, marginalization should translate into low presence of both *Origin* and *Host* contacts; therefore, given the way network data have been collected and alter classed have been constructed here, "Marginalization" implies a network mostly consisting of *Fellow* or *Transnational* alters. Using the label "Marginalization" for this cluster, which highlights the *lack* of relations to given alter classes, emphasizes a *negative* attitude of Ego's: a tendency to (voluntarily or forcedly) withdraw from social relations with both the origin

country and the host society. However, the high frequency of *Fellow* contacts in these networks may rather point out a *positive* attitude of cultural creation and social networking: the production of and adherence to a "transmuted" cultural repertoire (Mendoza, 1989; Cuellar et al., 1995), which originates from the clash between origin and host culture, but defines itself in opposition to both. In terms of networking with given classes of contacts, this fifth mode of acculturation would precisely correspond to networks where relations to *Fellow* and *Transnational* alters are prevalent.

Structural typology

Of the four variables used to describe networks in the structural dimension, three result from the Girvan-Newman algorithm: the number of subgroups of relevant size, the number of dyads and isolates, and modularity. As discussed in Ch. 5 (section 5.1.2), taken together these metrics trace a map of network structural types, from more core-centered to more factional structures (see Figures 5.8, 5.9, and 5.10, from page 132). This justifies using them together to extract a structural typology of ego-networks. Overall network density is the fourth variable: it is added because it is the first and most basic network-level measure on the patterns of relations in a network, and it cannot be ignored if different structural types are to be discerned.

Excluding the partition with only 2 clusters, the 4-cluster solution shows the highest silhouette index on the structural dimension (Fig. 6.2). This partition differentiates between essentially the same types of network structure that were independently identified in Ch. 5 (section 5.1.2), by plotting the measures derived from the Girvan-Newman procedure (Tab. 6.2):

1) *Factional structure* ($N = 146$). Networks in this cluster are those that fit best with a Girvan-Newman partition into separate factions. They show multiple cohesive subgroups (more than 3 on average), a high modularity and low overall density. The low number of dyads and isolates is also typical of well fitted factional structures.

2) *Hybrid structure* ($N = 98$). This cluster collects networks that can be described as in between core-centered and factional structures. They have only 2 subgroups on average, a few dyads and isolates, and an average modularity score. Density is higher than in factional networks, but not as high as in core-centered structures.

3) *Core-periphery structure* ($N = 91$). These networks have only one relevant subgroup on average (the core), but many dyads and isolates (the periphery). Density

is quite high, which is consistent with a cohesive central core and a sparsely connected periphery. The low value of modularity is in line with those generated by typically core-periphery networks.

4) *Closed community* ($N = 34$). Networks in this type also have one single subgroup. Unlike the previous cluster, however, they show few dyads and isolates, and a very high density, together with modularity values close to zero. These are the typical features of a "closed community" type of network, where almost all contacts are part of a single, large cohesive group.

Cluster n.	N	N. subgroups	N. dyads and isolates	Density	Modularity	
1	146	3.32	3.61	0.26	0.36	*Factional*
2	98	2.25	8.59	0.36	0.12	*Hybrid*
3	91	1.13	19.85	0.45	0.04	*Core-periphery*
4	34	1.18	5.03	0.82	0.01	*Closed community*

Table 6.2: Network clustering on structural variables, partition with 4 clusters: mean of relevant variables by cluster.

It may be noticed that the "factional" cluster is much larger than the others in this typology. This shows that a certain level of separation into multiple cohesive subgroups or "factions" is the most common configuration among the personal networks of international migrants. Furthermore, this cluster probably embraces a broader spectrum of ego-network structures, with higher variation within: in the terminology used in Ch. 5, it includes both "factional" and "weakly factional" structures, with different levels of within-subgroup cohesion and between-subgroup separation.

The fact that a cluster analysis independently isolates the same structural types predicted Ch. 5 is not a trivial result. In Ch. 5, structural types were logically derived from an ideal map of variables generated by the Girvan-Newman algorithm. The cluster analysis adds a crucial detail to this, namely that those types coincide with actual clusters of relevant size in a sample of 369 real-world personal networks. This means that those structural types are empirically relevant, besides being theoretically reasonable. It also shows that the Girvan-Newman algorithm effectively allows us to identify and separate meaningful structural types into real-world network data.

Typologies on geographical and national diversity and segregation

Only two variables are used for cluster analyses in the two dimensions of national and geographical diversity: network diversity (H^*), and subgroup diversity ($\hat{H}$). The third

relevant variable, the segregation index H, would be redundant, given that it is calculated from the other two.

In the dimension of national diversity and segregation, the highest silhouette value is found at two clusters, and the second highest at three clusters (Fig. 6.2). As in the other dimensions, a 2-cluster solution is ruled out because it would not yield a meaningful classification of the networks, that is, a network typology on diversity and segregation. Therefore, the partition with 3 clusters is chosen (Tab. 6.3), which interestingly corresponds to the three extreme cases of "Total homogeneity", "Maximum segregation" and "Minimum segregation", logically identified in Ch. 5 and located on the cartesian plane of subgroup segregation (see Fig. 5.12, p. 140):

1) *Homogeneity* ($N = 109$). This cluster collects networks with very low levels of national diversity in both the whole network and its structural subgroups. It corresponds to the case of "Total homogeneity" in the cartesian plane of subgroup segregation.

2) *Diversity and segregation* ($N = 143$). Networks in this cluster are diverse at the whole network level, but homogeneous within their structural subgroups. In other words, national diversity is segregated in the structure of these networks, as reflected in the high average segregation index. This type is closer to the "Maximum segregation" extreme, or the "brokering" type of social integration exemplified in Ch. 5, Fig. 5.3, C (p. 122).

3) *Diversity and cohesion* ($N = 117$). Networks of this type are nationally diverse at both the whole network and the subgroup level. Alters from different nationalities are connected to each other, which is shown by low values of the segregation index. These networks are closer to the "Minimum segregation" case, or the "cohesive" type of social integration displayed in Ch. 5, Fig. 5.3, D.

Cluster n.	N	National diversity in network	National diversity in subgroups	National subgroup segregation	
1	109	0.22	0.06	0.7	*Homogeneity*
2	143	0.6	0.23	0.59	*Diversity-segregation*
3	117	0.87	0.6	0.3	*Diversity-cohesion*

Table 6.3: Network clustering on variables on national diversity, partition with 3 clusters: mean of relevant variables by cluster.

Clusterings on geographical diversity are quite different from those on national diversity in the pattern of silhouette, with this index settling at its highest levels from 6 clusters onward (Fig. 6.2). Nevertheless, the 3-cluster solution is the most clearly interpretable in this case as well. Moreover, its silhouette value is only slightly lower than the highest levels[5].

Like in the case of national diversity, the 3-cluster partition yields network types that can be interpreted in terms of the "Total homogeneity", "Maximum segregation" and "Minimum segregation" poles in the cartesian plane of subgroup segregation (Tab. 6.4).

1) *Homogeneity* ($N = 80$). These networks share low degrees of geographical diversity at both the network and the subgroup level. They are closer to the "Total homogeneity" pole in the plane of subgroup segregation.

2) *Diversity and segregation* ($N = 139$). In this cluster, geographical diversity is high at the network level, but it is segregated in network structure: cohesive subgroups are homogeneous in actors' countries of residence. Networks of this type are closer to the "Maximum segregation" case, or to "transnational brokerage" as shown in Ch. 5, Fig. 5.3, A (p. 122).

3) *Diversity and cohesion* ($N = 150$). These networks are geographically diverse at both the network and the subgroup level: there is structural cohesion between contacts who live in different countries. This type is closer to the "Minimum segregation" case, or to the "transnational cohesion" example in Ch. 5, Fig. 5.3, B.

Cluster n.	N	**Geographical diversity in network**	**Geographical diversity in subgroups**	**Geographical subgroup segregation**	
1	80	0.35	0.22	0.33	*Homogeneity*
2	139	0.73	0.3	0.57	*Diversity-segregation*
3	150	0.84	0.68	0.16	*Diversity-cohesion*

Table 6.4: Network clustering on variables on geographical diversity, partition with 3 clusters: mean of relevant variables by cluster.

Figure 6.3 shows where the three clusters on geographical and national diversity are located on the cartesian plane of subgroup segregation. Data points in the graphs are

[5] Another reason why the 3-cluster solution is preferred is that these clusters will be used in the following as categorical predictors in regression models. Choosing a solution with a high number of clusters would imply a high number of parameters in the models, reducing the degrees of freedom of the estimators and yielding less reliable estimates of the predictor effects.

limited to networks of Moroccan and Senegambian respondents in Barcelona, because this is the data sample used in the following for estimating models of cultural adaptation. The figure displays a very clear correspondence between the three clusters of *Homogeneity*, *Diversity-Segregation* and *Diversity-Cohesion*, and the three theoretical poles of "Total homogeneity", "Maximum segregation" and "Minimum segregation" respectively (cf. Fig. 5.12, p.140).

A fundamental result from Ch. 5 is confirmed here by the cluster analyses on national and geographical diversity: personal networks of international migrants are markedly more diverse and less segregated in the countries of residence than in the nationalities of actors (see Ch. 5, section 5.3.4). There are less different nationalities than different countries of residence in these networks; furthermore, while different countries of residence tend to be connected to each other (less geographical segregation), different nationalities, if present at all in the network, tend to fall into separate subgroups (more national segregation).

This finding from Ch. 5 is apparent in the different distribution of networks among clusters in the national versus the geographical dimension. At the national level, the *Homogeneity* cluster is larger, as is the *Diversity-Segregation* cluster, while the *Diversity-Cohesion* type is markedly smaller: in the national dimension networks are more homogeneous and, if diverse, they are more segregated, than in the geographical dimension.

At the same time, not only is the geographical *Homogeneity* cluster smaller, it also shows definitely higher diversity measures and a lower segregation index than the national *Homogeneity* cluster. This means that even the most geographically homogeneous networks have a certain degree of geographical diversity; even in the most geographically homogeneous networks, actor countries of residence never reach the level of uniformity that actor nationalities attain in the most nationally homogeneous networks. In practice, while it is easy to find migrant networks with contacts sharing all the same nationality, it is almost impossible to find migrant networks with contacts all living in the same country.

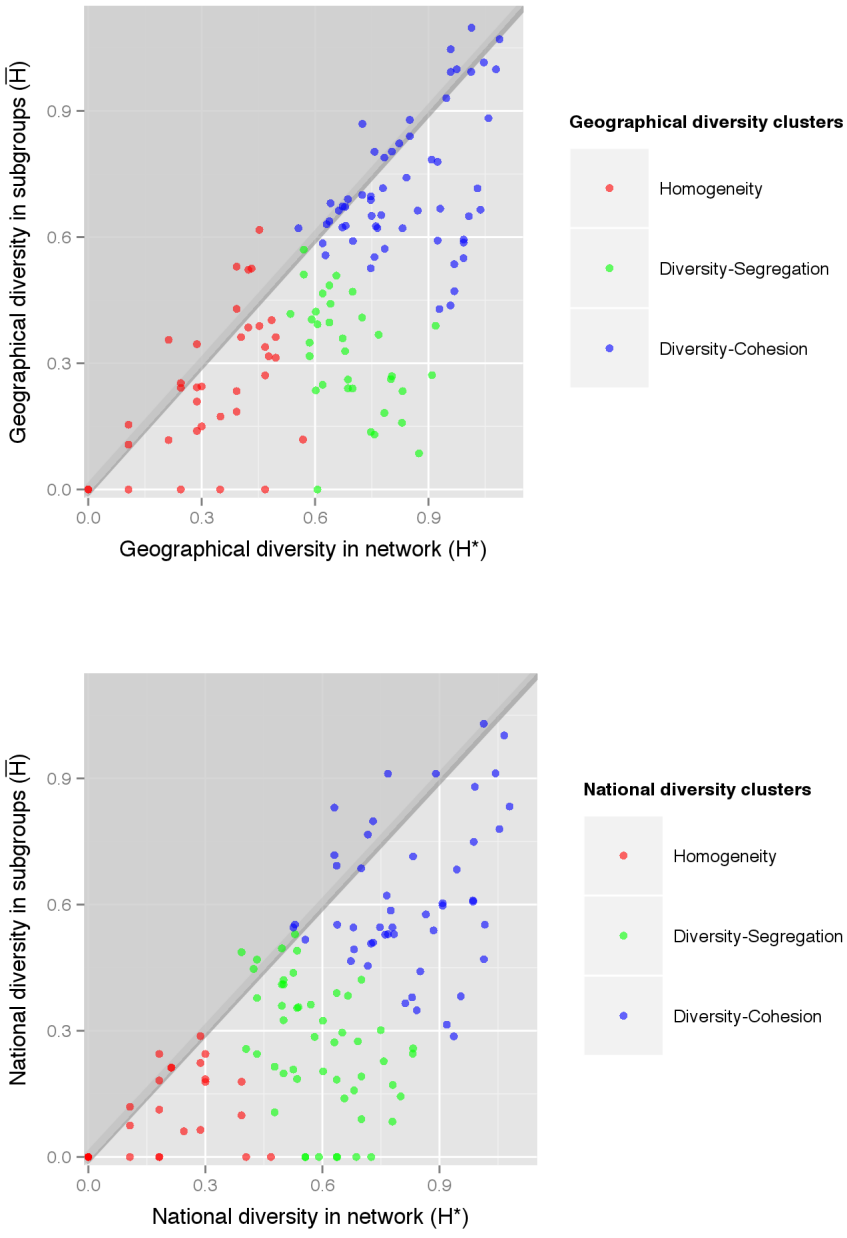

Figure 6.3: The distribution of the 3 network clusters from geographical and national diversity variables on the cartesian plane of subgroup segregation (cf. Fig. 5.12). Points are ego-networks of Moroccan and Senegambian respondents in Barcelona (the data used in the models for cultural assimilation). The 3 clusters of geographical and national *Homogeneity*, *Diversity-Segregation* and *Diversity-Cohesion* clearly correspond to the three theoretical extremes of "Total Homogeneity", "Maximum Segregation" and "Minimum Segregation" in Fig. 5.12 respectively.

The association between typologies

The cross-tabulations of typologies from different network dimensions offer deeper insights on the nature of the compositional types identified above, and linked to Berry's modes of acculturation. Table 6.5 shows the most and the least common ego-network structures in each compositional type. Networks with many contacts in the home country and few relations to the native society, the *Transnational-Origin* type, are quite evenly distributed across the four structural clusters: yet, given the marginal distribution of structures in the whole network sample, this means that *Transnational-Origin* networks are positively associated with closed community structures, and negatively associated to factional ones. The same does not hold for the second type of transnational networks, the *Transnational-Diaspora* cluster, whose structures are more often than expected in the hybrid type, and more rarely than normal in the closed community category. The *Marginalized* cluster, with many co-national contacts in the host country, but few relations to the native society and to the home country, is similar to the *Transnational-Origin* type in that it is significantly overrepresented among core-centered structures (core-periphery in this case), and it is found less frequently than normal among factional networks. By contrast, *Assimilated* networks tend very much to have factional structures, while they are underrepresented in all the other structural types: in other words, the networks with most native contacts also tend to be the ones where the migrant is a broker between separate subgroups of alters.

	N	Factional	Hybrid	Core-periphery	Closed community	*Total*
Transnational-Origin	106	*28*	25	27	**19**	*100*
Transnational-Diaspora	82	41	**34**	20	*5*	*100*
Marginalized	98	*32*	29	**32**	8	*100*
Assimilated	83	**61**	*18*	*18*	*2*	*100*
All networks	369	40	27	25	9	*100*

Table 6.5: Distribution of structural clusters within compositional clusters of networks. All figures in the table are row percentages, except *N* (row absolute frequencies). Cells in bold represent positive associations, cells in italics represent negative associations between row and column categories (statistically significant Pearson residuals from the original contingency table). Pearson's Chi-squared test on the original contingency table rejects independence between row and column categories with P-value <0.001.

The cross-tabulation between typologies on composition and geographical diversity (Tab. 6.6) shows that transnational, marginalized and assimilated networks are different not only in the frequencies of countries of residence, but also in the patterns of con-

nectivity between them. *Transnational-Origin* networks are by definition geographically diverse, because they include many relations in migrants' home countries: as expected, they are underrepresented in the geographical *Homogeneity* cluster. However, they are not evenly distributed between the two geographically diverse types: they fall much more frequently in the *Diversity-Segregation* than in the *Diversity-Cohesion* cluster. This suggests that *Origin* contacts in these networks are only sparsely connected to alters in the migrant's receiving country, in a kind of transnationalism more similar to the "transnational brokerage" case of Fig. 5.3, *A*, than to the "transnational cohesion" example of panel *B*.

Interestingly, the opposite emerges for *Transnational-Diaspora* networks. These are highly overrepresented in the geographical *Diversity-Cohesion* type, while they are underrepresented in the geographical *Diversity-Segregation* cluster. In other words, they are closer to the "transnational cohesion" than to the "transnational brokerage" case.

As for the networks more centered on the receiving country, that is, the *Marginalized* and *Assimilated* types, they are obviously more often homogenous in alter countries of residence. On the other hand, when *Assimilated* networks include enough geographical diversity among actors, alters in different countries tend to be separated (*Diversity-Segregation*) rather than connected to each other (*Diversity-Cohesion*). The opposite holds true for *Marginalized* networks, which probably reflects a general pattern of less connectivity between *Host* and *Origin* than between *Fellow* and *Origin* contacts: in networks that include mostly *Host* and *Origin* alters (the *Assimilated* type), Ego tends to be a broker between different countries; in networks that are mostly made up of *Fellow* and *Origin* contacts (the *Marginalized* type), Ego is more often embedded in a flow of multiple relationships between different countries.

Finally, the cross-tabulation between the compositional and the national diversity typologies (Tab. 6.7) shows that in both the transnational clusters (*Transnational-Origin* and *Transnational-Diaspora*), when national diversity exists at all, connectivity between different nationalities tends to be low: as expected, natives of the host society are rarely connected to *Origin* and *Diaspora* contacts in these networks. This translates into the two *Transnational* types being underrepresented in the *Diversity-Cohesion* cluster.

The same is true for *Marginalized* networks, also underrepresented in the national *Diversity-Cohesion* type. In this case, however, the lack of national cohesion means that connections are few between *Fellow* and *Host* contacts, the main sources of national diversity in this type of networks.

An interesting finding is that an opposite pattern is the most common among *As-*

similated networks, which are highly overrepresented in the national *Diversity-Cohesion* cluster. Thus, besides being nationally diverse, these networks normally feature a high number of connections between actors from different nationalities, that is, *Host* and *Fellow* contacts. This means that the kind of social integration in this network type is closer to the "cohesive" case in figure 5.3, *D*, than to the "brokering" case in panel *C*[6].

	N	Geographical homogeneity	Geographical diversity-segregation	Geographical diversity-cohesion	*Total*
Transnational-Origin	106	*17*	**46**	37	*100*
Transnational-Diaspora	82	*2*	*21*	**77**	*100*
Marginalized	98	**30**	34	37	*100*
Assimilated	83	**37**	**48**	*14*	*100*
All networks	369	22	38	41	*100*

Table 6.6: Distribution of clusters from variables on geographical diversity and segregation, within compositional clusters of networks. All figures in the table are row percentages, except *N* (row absolute frequencies). Cells in bold represent positive associations, cells in italics represent negative associations between row and column categories (statistically significant Pearson residuals from the original contingency table). Pearson's Chi-squared test on the original contingency table rejects independence between row and column categories with P-value<0.001.

	N	National homogeneity	National diversity-segregation	National diversity-cohesion	*Total*
Transnational-Origin	106	**44**	42	*14*	*100*
Transnational-Diaspora	82	**38**	40	*22*	*100*
Marginalized	98	31	45	*24*	*100*
Assimilated	83	*1*	*27*	**72**	*100*
All networks	369	30	39	32	*100*

Table 6.7: Distribution of clusters from variables on national diversity and segregation, within compositional clusters of networks. All figures in the table are row percentages, except *N* (row absolute frequencies). Cells in bold represent positive associations, cells in italics represent negative associations between row and column categories (statistically significant Pearson residuals from the original contingency table). Pearson's Chi-squared test on the original contingency table rejects independence between row and column categories with P-value<0.001.

Two general conclusions may be drawn from this description of patterns of "attraction" and "rejection" between network typologies on different dimensions:

[6]Considering that the proportion of *Fellow* contacts in *Assimilated* networks is similar to the proportion of *Origins* (see Tab. 6.1), one may imagine that the cohesion between different nationalities in these networks also comes from connections between the *Host* and *Origin* alter classes. However, if this were the case, we would also observe *geographical* cohesion in *Assimilated* networks, given that *Host* and *Origin* contacts live in different countries. Yet *Assimilated* networks are very rarely geographically cohesive (Tab. 6.6). Therefore, their national cohesion is mostly a result of connectedness between *Host* and *Fellow* alters.

i) The two compositional types of *Transnational-Origin* and *Transnational-Diaspora* actually reflect two different kinds of migrant transnationalism. These differ not merely in the composition of migrant networks, but also in the pattern of relations, and in the level of connectedness among actors who live in different countries. *Transnational-Diaspora* networks are more frequently factional or hybrid structures than *Transnational-Origin* ones, while the latter are more commonly core-centered structures. Furthermore, transnational networks more centered on the home country (*Transnational-Origin*) put Ego more often in a position of transnational brokerage, whereas transnational networks of the diasporic kind (*Transnational-Diaspora*) are more likely to imply a cohesive type of transnationalism, following the distinction between transnational brokerage and transnational cohesion drawn in Fig. 5.3, A and B.

ii) Similarly, the two compositional types of *Marginalized* and *Assimilated* networks correspond to different types of social integration, not only in terms of network composition, but also in terms of structure and connectivity between different nationalities. *Marginalized* networks are more associated with core-centered structures, and with a "brokering" kind of social integration in which Ego is a bridge between different nationalities. *Assimilated* networks tend more to be factional structures, yet they are much more likely to represent a "cohesive" type of social integration, in which Ego is embedded in a dense web of relations between different nationalities (cf. Fig. 5.3, C and D).

In this sense, the theoretical distinctions made in Ch. 5 between the "brokering" and the "cohesive" types of transnationalism and social integration find an empirical validation in the cluster analyses of real-world networks. First, the "brokering" versus "cohesive" dichotomy is found in the clustering of geographical and national diversity variables, with the emergence of the *Diversity-Segregation* versus the *Diversity-Cohesion* cluster. Secondly, the compositional typology also turns out to uphold this distinction, with the *Transnational-Origin* and the *Transnational-Diaspora* clusters reflecting the brokering and cohesive types of transnationalism, and the *Marginalized* and the *Assimilated* clusters reflecting the brokering and cohesive types of social integration respectively.

6.1.3 Predictive models for cultural assimilation

The relation between migrants' cultural adaptation and personal networks is examined in this section by estimating a sequence of nested linear models on pooled data from Moroccan and Senegambian respondents in Barcelona (Tab. 6.8). The Acculturation

Rating Scale is the dependent variable: it is regressed on increasingly larger sets of network variables, controlling for standard socio-demographic predictors. As anticipated above, network characteristics enter these models as network typologies in each of the four dimensions of network composition, structure, geographical and national diversity and segregation. The distribution of all the predictors in the Moroccan and Senegambian population is shown in Tables 6.9 and 6.10, for categorical and continuous variables respectively.

In the most basic model (Model 1), only socio-demographic variables are used to predict acculturation: these include the respondent's population (Moroccan versus Senegambian), sex, education level, age and time since migration. In terms of R^2, this model explains a low proportion of the variation in acculturation levels, yet it shows that traditional socio-demographic characteristics matter to cultural adaptation, and they do so in the expected directions. First of all, older migrants tend to adapt less to the host culture, while migrants who have lived in the host country for a longer time are more culturally assimilated. These "age" effects are statistically significant, even though they are small considering the 1-5 scale of *ARS* scores and their variation in the sample ($sd = 1$, see Fig. 6.1 and Tab. 6.10).

The effect of educational status is definitely greater, with secondary and university education positively affecting cultural adaptation in comparison with primary education (the reference category), or no education at all. Also the category of "Other" education, which includes Koranic schools and vocational training, is not associated with greater cultural assimilation. Several reasons are traditionally put forward to explain the positive effects of education on immigrant cultural assimilation. As noted by Berry (1997), education is a resource in itself, which provides migrants with important analysis and problem-solving tools during the acculturation process, allowing them to better decipher and understand the new environment, its languages, values and norms, and to adapt more smoothly to it. At the same time, education in the home country may serve as a pre-acculturation stage, giving future migrants the opportunity to learn languages, histories and norms of the future host society even before their actual move. Finally, in data that do not include more detailed controls on socioeconomic conditions, like those used here, more education may also be a proxy for higher socioeconomic status. The latter is, in turn, a protective factor which facilitates smoother cultural adaptation to the host country. In particular, better socioeconomic conditions in the host country reduce the risk of status loss and downward mobility with migration, that is, the risk that migrants experience a dramatic fall in their socioeconomic status from the society of departure to that of arrival, which has been linked to negative acculturative outcomes

(Aycan and Berry, 1996; Beiser et al., 1993).

There seems to be no significant difference between men and women in regards to acculturation, and similarly no systematic difference between Moroccans and Senegambians. Migrant's nationality is normally a proxy for other factors that are considered to be relevant to acculturation, namely motives and context of migration, cultural distance between home and host society, and more or less experience of discrimination (for example because of a greater or lower physical difference between a foreign minority and the native population). As for the motives of migration and the context of exit from the origin country, forced and involuntary migration (e.g. by asylum-seekers) is normally associated to a more problematic cultural adaptation. On the other hand, even when migration is voluntary, unrealistically high expectations about life conditions and socioeconomic status in the receiving society can also negatively impact cultural assimilation (Berry, 1997). In addition, more cultural distance is negatively associated to acculturation, as it implies for migrants more difficulties in learning the language, values and norms of the receiving society, as well as in maintaining their values and norms without conflict with natives. All these factors do not seem to be at play in the case of Moroccans and Senegambians, or at least, they do not seem to systematically differ between these two populations, in such a way as to determine regularly different acculturation scores between the two nationalities.

In Models 2-4, network characteristics are progressively added as predictors or *ARS* levels, so as to cover the four dimensions of network composition, network structure, and geographical and national diversity and segregation in the network.

Network composition consistently emerges in all the models as the most significant variable for explaining variations in migrant acculturation levels. Compared to the *Transnational-Origin* type, all other compositional clusters are related to significantly higher acculturation scores, although it is the *Assimilated* type that most strongly increases cultural assimilation. In Model 2, while having a network in the *Transnational-Diaspora* or in the *Marginalized* group increases *ARS* of about 0.4 points compared to the *Transnational-Origin* type, having an *Assimilated* network has both a more significant and a larger effect of adding 1 point to the acculturation score.

These effects remain essentially unaltered from Model 2 to the larger models that also account for network structure and diversity characteristics. Most importantly, the effect of network composition emerges even though socio-demographic characteristics are controlled. In particular, the effect of network composition turns out to be both more significant and larger than the effect of education on acculturation scores. This points

Acculturation Rating Scale				*N = 128*
	Model 1	**Model 2**	**Model 3**	**Model 4**
(Intercept)	-0.55 ·	-1.11 **	-1.04 **	-1.49 **
Population: Senegambians	-0.26	-0.12	-0.12	-0.17
Sex: Woman	-0.04	0	-0.05	-0.17
Age	-0.04 **	-0.03 **	-0.03 **	-0.04 **
Time since migration	0.1 **	0.07 **	0.08 **	0.08 **
Education: No education	0.13	0.14	0.16	0.12
Education: Secondary	0.38 *	0.39 *	0.36 *	0.26
Education: University	0.57 *	0.47 *	0.39 ·	0.39 ·
Education: Other	0.22	0.21	0.24	0.3
Network composition				
Transnational-Diaspora		0.43 *	0.43 *	0.52 *
Marginalized		0.44 *	0.45 *	0.52 **
Assimilated		1 **	0.99 **	1.16 **
Network structure				
Hybrid			0.14	0.22
Core-periphery			-0.17	-0.03
Closed community			-0.01	0.18
Geo. and Nat. diversity				
Geo. diversity-segregation				0.52 *
Geo. diversity-cohesion				0.32
Nat. diversity-segregation				0.4 *
Nat. diversity-cohesion				0.17
Adjusted R^2	*0.39*	*0.48*	*0.48*	*0.51*

Table 6.8: Linear regression models for the *Acculturation Rating Scale* (*ARS*): coefficient estimates and P-value levels. Base categories of categorical predictors: Sex: *Man*, Education: *Primary*, Network composition: *Transnational-Origin*, Network structure: *Factional*, Geo. diversity: *Homogeneity*, Nat. diversity: *Homogeneity*. *Age* and *Time since migration* are measured in years. P-value levels: · P-value $\leq$ 0.1, * P-value $\leq$ 0.05, ** P-value $\leq$ 0.01.

to a peculiar *network* effect on cultural adaptation, one that does not depend on the individual characteristics traditionally used to predict migrants' integration outcomes. In other words, a more "assimilated" network is not simply a by-product of more time since migration or higher education, with a link to acculturation reflecting the link between those individual characteristics and the dependent variable. Network composition is not

explained by individual socio-demographic characteristics, and it seems to be a better predictor of cultural adaptation than those individual characteristics.

The structural typology does not add significantly to the explanation of migrant acculturation, when socio-demographics and network composition are already accounted for (Model 3). However, when structure and composition are combined to identify network typologies of national and geographical diversity, the resulting categorical predictors turn out to be significantly related to acculturation scores in the largest model (Model 4). Moreover, in Model 4 the association between individual socio-demographic variables and acculturation levels becomes overall weaker: the effects of *Age* and *Time since migration* become smaller in absolute value, while education status becomes overall less significant. This contrasts with the constantly significant effects of network composition, which become even larger. In this model the *Transnational-Diaspora* and *Marginalized* network clusters are associated to half a point increase in the *ARS* index, while having a network in the *Assimilated* typology is estimated to increase *ARS* of more than one point.

Even when the strong and consistent effect of composition typologies is accounted for, Model 4 shows a positive association between network diversity and acculturation levels, independently from network composition in terms of *Host*, *Origin*, *Fellow* and family contacts. In both the geographical and the national dimensions, networks in the *Diversity-Segregation* cluster are associated to an acculturation score around half a point higher, compared to the *Homogeneity* type. On the other hand, no significant relation emerges between networks in the *Diversity-Cohesion* type and cultural assimilation as measured by *ARS*.

Network characteristics contribute significantly to explain variations in migrants' acculturation scores, compared to socio-demographic characteristics alone. The proportion of predicted variation in the dependent variable, R^2, increases from 0.39 in Model 1 (only socio-demographic variables) to 0.51 in the complete model including all variables on network composition, structure, and geographical and national diversity and segregation.

6.1.4 Discussion

Three main patterns on networks and cultural adaptation emerge from the models fitted in the previous section:

i) The value of more "assimilated" networks. Having a network more centered on

the host society, in terms of alter nationality and country of residence, is strongly associated to more cultural assimilation.

ii) The value of diversity. No specific alter class seems to have a continuous, linear, monotone effect on acculturation, be it positive or negative. In particular, having more co-national or transnational contacts does not always mean being less acculturated: having too much of a co-national or transnational network is bad for acculturation, just like having too little of it. *Diversity and balance* between alter nationalities and countries of residence seem to be the key to cultural adaptation.

iii) The value of structural brokerage. Diversity segregated in network structure is positively associated with acculturation, diversity cohesive in network structure is not. Migrants who broker between different nationalities and countries are more culturally adaptive than those who are embedded in dense and cohesive, although diverse, networks.

Diversity and balance

According to the effect of the compositional typology on acculturation, the networks most homogeneously centered on migrants' sending country (the *Transnational-Origin* type) are systematically associated with less acculturation, while those with a high presence of natives from the host country (the *Assimilated* type) are regularly linked to more acculturation. On the other hand, also geographical diversity in itself affects acculturation: having a geographically more diverse network, one that stretches across more countries, is associated with more acculturation. This is true *ceteris paribus*, thus within each of the compositional clusters, from the *Transnational-Origin* to the *Assimilated* one: within the *Assimilated* type, for example, networks with more geographical diversity, which also include people living in the home country, are linked to more cultural adaptation than networks including only contacts from the host country. Geographical diversity means transnationalism: hence, being more transnational, that is, having a greater part of one's network abroad (possibly in one's home country), does not necessarily mean being less culturally assimilated. Rather, within each compositional type, a *balance* between contacts in the home and in the host country (that is, geographical diversity as opposed to homogeneity) has a positive effect on cultural adaptation. In this sense, we may imagine a non-linear relationship between transnationalism and acculturation, whereby networks with too few *and* too many contacts in the migrant's home country are associated to low levels of cultural adaptation, while a *balanced proportion* of

contacts in the home and host country characterizes the networks of the culturally most adaptive migrants.

Exactly the same argument can be made on national diversity in the network. National diversity is significantly associated to cultural assimilation, even after controlling for network compositional types. Thus, a balance between different nationalities in the network, and between co-nationals and natives in particular, has a higher positive effect on cultural adaptation than the presence of any specific alter nationality. Even within the *Assimilated* network type, knowing also people who were not born in the host country, possibly migrant's co-nationals, has a positive effect on acculturation.

Diversity and balance can be read as "Integration" in terms of Berry's framework on acculturation. Networks whose composition is dominated by a single alter class can be interpreted as reflecting an assimilation, separation, or marginalization strategy, when the dominant alter class in the network is the *Host*, *Origin*, or *Fellow* class respectively. By contrast, a balanced composition between these three classes can be interpreted as the network reflection of the Integration mode of acculturation, bent on maintaining contact with the origin national community while also participating in the host society.

Consistent with this interpretation, cross-cultural psychology research has repeatedly found integration to be the most successful acculturation strategy in terms of migrant physical and psychological well-being (Berry, 1997). In particular, maintaining a diverse array of contacts that involve both the migrant's co-national community and the host society, has been documented to reduce acculturative stress[7]. Rather than the intensity of contact with either the co-national community or the host society in particular, it is the diversity of social relations and the combination of contacts with these two groups that reduce acculturative stress, thus facilitating positive cultural adaptation (Berry et al., 1987; Berry, 1997).

Brokering between differences

Beyond diversity in terms of attribute frequencies in the network, the regression results tell us something more about how network *structure* comes into play. In both the national and the geographical dimensions, only migrants with networks in the *Diversity-Segregation* types, as opposed to the *Diversity-Cohesion* clusters, score regularly higher on acculturation. In other terms, diversity seems to be linked to more cultural adaptation

[7] Although, to the best of my knowledge, this "contact" dimension has never been measured using data on migrant personal networks.

only in the presence of segregation or brokerage, that is, when heterogeneity is arranged into multiple separate subgroups, or in a network periphery different from and poorly connected to its core, rather than mixed within the same cohesive subgroups. Networks in the *Diversity-Cohesion* clusters, where national and geographical diversity exist but actors from different nationalities or in different countries tend to know each other and fall in the same subgroups, are not culturally more assimilated than those in the *Homogeneity* cluster, once the compositional typology is controlled for. The "brokering" type, rather than the "cohesive" one, of transnationalism and social integration is associated with cultural assimilation.

This specifically structural effect on acculturation is emphasized when looking at the pattern of overall network diversity in the clusters. One may think that the *Diversity-Segregation* cluster is associated to higher acculturation not by virtue of structural characteristics of its networks, but merely because its networks are on average more diverse than networks in the *Diversity-Cohesion* cluster. However, this is not the case: the difference between *Diversity-Cohesion* and *Diversity-Segregation* in these data is not merely a difference in the levels of diversity in the whole networks. In fact, and contrary to expectations, levels of overall network diversity are on average even higher in the *Diversity-Cohesion* type, that is, in the networks where diversity is connected, than in those where diversity is segregated. This is shown in Fig. 6.3, where overall network diversity is the x-coordinate on network points, and most clearly in the distribution of network diversity by cluster in Fig. 6.4. The pattern of overall network diversity across the three clusters means that the most culturally adaptive networks, those in the *Diversity-Segregation* type, are at the same time more diverse than some of the least adaptive networks (the *Homogeneity* type), and *as* diverse or even *less* diverse than some others (the *Diversity-Cohesion* type). Thus, there is a specific compositional effect *and* a specific structural effect of personal networks to acculturation: the networks associated with more cultural assimilation are *both* more diverse *and* more of a network with structural brokerage between differences.

These results are consistent with findings on ethnic identification by Lubbers et al. (2007), who worked with the same data on migrant networks used here. Lubbers and colleagues show how personal networks that are both more centered on migrant's home country *and* more dense and cohesive are more associated with ethnic-exclusive identifications. They suggest that embeddedness in dense homogeneous networks sustain culturally exclusive attitudes and views, while more heterogeneous and structurally sparse networks increase cultural openness and inclusivity. To use simple and well-known cat-

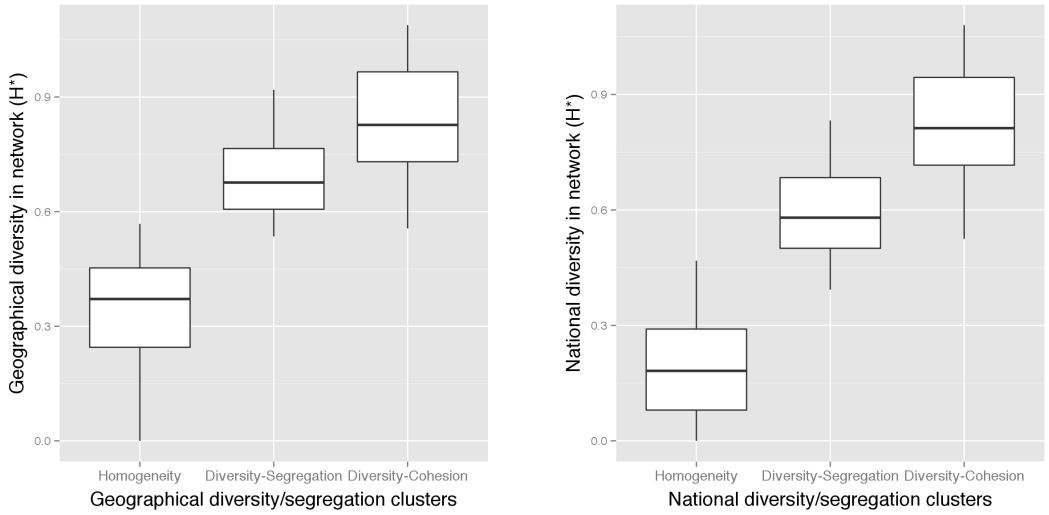

Figure 6.4: The distribution of geographical and national diversity at the network level, by clusters of geographical and national diversity and segregation, in the networks of Moroccans and Senegambians in Barcelona. Each distribution is represented by a boxplot: the box represents the "bulk" of the distribution (the 25th to the 75th percentile), with the horizontal line in the middle showing the median; the vertical segments outside the box cover the residual observations, below the 25th and above the 75th percentiles.

egories in sociological thought, we may imagine that a "Gemeinschaft" type of network, one made up of multiplex, strong and dense relations within a closed homogeneous group, facilitates strong, exclusive and conservative identities; whereas a "Gesellschaft" kind of network, one that consists more of simplex, weak and sparse relations, fosters weak, inclusive and adaptive identities[8]. Interestingly, results in this section confirm such patterns for both the geographical and the national dimensions of network homogeneity versus heterogeneity. Cultural assimilation is related to network heterogeneity in both actor nationality and country of residence. Specifically, the "brokerage" kind of transnationalism and social integration is linked to a higher inclination to cultural adaptation and change.

On the subject of identities, the link between network structure and multiple identities as revisited by Smith-Lovin (2007) helps interpret our findings on migrant networks. Smith-Lovin focuses on a general notion of identity, rather than on ethnic identity in particular. She emphasizes the relational source of each of the three main types of in-

[8]Multiplex relations are those that arise and are sustained between Ego and Alter in more than one sphere of sociability: for example, Ego and Alter are relatives and neighbors, or coworkers and members of the same voluntary association, at the same time. Simplex relations arise and are maintained in a single sphere of sociability. More on this concept in the following section.

dividual identity: (1) role identities (positions in the social structure, e.g. Professor, or Landlord) come from the relations to people in other, related roles (Professor with Students, Landlord with Tenants); (2) identities from group membership (e.g. Church member, Member of a music band, Leader of an immigrant cultural association) arise from a relationship with a group; (3) identities from salient and differentiating characteristics or traits (e.g. Sport lover, Smart person) come about as a consequence of relations and comparisons with people who do not have that trait, which makes it a salient and differentiating one for Ego.

While all identities have relational origin, weak ties and simplex, unidimensional relations facilitate multiple, fluid identities in particular. These are often *weak* identities, in that they are not essential to Ego's definition of self: they are not the first thing Ego thinks of when he is asked who he is. But as weak as they may be, these identities are likely to affect and change Ego's emotions, practices and tastes with time. Although Smith-Lovin is interested in any kind of identity, we may apply her argument to ethnic identities in particular, and notice that emotions, practices and tastes, on the subject of origin versus host culture, are much of what the Acculturation Rating Scale actually captures.

In light of the empirical findings presented here, we may add that weak, simplex ties prevail in sparse networks where Ego's social life is partitioned between multiple separate groups, whereas strong multiplex ties are dominant in networks centered around more dense and large cores: thus, the latter structure is associated to single, stronger identities, while the former fosters multiple, weak identities. The notion of "cultural holes" proposed by Pachucki and Breiger (2010) contributes to this argument. According to Pachucki and Breiger, structural holes in social networks are likely to create cultural homogeneity within cohesive subgroups, and cultural differences between them, that is, cultural holes. Thus, bridging structurally separate areas of a network often means mediating and reconciling different cultures, tastes, practices and identities, which also implies negotiating and adapting one's identity (Mische, 2008). In this way, structural brokerage comes to be linked to plural identities and cultural adaptivity.

The arguments proposed by Smith-Lovin and Pachucki and Breiger explain why structural holes and brokerage go together with more inclusive identities and more cultural adaptivity. However, the main finding in this section is that cultural adaptivity is associated not to structural brokerage *in general*, but to brokerage *between different actor attributes*; it is associated not to structural holes *in general*, but to structural holes that imply *segregation of actor attributes*. This suggests that cultural holes originate not generically from *any* brokering position, but specifically from brokering positions between areas of the network that are internally homogeneous, and different from one another,

with respect to culturally relevant alter attributes (in this case, nationality and country of residence). Homogeneity within groups (segregation of attributes) brings about cultural uniformity in the groups, hence cultural distance between groups in a diverse network, which gives Ego the role of a "cultural broker". In contrast, diversity within groups (mix of attributes) facilitates cultural similarity between groups, hence a "flattening" of cultural holes, which makes Ego less of a bridge between cultural differences. In other words, segregation is what turns *structural* holes into *cultural* holes. Thus, bringing the "weak identities" and the "cultural holes" arguments together in light of our empirical results, we may imagine that networks where the migrant bridges culturally different and internally homogeneous subgroups, from different nationalities or living in different countries, are more likely to imply cultural holes, weak ties and weak identities, thus fostering cultural adaptation.

Thus, structural brokerage is relevant to cultural adaptation, but only when it is brokerage between different, *culturally relevant* attributes. On this point, the results in this section show that both *nationality* and *country of residence* are culturally relevant attributes. A Moroccan in Barcelona is a cultural broker not only when he mediates between Moroccans and Spaniards in his network, also when he mediates between Moroccan friends who live in Morocco and Moroccan friends who live in Spain. In other terms, not only the place where one was born and socialized, and where much of one's linguistic and ethnic characteristics come from, shapes culture and produces cultural differences; also the country when one currently lives, the political community to which one currently belongs, affects cultural identities. This is a major result from the models on cultural assimilation: geography shapes culture as well as nationality, and being a *geographical* broker makes migrants culturally more adaptive as well as being a *national* broker. In this sense, transnationalism increases migrants' cultural adaptivity.

N = 128	**Population**		**Sex**		**Education level**
BCN-Moroccans	50	*Man*	59	*No education*	9
BCN-Senegambians	50	*Woman*	41	*Primary*	45
				Secondary	22
				University	13
				Other	12
Total	100		100		100

	Network composition		**Network structure**
Transnational-Origin	32	*Factional*	26
Transnational-Diaspora	22	*Hybrid*	25
Marginalized	25	*Core-periphery*	30
Assimilated	21	*Closed community*	19
Total	100		100

	Geographical diversity in network		**National diversity in network**
Homogeneity	28	*Homogeneity*	22
Diversity-segregation	27	*Diversity-segregation*	40
Diversity-cohesion	45	*Diversity-cohesion*	38
Total	100		100

Table 6.9: Distribution of categorical variables used in the model for cultural assimilation of Moroccan and Senegambian migrants in Barcelona. All figures are percentages (except the sample size *N*).

N = 128	**Acculturation Rating Scale**	**Age**	**Time since migration**
Mean	-0.98	29.5	6
sd	1	8.4	5.7
.10	-2.23	19	1
.25	-1.73	23	2
.50	-1.01	28	4
.75	-0.38	34.2	8.2
.90	0.21	42	16

Table 6.10: Distribution of continuous variables used in the model for cultural assimilation of Moroccan and Senegambian migrants in Barcelona: mean, standard deviation, 10th, 25th, 50th, 75th, 90th percentiles.

6.2 Transnational networks and economic incorporation

Besides network data, the Italian survey collected information on respondents' employment status and income, which allows us to study the link between transnational net-

works and socioeconomic integration among Sri Lankan immigrants in Milan. The socioeconomic condition of respondents is indexed in this section by combining data on employment status and income into a binary dependent variable with two possible outcomes, namely "Success" versus "Failure" in economic incorporation (section 6.2.1). These outcomes are then related to the same network dimensions considered above in the models for cultural assimilation (composition, structure, geographical and national diversity and segregation), while controlling for socio-demographic variables known to be relevant to immigrant economic integration. Network variables are used here in their original, continuous version, rather than as network typologies like those in the models for cultural assimilation. As illustrated in the following, this strategy was chosen because in this case the dependent variable is itself categorical: regressing it on other categorical variables would have meant estimating less intuitive models on multi-way contingency tables.

6.2.1 A binary index of economic incorporation

When employment status is taken into consideration, 81% of the Sri Lankans interviewed in Milan are employed in some form, while 19% are not[9]. The "employed" category, however, embraces here an array of quite different employment situations, from stable and regular jobs to part-time and informal activities. Hence, it presumably brings together respondents who are actually faring very differently in the Italian labor market.

If we turn to monthly incomes, a bimodal distribution emerges (Fig. 6.5). The overall average income of Sri Lankan respondents in Milan is around €850. Yet, a significant part of the population seems to have almost a separate distribution of incomes located below the threshold of €600, with a second modal value around €300. The antimodal value that separates the two distributions, €600, is in the range of the most recent poverty line calculated by the Italian National Institute of Statistics (ISTAT)[10].

Thus, a threshold of €600 as a monthly income seems to differentiate between two separate parts of the pool of Sri Lankan respondents in Milan, one that fares above the poverty line and another that does not earn a sufficient income to be considered safely removed from poverty in Italy. In the following analysis, this information is combined with employment status into a single index of economic incorporation: respondents who are employed *and* earn a monthly income of €600 or above will be considered to be

[9] Respectively 79 and 18 respondents out of 97.

[10] In 2011 the poverty line in Italy was between €550 and €780 in metropolitan areas. Differences depend on the Italian region. Source: ISTAT. (2012). *La povertà in Italia*. Available at http://www.istat.it/it/archivio/66983.

successfully incorporated in the Italian labor market; respondents who do not meet either of these two conditions (they are not employed, or they are employed but they earn less than €600) will be considered *not* successfully integrated in the Italian labor market. According to this index, 65% of the Sri Lankans interviewed in Milan are successfully incorporated in the labor market, being employed with an income of at least €600, while 35% are not (Tab. 6.13). Notice how this refined index yields a more restrictive criterion of economic incorporation than simple employment status, which indicated 81% of respondents as employed and 19% of them as not employed.

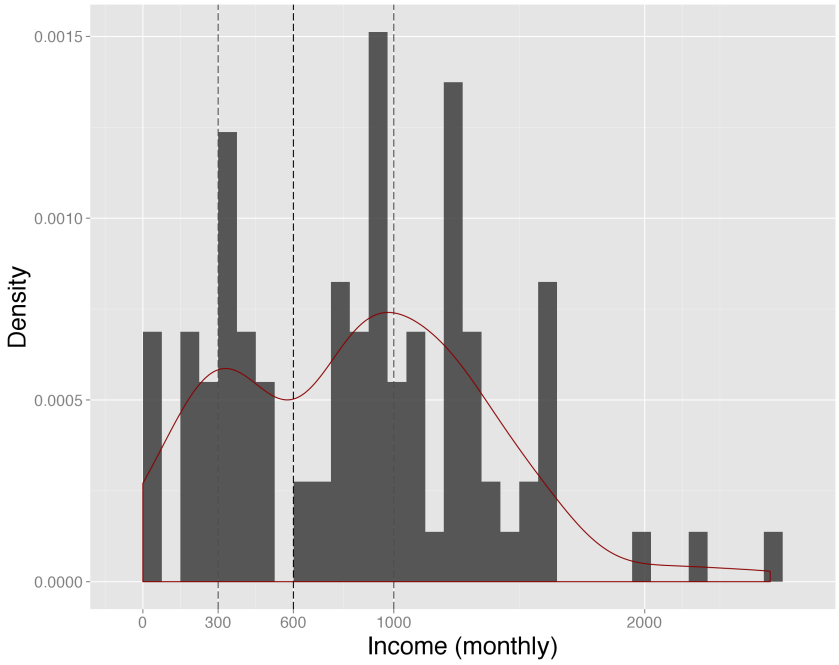

Figure 6.5: Actual distribution and estimated density curve of monthly income among Sri Lankan respondents in Milan (N=97). The density is bimodal with two peak values around €300 and €1,000. The antimode that separates the two distributions is around €600, which was chosen as the threshold of minimum income for economic incorporation.

6.2.2 Predictive models for economic incorporation

Logistic regression is used to examine the economic incorporation of Sri Lankans in Milan as related to characteristics of their personal networks. Increasingly larger sets of predictors are specified in four nested models to cover the same four network dimensions considered in the models for cultural adaptation: composition, structure, geographical and national diversity (Tab. 6.11).

As anticipated above, network variables are used here in their original continuous form, rather than by means of network typologies as categorical predictors. Using categorical regressors to predict a binary dependent variable would have meant essentially modeling a multi-way contingency table, with less intuitive models and less degrees of freedom in estimations.

On the other hand, the main reason for adopting network typologies as regressors in the models on acculturation was the high correlation between network variables within the same dimension (composition, structure, etc.). For this reason, some of the original network variables are excluded here from the models on economic incorporation, although they were used in the cluster analyses for typology identification in section 6.1: these variables are predicted by other groups of regressors, so they would be redundant if used as separate predictors in the models. Specifically, for the dimension of network composition, only the proportions of *Host*, *Origin* and *Fellow* alters in the network were used: together, they predict quite well the proportion of *Diaspora* relations, given that these four variables are (almost exhaustive) proportions of the same whole. Similarly, network modularity was omitted in the dimension of network structure, because it is predicted by the remaining structural variables: the number of subgroups of relevant size, the number of dyads and isolates, and network overall density. The proportion of family members in the network is included among the compositional predictors, based on consolidated theoretical arguments on the substantial role of family networks in immigrant economic incorporation (Boyd, 1989; Nee and Sanders, 2001).

Like for cultural assimilation, socio-demographic controls were added to the models. They cover the main characteristics that are known to matter for immigrant economic integration: age, time since migration, marital status, level of proficiency in the host language, education, and legal status. Tables 6.13 and 6.14 show the distribution of the categorical and continuous regressors used in the models for economic incorporation.

Is employed with income ≥ € 600				*N = 97*
	Model 1	**Model 2**	**Model 3**	**Model 4**
(Intercept)	2.33	7.42 ·	9.74 ·	-13.06
Age	-0.06	-0.06	-0.04	-0.06
Time since migration	-0.05	-0.04	-0.06	-0.01
Marital status: Single	-2.59 **	-2.69 **	-2.52 *	-2.94 *
Speaks Italian: A little	0.53	0.77	0.85	1.88
Speaks Italian: Fairly well	1.86 ·	1.71	2.09 ·	3.44 *
Speaks Italian: Well	3.57 *	3.9 *	4.31 *	7.28 *
Speaks Italian: Very well	5.16 *	4.63 *	4.87 *	6.33 *
Education: O-level	-1.29	-1.43	-1.56	-3.02 *
Education: Senior secondary	0.32	-0.37	-0.44	-2.05
Education: University	1.45	1.07	0.96	0.26
Has legal documents: No	-1.87 ·	-1.87 ·	-1.49	-2.84 ·
Network composition				
% Host		-3.88	-4.01	-6.8
% Origin		-7.77	-9.35 ·	6.92
% Fellow		-6.24	-8.01	12.51
% family		4.03	2.8	4.33
Network structure				
N. subgroups			-0.44	0.4
N. dyads and isolates			0	0.04
Density			0.21	2.07
Network geo. and nat. diversity				
Geographical diversity				7.34
Geographical segregation				-4.38 *
National diversity				9.41 *
National segregation				-3.78 ·
% Correctly predicted	*79*	*81*	*85*	*88*
Adjusted count R^2	*0.41*	*0.47*	*0.56*	*0.65*

Table 6.11: Logistic regression models for the variable *Is employed with income ≥ € 600*: coefficient estimates and P-value levels. Base categories of categorical predictors: Speaks Italian: *Not at all*, Education: *Junior secondary or lower*, Has legal documents: *Yes*. *Age* and *Time since migration* are measured in years. P-value levels: · P-value ≤ 0.1, * P-value ≤ 0.05, ** P-value ≤ 0.01. NOTE: The percentage of outcomes correctly predicted by the models (*% Correctly predicted*) should be compared to its minimum value, 65%, the percentage correctly predicted when predicting all outcomes to be 1 (cf. Table 6.13).

In the most simple model (Model 1), only the basic socio-demographic characteristics of migrants are used to explain "Success" or "Failure" in economic incorporation. Among these, linguistic proficiency (*Speaks Italian*) turns out to be the strongest predictor of whether the migrant is employed with an income above the poverty line: the probability of economic integration is significantly and positively associated with higher skills in Italian, and higher levels of proficiency have a stronger effect on the outcome, compared to the reference category ("Does not speak Italian at all"). This effect is steadily significant, and even growing in degree, across all the four models.

Age and *Time since migration* are not significantly associated to labor market incorporation. This suggests that besides linguistic proficiency, no other human capital characteristic that increases with age and time since migration is relevant to the economic integration of Sri Lankans in Milan. Sri Lankan immigrants in Italy are probably employed in industries and jobs where past work experience, skills learnt in the workplace, and job tenure are not valued and rewarded with higher salaries or more stable positions. Thus, once the effect of linguistic skills and schooling are isolated in dedicated regressors, age and time since migration lose any relevance to economic incorporation.

On the other hand, human capital acquired with education appears to be irrelevant as well for the probability of Sri Lankans' economic integration. Sri Lanka is known for a good overall level of schooling compared to similar economies, at least since the 1990s (World Bank, 2012[11]). This is reflected in the greatest majority of the Sri Lankan respondents in Milan having an education level not lower than junior secondary school[12]. However, above this level, further advancements in education seem to be irrelevant to how Sri Lankan immigrants fare in the Italian labor market.

The irrelevance of human capital as measured by educational level, age and time since migration is explained by the type of labor market that is accessible to most Sri Lankans in Italy, and in some cases even "reserved" for them as a labor market ethnic niche (Schrover et al., 2007; Wang, 2004; Waldinger, 1996). This mostly consists of positions that do not require and reward levels of human capital above a basic threshold: domestic services to families, elderly care, and janitorial jobs in residential buildings. Beyond these niches, other prevalent labor market outcomes for Sri Lankans in Milan are mostly unskilled jobs in the manufacturing industry and in the food preparation and serving sector, which likewise do not demand and reward high levels of educational attainment.

[11] Collections of data on education in Sri Lanka from past years are available at http://data.worldbank.org/data-catalog/world-development-indicators.

[12] This is the reason why the aggregated category of *Junior Secondary or lower* was chosen as the lowest category for education level in the models for Sri Lankan immigrants, while lower education categories were differentiated in models of cultural assimilation of Moroccans and Senegambians in Barcelona.

The importance of domestic and janitorial jobs to Sri Lankans' labor market incorporation in Milan may also explain why not being married has a steadily negative effect on the probability of economic integration across all the four models: being married and able to work as a couple is a relevant asset in the industry of domestic and janitorial services, where the most contractually protected and the most highly paid jobs are given to married couples of Sri Lankans who can work together. However, the effect of marital status may also derive from an inverse causal relationship, whereby economic incorporation increases the odds of being married, because immigrants who are better off in Italy have the economic safety that allows them to get married. On this note, our ethnographic work in Milan documented how the "transnational" marriage of a Sri Lankan immigrant normally requires relevant economic resources that are only available to those who have a stable job in Italy. Sri Lankans in Milan usually get married back in Sri Lanka, remaining there for at least one month and spending the savings of at least one year of work in Italy for long, extensive celebrations in their home villages.

Legal status is another significant predictor of economic incorporation across all the four models. Having no legal documents significantly reduces the probability of being employed with an income beyond the poverty line. This is an expected effect, since finding a legal employment is impossible, and finding any kind of employment at all is much more difficult, for immigrants with no legal status in Italy.

All the socio-demographic predictors maintain their effect essentially unchanged in the larger models that include network characteristics. The irrelevance of education to economic incorporation is confirmed, and even stressed in the complete model (Model 4) by a *negative* significant effect of the second education level (*O-level*), compared to the lowest level, on the probability of being employed with a sufficient income.

Table 6.12 gives a clearer picture on the effects of socio-demographic categorical predictors on Sri Lankans' labor market incorporation, showing the predicted probability of economic incorporation in each category of marital status, proficiency in the Italian language, education level and legal status according to Model 4[13]. The "typical" Sri Lankan immigrant in Milan, with all regressors at their mean (if continuous) or modal values (if categorical), is *married*, speaks Italian "*a little*", has achieved *senior secondary school*, and has legal documents to reside in Italy: according to Model 4, he has a 0.54 probability of being employed with an income higher than €600. The model predicts a marked drop in this probability for categories of increasingly lower proficiency in the Italian language: while the probability of being employed with a good income is very high (between 0.85

[13] In table 6.12, the predicted probability of "Success" in a given category of a predictor is calculated while setting all other predictors at their mean values if continuous, or modal values if categorical.

and 1) for Sri Lankans who speak Italian "fairly well" or better, it falls to 0.15 for Sri Lankans who do not speak Italian.

The patterns of predicted probabilities across educational levels confirm the irrelevance of this kind of human capital to the employability of Sri Lankans in Milan: the probability of economic incorporation for Sri Lankans in the lowest educational category (*Junior secondary or lower*) is 0.9, the same as in the highest category (*University*), and even higher than in the two intermediate categories of *O-level* and *Senior secondary education* (the modal category).

	Marital status		**Speaks Italian**
Married	0.54	*Not at all*	0.15
Single	0.06	*A little*	0.54
		Fairly well	0.85
		Well	1
		Very well	0.99

	Education level		**Has legal documents**
Junior secondary or lower	0.9	*Yes*	0.54
O-level	0.31	*No*	0.06
Senior secondary	0.54		
University	0.92		

Table 6.12: Predicted probabilities of Success from Model 4 (see Table 6.11) for each value of categorical predictors. Figures are predicted probabilities of Success ("Is employed with income $\geq$ €600") in Model 4 for respondents in a given category, keeping other predictors at their mean value (if continuous) or at their modal value (if categorical). Modal values of categorical predictors are underlined (cf. Table 6.13).

Network composition, as measured by the proportions of alter classes and family in personal networks, does not significantly improve the model fit when added to socio-demographic variables (Model 2). Only when structural variables are also taken into consideration (Model 3), a negative effect of co-national networks on economic incorporation emerges. More transnational networks, with more contacts in the home country, are significantly associated to a lower probability of being employed with a sufficient income. The same holds true for more "marginalized" networks, with more relations to *Fellow* co-national immigrants, although the negative effect is not significant in this case. It should be noticed that Model 3 shows these negative associations while controlling for socio-demographic characteristics. Thus, like the models of cultural assimilation, it identifies a *separate* effect of network composition on employment, independently from

such individual characteristics of migrants that also affect personal network composition as time since migration, linguistic proficiency, and education level.

When variables on network diversity and segregation are added in the full model (Model 4), they absorb any significant effect of network composition. While the controls for socio-demographic characteristics remain statistically significant, the effects of co-national network composition reverse their direction to a positive association with economic integration, and lose statistical significance. Instead, it is network *diversity* in contact nationality that turns out to have a large and significant positive effect on the probability of migrants' labor market incorporation. At the same time, ego's brokerage between different nationalities and different countries of residence (national and geographical segregation) is predicted to *reduce* the probability of employment with a good income.

Figure 6.6 graphically shows the non-linear effects of geographical and national diversity and segregation on the probability that a Sri Lankan immigrant in Milan has a job and an income higher than €600, according to Model 4. National diversity of personal network has the strongest (positive) effect on the probability of economic incorporation, with a steep curve especially between the values 0.4-0.6 of the national diversity H^* measure. While geographical diversity in the network is not a significant predictor of economic incorporation according to Model 4, geographical segregation of alters stands out as having a relevant *negative* effect on the probability of "Success", slightly less steep than national diversity. The negative association between national segregation and the probability of economic integration, although significant, is weaker and involves a narrower range of probability values.

Interestingly, when diversity and segregation of network are added in Model 4, not only do these network measures emerge as statistically significant, also the effects of socio-demographic variables become overall more significant, and larger in degree: in Model 4, language proficiency, educational level and legal status are statistically more significant than in the previous models, and the degree of their effects is higher. In other words, not only network diversity and segregation are relevant to economic incorporation in their own right, they also make the effects of respondents' individual characteristics stand out more clearly. The full model, Model 4, is the one the stresses the most the influence of individual socio-demographic features on economic incorporation, while simultaneously and *separately* revealing the network effect of diversity and segregation.

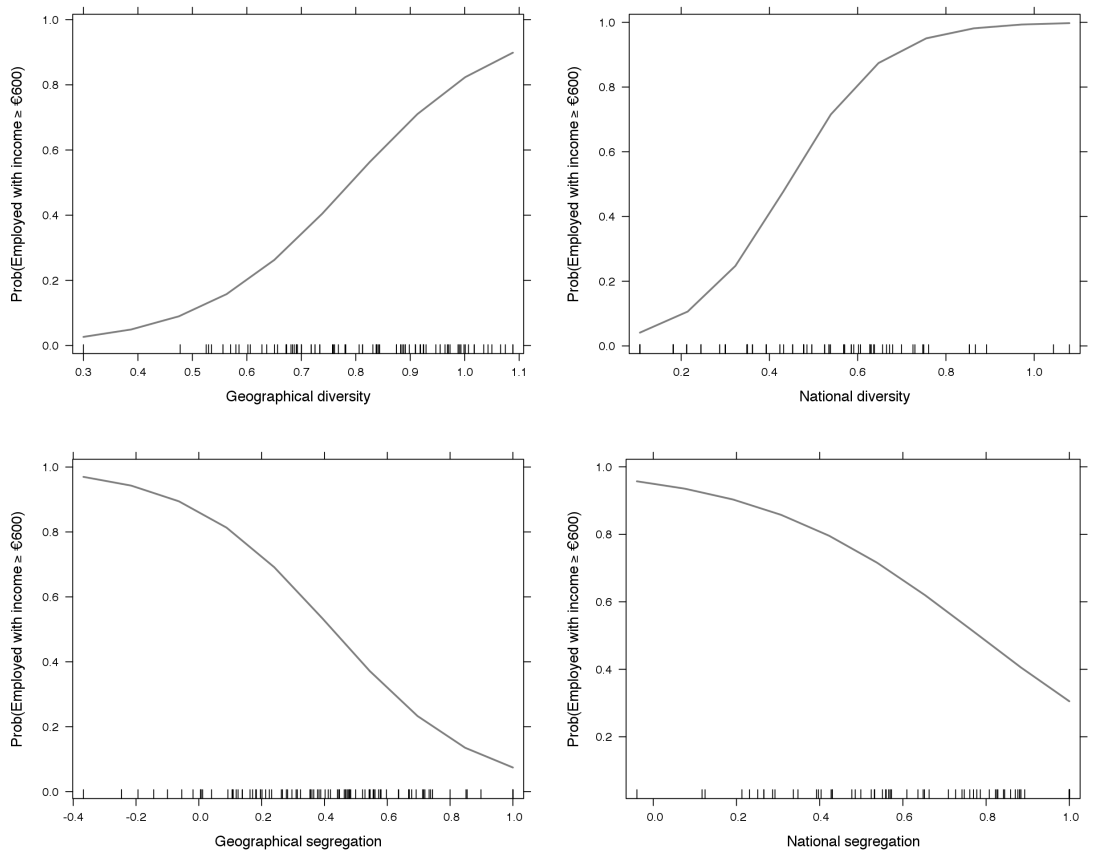

Figure 6.6: The relation between variables on network geographical and national diversity and segregation, and the probability of migrant economic incorporation, according to Model 4 (see Table 6.11). Ticks on the x axes are the actual values observed in the data for the four variables.

6.2.3 Discussion

Two main results should be discussed here on the relation between personal networks and economic incorporation:

i) The value of diversity. Rather than connectedness to alters of a specific nationality or living in a specific country, it is connectedness to multiple and diverse categories of contacts that increases the probability that the migrant fare well in the host labor market.

ii) The value of cohesion between differences. Given the same level of network diversity, the pattern of connectivity between actors with different attributes matters. Countering arguments on brokerage as social capital, it is not a brokering position

between different social circles that relates positively to economic advancement. On the contrary, low segregation, or cohesion between diversity, has a positive effect on the outcome: networks where actors with different attributes fall in the same cohesive subgroups are associated to better labor market incorporation.

Diversity and brokerage as social capital

While the relation between socio-demographic predictors and economic incorporation remains steadily significant, estimates on the effects of network composition are much more volatile across the four models for economic incorporation, in particular after variables on geographical and national diversity and segregation are introduced. While Model 3 suggests a monotone negative effect of co-national transnational networks (% *Origin*) on economic incorporation, this association changes direction and loses significance when network diversity and segregation are accounted for in Model 4. Like in models for cultural assimilation, this points to a non-linear and non-monotone effect of the frequency of specific alter classes in the network. It is not the number of co-national contacts (in the home or in the host country), nor the number of natives (*Host* alters), that has a negative or positive effect *per se* on economic integration. Rather, it is the *heterogeneity* of the network that facilitates migrant economic advancement.

In this sense, the relation between network transnationalism and economic integration can be conceived of as non-linear and non-monotone: the least integrated migrants are those with too much of a transnational network, but also those with *too little* of it. Similarly, having more *Fellow* migrants in the network does not always mean less integration, and having more relations with natives from the host society does not always mean more integration. The diversity and balance of connections, rather than connectedness to a specific kind of contacts, are the key to the network effect on integration, in both the cultural and socioeconomic domain.

From this standpoint, traditional arguments on bridging social capital are in part validated by data on migrant integration. Similar to Granovetter's theory of weak ties, in Burt's arguments on structural holes or in Lin's propositions on the "extensity of ties", being connected to a more diverse and extended array of social circles is an advantage to immigrants' economic advancement. This upholds the view that diverse weak ties are a constant vehicle of fresh and non-redundant information and resources, and is consistent with findings from qualitative research on the advantages of diverse weak ties, and the disadvantages of homogeneous strong ties, for migrant social integration (Hagan, 1998).

As far as network composition is concerned, the benefits of compositional diversity emerge consistently from results on both cultural and economic integration. However, evidence is more mixed on the structural component of the network effects on integration. While *separation* between diversity was shown to facilitate cultural adaptation in the previous section, *cohesion* between diversity seems to be more beneficial in the domain of economic incorporation. Among Sri Lankan respondents in Milan, economic incorporation is more likely when the migrant's personal network includes relations from different nationalities in even proportions (national diversity), but also when contacts from different nationalities and in different countries know each other, instead of forming separate, single-nationality or single-country subgroups. The "cohesive" type of transnationalism and social integration in Ch. 5, Fig. 5.3, rather than the "brokering" type, seems to be more associated with economic integration among Sri Lankans in Milan.

To be sure, the negative effect of the geographical and national segregation index on migrant economic incorporation does not need to be read as countering traditional arguments on brokerage as social capital. The segregation index is a measure of brokerage *between alters with different attributes*, it is not a purely structural measure of brokerage between network subgroups (see section 5.3.1 in Ch. 5). The sheer structural dimension is represented in the models for economic incorporation by such measures as the number of cohesive subgroups in the network, the number of dyads and isolates, and network density. As discussed in Ch. 5, section 5.1.2, it is these metrics that capture the extent to which Ego is a structural broker between multiple factions, rather than being embedded in more core-centered and dense structures. However, these measures do not seem to bear any significant effect on labor market integration in the Sri Lankan data.

On the other hand, what the geographical and national segregation indexes capture is the extent to which Ego is a broker, not between generic cohesive subgroups in his networks, but between alters from different nationalities, or living in different countries. As illustrated in Ch. 5, section 5.3.3, such brokering positions between different nationalities and countries are not predicted by specific network structures, and there is much variation in the observed segregation values within the same structural type. Nevertheless, there exists a pattern between these two variables, quite in the opposite direction, whereby the segregation level reveals something about network structure: zero or negative segregation values normally arise in core-centered networks, while the highest values of segregation are frequently associated to multiple-subgroup, factional structures.

Thus, while the Sri Lankan data do not support the argument of bridging social capital, given the irrelevance of structural network variables in the models, they cannot be

considered as outright countering this argument. The data do not indicate that structural closure and density *in general* are beneficial to migrant economic incorporation. What these data are pointing out as an advantage are cohesion and density *between different nationalities and different countries* in the network. In other words, economic integration in the Sri Lankan population is associated to attribute heterogeneity within cohesive subgroups – *diversity within closure*. This is not a purely structural characteristic of the network; closure and density *per se* are not related to economic incorporation. Rather, this is a specific combination between structural and compositional characteristics: networks where closure and cohesion bring together contacts with different attributes are positively associated to migrant economic integration; networks where Ego is a broker between separate subgroups, *and* different alter attributes fall into different subgroups so as to be poorly connected, are negatively associated to it.

Network closure as social capital

The vast research on brokerage as social capital is mostly based on empirical studies on non-migrant, mainstream populations in mainstream contexts, typically workplaces in American and European companies: from the Bostonian professional, technical, and managerial employees in Granovetter's classical study (Granovetter, 1973; 1974), to managers in high-technology firms (Burt, 1992), loan officers in commercial banks (Mizruchi and Stearns, 2001), employees in chemical firms (Burt et al., 2000), workers in high-technology companies (Mehra et al., 2001), research and development scientists (Gabbay and Zuckerman, 1998), etc. (see Burt, 2000, for a review). While this evidence is very clear concerning the positive relation between bridging structural positions and socioeconomic advancement in Western organizations, less is known about the effects of brokerage in non-Western populations and cultures. As a matter of fact, recent research has suggested that cultural specificities may jeopardize the usual working of bridging social capital in non-Western contexts: in a study on Chinese high-tech companies, Xiao and Tsui (2007) find that the typical Chinese collectivistic culture, as well as a work ethic promoting high commitment and mutual investment between people, cause structural holes to have *negative* effects on workers' economic advancement.

As far as immigrant minorities are concerned, they obviously bring together cultural specificities and social disadvantages that make them very different from the typical populations described in the research on brokerage and structural holes. In fact, migration studies have explored several mechanisms whereby network *density and closure*, rather than brokerage in sparse networks, come to be a source of social capital in migrants' path to incorporation. I will focus here on three of those mechanisms, which ethnographic

work in Milan has shown to be at play among Sri Lankans: ethnic solidarity, enforceable trust, and multiplex relations.

Ethnic solidarity is a sense of community that arises in an ethnic group whose members experience together, and recognize in each other, the state of being foreign or minority members; as well as marginalization, discrimination, and possibly exploitation by majority members. This notion is a version of the more general concept of "bounded solidarity" (Portes and Sensenbrenner, 1993; Portes, 1998), the solidarity that binds together any kind of social formation whose members identify and recognize themselves as sharing a common fate and belonging to a distinct group, be it a religious sect, an ethnic minority or a social class like Marx's proletariat.

In the realm of economic action, identification with the same foreigner minority and ethnic solidarity bring migrants from the same nationality to help each other in finding a job or an accommodation, to vouch for a co-national worker with a known employer, to lend each other money and other resources more easily. Although solidarity and mutual help among co-national immigrants should not be overestimated and overrepresented, and competition and conflict are also common between co-nationals as discussed in Ch. 4, section 4.1.4, there is no doubt that belonging to the same immigrant minority does create a positive bond and at least a preference over people from other nationalities, and that this pattern exists among Sri Lankans in Milan.

Dense and closely knit co-national networks, as opposed to fragmented and poorly connected ones, facilitate communicating, sharing experiences, recognizing similarities, perceiving similar people as a cohesive, bounded group rather than as a collection of individuals. Thus, they increase the sense of having common interests, problems and goals, and mutual recognition as people belonging to the same group. This is also one reason why, as discussed in the section on cultural assimilation, networks of this kind are associated to stronger and more exclusive ethnic identifications. In this way, more closed communities increase ethnic solidarity, hence the level of mutual support, obligations and expectations existing in the group, that is, the social capital available to each group member.

Enforceable trust (Portes and Sensenbrenner, 1993) is the reciprocal trust that arises between members of a community, who value their membership in that community, and know that betraying other members' trust means exclusion from it. The term "community" here refers the network of co-ethnic kin, friends and acquaintances in which

the immigrant is embedded. It is implied that the community is a source of material and emotional support for the migrant, and that conflicts with and exclusion from one's community cause the loss of such support.

In the notion of enforceable trust, mutual trust between A and B exists insofar as it can be *enforced* with sanctions or rewards by the community to which both A and B belong. A is willing to hold a credit with B, and trusts B to fulfill his debit, because he belongs to the same community as B, he knows that B values being part of that community, and knows that the community will monitor the relation between them. The community collectively censures deviant behaviors, like disregarding another member's expectations and betraying his trust, and rewards compliant behaviors, like meeting another member's expectations and satisfying his trust. Disapproval, bad reputation, and even ostracism from the community are the typical sanctions, and they would deprive B of the pool of support and resources that the community offers, that is, from the social capital originating from the community. Recognition and good reputation in the community are the typical rewards, and they would enhance B's ability to gain help, favors and loans from community members, that is, to use the community social capital.

Enforceable trust is what allows A and B to establish a fruitful relation although that relation is not protected by a contract or by the law. Therefore, enforceable trust is crucial to many aspects of immigrant economic life and coping strategies, from accessing informal loans of money and other assets, which would not be otherwise available to immigrants, to starting up businesses in the host or in the home country. The well-known phenomenon of informal loans in rotating credit associations, the typical instance of enforceable trust in sociological literature since the 1970s (Light, 1972; Portes, 1998), was well documented among Sri Lankans during our fieldwork in Milan. Enforceable trust is also essential to starting up a business in Sri Lanka while living in Italy, another economic strategy that we observed among Sri Lankans in Milan.

Small transnational businesses, like fishing companies in Sri Lanka or private carriers connecting Sri Lankan villages by bus, are often owned or co-owned by Sri Lankans in Italy, while they operate and are managed in the Island. Enforceable trust is essential to the success of such businesses, as managers in Sri Lanka have continuous chances for opportunistic behaviors at the expense of owners in Italy. The manager of a bus carrier in Sri Lanka can ask the owner for more money telling that municipalities are charging higher administrative fees to issue bus licenses; the driver of a taxi in Colombo can falsely report an accident and tell the taxi owner in Italy that he needs money to fix the car; the manager of fishing boats owned in Italy can report lower revenues to the owner. Unable to control their agents in Sri Lanka, migrant owners can trust them only insofar

as there is a community in the Island that can monitor their behavior. The more agents are embedded with owners in a closely knit transnational community, the more both the cost of monitoring and the risk of opportunistic behavior are reduced. If creditor and debtor, owner and agent, are embedded in the same closed and dense transnational community, trust is much more easily created and enforced between them.

This also means that enforceable trust is a *transnational* mechanism, and tightly knit *transnational* communities, or *transnational closure*, are its source. If a Sri Lankan in Milan holds a debit with a co-national, sanctions and rewards for his behavior may also be administered to his relatives Sri Lanka. Families still in Sri Lanka are held fully responsible for the financial obligations of their kin in Milan. Sri Lankan immigrants who are in credit with co-nationals in Italy, can count on their friends and relatives in Sri Lanka to enforce their credit with the debtors' families in the Island. This mechanism does not even require specific actions to be taken in Sri Lanka to enforce the credit: reputation operates automatically, and transnationally, as a source of enforceable trust. If a Sri Lankan does not pay for his debt in Milan, the reputation of not being trustworthy will likely reach his hometown and affect his family's ability to borrow in Sri Lanka. This also means that having a well-off and trustworthy family in Sri Lanka is a "collateral" asset for Sri Lankans who have debts in the immigrant community in Milan. Symmetrically, having a rich relative in Milan represents an asset that increases the credibility and trustworthiness of people in Sri Lanka.

Summing up, two mechanisms are essential to the working of enforceable trust in a community, especially if it is a transnational one, involving long physical distances between its members:

i) Monitoring. A community can be a source of enforceable trust as long as it has the ability to monitor the behavior of its members. When the two parties of an agreement, besides knowing each other, have many friends or relatives in common, these common contacts are all sources of monitoring against opportunistic behaviors of either of them. On the other hand, having many common contacts also means that a *positive* and compliant behavior will be more likely observed by many people besides the counterpart.

ii) Communication. When the two parties are embedded in the same dense community, deviation is not only more easily discovered, it is also more easily communicated to the rest of the community. The same holds for the recognition of a good and compliant behavior. News spread more quickly, bad or good reputation arises more easily, and the community's sanctions or rewards are more rapid and

effective.

Thus, the working of monitoring and communication explains why enforceable trust is more effective in more tightly knit, dense, and close communities. If such communities are also transnational ones, embedding the migrant in a flow of multiple dense relations between home and host country, enforceable trust fosters transnational economic activities, like starting up businesses in Sri Lanka while living in Italy. A closely knit transnational network, with a high level of connectedness between people in different countries, is pointed out in our data by low values on the geographical segregation index.

Multiplex relationships, as opposed to simplex ones, are often a feature of closed and dense networks (Coleman, 1988). A relationship is multiplex if it arises and is sustained in multiple spheres of sociability and from different roles at the same time. A multiplex relationship exists between relatives who are also neighbors, or between coworkers who also go to church together. Simplex relations prevail in a "partitioned" kind of social life, where each sphere of sociability of Ego is associated to one specific group of contacts, and each group of contacts is associated to one specific domain of sociability: family, coworkers, neighbors, people with whom Ego goes to church, contacts with whom Ego exercises, etc. Closure and density are a correlate of multiplicity, as networks where everyone know each other are more likely to come about when actors share multiple spheres of sociability. If many of Ego's coworkers are also Ego's neighbors (multiplicity), then all of Ego's coworkers will be more likely to meet all of Ego's neighbors (density); if Ego's spheres of sociability do not overlap (simplicity), then Ego will be more likely to broker between unconnected groups corresponding to different spheres (structural holes).

Multiplicity is a source of reciprocal obligations, mutual expectations and trustworthiness (Coleman, 1988). Obligations are more likely to arise between persons who have different types of relations at the same time. An obligation from A to B arising in the context of one relation may be fulfilled in the context of another: B helps A solve a problem at work (relation between coworkers), A babysits B's children at home (relations between neighbors). In general, more than a specific exchange of one favor for another, multiplicity facilitates relationships in which reciprocity takes place more easily: A and B will be more willing to be in credit or debit with each another, because obligations arising in their relationships will be more easily fulfilled in one of many domains and circumstances. Thus, multiplicity increases social capital in the sense of mutual obliga-

tions, expectations, trustworthiness and solidarity.

The downsides of network closure

For all the positive effects they may bring about in terms of social capital, dense and closely knit communities also have well-documented negative effects for individual economic advancement, in both immigrant and mainstream populations. Structural closure is often a correlate of homogeneity of social circles, redundant information, social pressure, constraint and control.

In an immigrant population, structural closure of networks may entail closure from non-ethnic, non-redundant information and resources. Among Sri Lankans, closure from Italian social circuits may mean having biased and inaccurate information, or no information at all, on jobs, the housing market, or opportunities to become legal. Closed co-ethnic networks may be a vehicle of inaccurate information and wrong practices, for example in such domains as health care or the legal rights of workers or tenants in Italy.

Closed communities often bring about social control, pressure to conform to the group, or resistance to innovation (Portes and Sensenbrenner, 1993). For an immigrant, innovation may include taking on a better job, or going to live in a new neighborhood with better facilities. In a closed Sri Lankan community in Italy, women may face the opposition of family or friends when planning to take on a non-traditional, more qualified job, one that is not common for Sri Lankan women in Italy and possibly requires roles and practices in conflict with the community-held female model. In a closed co-national community where no relative or friend has ever gone to college, Sri Lankan youngsters may be discouraged to go to college instead of taking on a job upon high school graduation. In contrast, having "outsiders" in the network, for example Italians or contacts from a third nationality, means observing different attitudes and behaviors, ones that possibly encourage innovation and ease community pressures to conform to the group. A dense community which brings together Sri Lankans, possibly Ego's kin, and Italians, would reflect in the data in low values on the national segregation index.

Finally, a closed community may impose to Ego excessive obligations toward community members. These may have relevant economic effects: for example, this is the case when Ego is obliged to share a business with relatives or close friends, to employ them, or to vouch for them with other employers, irrespective of their actual abilities and suitability to the job. In general, tightly knit and strong communities may demand Ego to constantly share his economic success with the group, a social obligation which may turn into free-riding practices of other community members and hinder individual achievements (Portes and Sensenbrenner, 1993). As discussed in the section on con-

tacts' "emotional closeness" (Ch. 4, section 4.1.4), the problem of excessive obligations within communities of family and friends was documented among Sri Lankans in Italy by our ethnographic work, as well as by other ethnographic research (Pathirage and Collyer, 2011). As a matter of fact, the family conflicts spawned by this problem contribute to explain the pattern of regularly lower "closeness" scores that are found among co-national family and friends living in the host country, compared to family and friends remained in the home country.

Diversity within closure

Evidence on Sri Lankans in Milan supports the claim that economic incorporation is facilitated by diverse networks, yet by networks where actors with different attributes fall in the same cohesive subgroups – diversity within closure. Diversity within closure is captured in the data by higher values on national and geographical diversity, and simultaneously lower values on national and geographical segregation: precisely the combination of predictors that the models show to be associated with economic incorporation. In particular, low values on national segregation point to networks where actors from different nationalities, for example Sri Lankans and Italians, fall in the same cohesive subgroups; low values on geographical segregation capture networks where actors living in different countries, for example Sri Lankans in Italy and Sri Lankans in Sri Lanka, are embedded in the same dense community – the sort of transnational closed community described above in the discussion on enforceable trust.

In light of the existing literature on positive and negative effects of dense and closed communities, my central argument is that an optimal network formation for immigrant economic incorporation is one that brings together the advantages of "closure" social capital, and those of diversity and connectedness to different social circuits. Optimal networks are those with a *balance* between closure and diversity. They are networks where actors are diverse enough (in this case, in nationality and countries of residence) to put Ego in touch with different social circuits, information, resources and models, yet where diversity does not go together with fragmentation. And they are networks where closure is high enough to create community social capital, yet the presence of "outsiders", e.g. some Italian contacts in a closely knit Sri Lankan group, avoids the negative effects of community homogeneity and pressure. Diversity within closure provides immigrants with two social resources at the same time, both useful for economic incorporation: the social support and safety coming from a strong social structure on the one hand, and connectedness to different social circuits coming from contact diversity on the other.

Finally, diversity with low segregation may also signal that the migrant has a dense

family network established in the host country, as opposed to a similar family network existing only in the home country. If a Sri Lankan's extended family lives in Italy, it is more likely to know Italian friends of Ego's and bring them into its dense, closely knit network, which results in national diversity and low national segregation. At the same time, a dense family network in Italy is likely to still have connections to people back in Sri Lanka, which results in geographical diversity and low geographical segregation. Establishing one's family in the host country, in contrast to the typical pattern of sojourning migration, has been shown to have important advantages for migrant economic incorporation (Nee and Sanders, 2001; Kogan, 2006). Migrants who live with their families tend to feel more stable in the host country, and thus to be more willing to invest in human capital specific to their new place of residence, which fosters their economic advancement after migration. By contrast, sojourning immigrants, who moved alone, left their family behind in the sending country, and focus on short-term savings with the goal of going back home soon, are more reluctant to invest in skills and knowledge specific to a particular place and labor market. This makes them more likely to become entrapped in low-skilled and low-paid jobs, irrespective of how long it will actually take them to return home with enough savings – and whether they will ever return.

In other words, having a network closer to the "cohesive" type of transnationalism and social integration may well reveal a situation in which the migrant is more established in the host society, has a more integrated family network there, feels more permanent and less of a temporary sojourner, and thus is more inclined to invest in the human capital that facilitates his incorporation in the host labor market. Diversity with low segregation, in both the national and the geographical dimension, indicates situations of this sort, in contrast to immigrants whose dense family network has been left behind in the home country. In the latter case, migrants may show the same level of network diversity, but they will have a much more segregated network, where contacts in the home country have fewer relations with contacts in the host country, and natives of the host country have fewer connections with co-nationals. This also suggests how measures based on ego-network composition and structure, and on the combination thereof, may help to differentiate between types of migration and incorporation trajectories traditionally distinguished by migration studies, such as sojourning versus more stable immigrants.

N = 97	**Is employed with income ≥ € 600**		**Marital status**		**Speaks Italian**
Yes	65	*Married*	82	*Not at all*	11
No	35	*Single*	18	*A little*	28
				Fairly well	26
				Well	13
				Very well	22
Total	100		100		100

	Education level		**Has legal documents**
Junior secondary or lower	14	*Yes*	90
O-level	28	*No*	10
Senior secondary	43		
University	14		
Total	100		100

Table 6.13: Distribution of categorical variables used in the model for economic incorporation of Sri Lankan migrants in Milan. All figures are percentages. NOTE: the O-level is an intermediate qualification taken in Sri Lanka before the end of senior secondary school, normally at the age of 15 or 16 years.

N = 97	**Age**	**Time since migration**
Mean	41.7	9
sd	10.7	8.1
.10	28	1
.25	32	3
.50	42	6
.75	51	12
.90	55.4	22

	% Host	**% Origin**	**% Fellow**	**% family**
Mean	10	36	42	30
sd	8	15	15	11
.10	2	17	26	18
.25	4	24	31	22
.50	9	36	40	29
.75	13	49	51	36
.90	19	56	63	44

	N. subgroups	**N. dyads and isolates**	**Density**
Mean	2.7	9	0.29
sd	1.1	7.2	0.1
.10		1	0.17
.25		3	0.23
.50		7	0.28
.75		14	0.36
.90		20	0.42

	Geographical diversity	**Geographical segregation**	**National diversity**	**National segregation**
Mean	0.81	0.39	0.46	0.74
sd	0.16	0.3	0.22	0.28
.10	0.6	0.01	0.18	0.32
.25	0.69	0.18	0.3	0.53
.50	0.84	0.4	0.45	0.83
.75	0.92	0.58	0.63	1
.90	1	0.74	0.73	1

Table 6.14: Distribution of continuous variables used in the model for economic incorporation of Sri Lankan migrants in Milan: mean, standard deviation, 10th, 25th, 50th, 75th, 90th percentiles. All variables, except *Age* and *Time since migration*, refer to respondent's personal network. NOTE: *N. subgroups* (the number of subgroups of relevant size in the network) is an integer that ranges from 1 to 5, so its percentiles have been omitted.

6.3 Conclusions

This chapter proposes an attempt at relating transnational networks to outcomes of cultural and economic assimilation in immigrant minorities. Transnational networks were described and measured by the metrics introduced in the two previous chapters, so as to cover the dimensions of network composition and structure, and then combine them into the dimensions of geographical and national diversity and segregation. The results strongly support the claim that networks matter, with both their compositional and structural characteristics, to the patterns of migrant assimilation.

Cultural assimilation was related to typologies of personal networks extracted by cluster analyses on the four relevant network dimensions separately (section 6.1.2). These typologies were interesting in their own right, as they were strikingly consistent with theoretical predictions on the patterning of network characteristics. In the first place, the compositional typology could be interpreted in terms of Berry's (1997) modes of acculturation, as Brandes et al. (2010) had already pointed out by analyzing the Spanish data. Secondly, the structural typology uncovered the same types of ego-network structure that were imagined in Ch. 5 with a logical map of measures from the Girvan-Newman algorithm. This showed that such structural types are empirically relevant, besides being theoretically meaningful, and that the Girvan-Newman algorithm is an effective tool to uncover them in real-world networks. Third, the typologies on geographical and national diversity and segregation matched the theoretical distinction between the three cases of "Total homogeneity", "Maximum segregation" and "Minimum segregation" outlined in Ch. 5, showing that such a distinction does exist among actual personal networks in migrant populations.

The identification of network typologies also gave empirical substance to the categories of "brokering" and "cohesive" transnationalism and social integration discussed in Ch. 5. These categories emerged in the clusters of geographical and national *Diversity-Segregation* versus *Diversity-Cohesion* respectively. The association between different typologies further validated this distinction, showing how a brokering kind of transnationalism is more typical of transnational networks centered on the home country (the *Transnational-Origin* cluster), whereas a cohesive kind is more common among transnational networks with many connections in the international diaspora (the *Transnational-Diaspora* cluster). Similarly, a brokering type of social integration is more frequent in *Marginalized* networks with many connections among co-national immigrants, while a cohesive type is more typical of *Assimilated* networks with many relations to natives of the host society.

When assimilation outcomes were modeled as predicted by network characteristics, the relevance of network composition emerged strongly, and separately from individual socio-demographic variables like time since migration and educational level. In the domain of cultural assimilation, less transnational networks (with less *Origin* contacts) and more assimilated ones (with more *Host* contacts) were clearly associated to better cultural adaptation. However, in both the cultural and the economic dimension, *diversity and balance* between contacts from different nationalities and in different countries came out consistently as the key to assimilation, rather than connectedness to a specific kind of contacts, be they natives or co-nationals, people living in the same country or alters residing abroad.

Concerning the association between transnationalism and assimilation, the relevance of geographical diversity suggests a non-linear, non-monotone relationship between these two dimensions, as in an inverted U curve which increases up to an optimal situation, and then decreases: assimilation is low if the migrant has too extensive a transnational network, but it also decreases if the migrant has too little of it. The most balanced and diverse networks, with average "values" of transnationalism, are those associated with the optimal assimilation outcomes, ideally at the maximum of the curve (Fig. 6.7). This is consistent with the results in Ch. 4 (section 4.1.1) on the relation between frequencies of *Origin* and *Host* alters, used as simple measures of transnationalism and assimilation with both individual data and aggregate statistics on the five populations surveyed. These frequencies suggested that there is no single linear and monotone relationship between transnationalism and assimilation as indexed by *Origin* and *Host* contacts: at both the individual and the population level, there were cases of positive relationship, with low connectedness (or high connectedness) to both *Origin* and *Host* contacts at the same time; as well as cases of negative relationship, with many connections to *Origin* and few connections to *Host* alters or vice versa.

A non-linear, increasing and then decreasing relationship between transnationalism and assimilation would explain such patterns, embracing both cases of positive and negative association between the two dimensions, as shown in Fig. 6.7. As discussed in Ch. 4, section 4.1.1, this would also fit with Berry's framework: namely, with the claim that connectedness with the home society and culture, and participation in the host society and culture, are two separate dimensions, and migrants can score high or low on both simultaneously, or rather high on one, but low on the other, which results in the four acculturation modes of Separation, Marginalization, Assimilation, and Integration. Fig. 6.7 is consistent with this framework, and our findings that balance between different nationalities and countries in the network is associated to culturally more adaptive

and economically better incorporated migrants uphold the claim that Integration, that is, a balance between cultural maintenance and participation in the host society, is the most successful and the least traumatic pattern of migrant incorporation, which has been widely documented in cross-cultural psychology. In this study, the optimal acculturation mode of Integration corresponds to an average level of transnationalism, as opposed to too low or too high degrees of transnationalism as shown in Fig. 6.7.

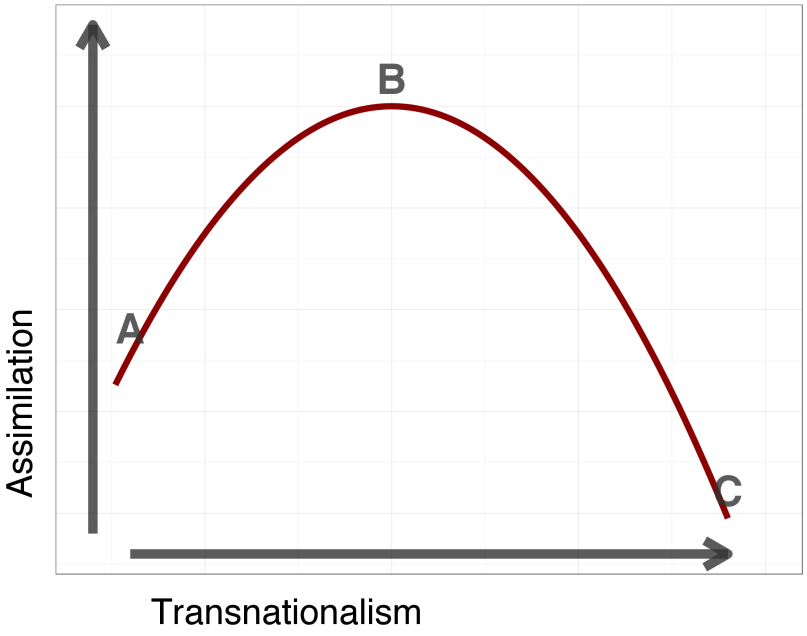

Figure 6.7: An hypothesis of non-linear relationship between network transnationalism and assimilation. Assimilation increases with transnationalism up to a certain level, then it decreases with transnationalism. The best assimilation outcomes are found among migrants with balanced, average levels of network transnationalism (B). High levels of transnationalism can coexist with high levels of assimilation (B), or with low levels of assimilation (C). Also low levels of transnationalism can coexist with low levels of assimilation (A). In terms of Berry's (1997) modes of acculturation, A can be interpreted as "Marginalization", B as "Integration", and C as "Assimilation".

Furthermore, the positive effects of network diversity on assimilation are in line with traditional arguments on the advantages of "bridging" social capital, which Granovetter's and Burt's works have well established in economic sociology. Yet compositional diversity is not the only point in the "bridging" argument, nor the most important. In fact, the main contention of this argument is that a specific *structural* position in the network, namely one that brokers between otherwise unconnected subgroups, is the paramount

source of social capital, with diversity and other useful resources being its by-products. Regarding the advantages of brokerage this chapter offers a mixed evidence.

Structural brokerage does emerge as relevant and positive to cultural adaptation. This is not, however, any kind of brokerage, but brokerage *between differences*, as measured by the geographical and national segregation indexes. The most culturally assimilated immigrants are those who bridge unconnected actors from different nationalities or in different countries. The notions of weak identities (Smith-Lovin, 2007) and cultural holes (Pachucki and Breiger, 2010) help interpret these finding. Structural holes are more likely to be *cultural* holes when the unconnected areas of a network are also different from each other with respect to culturally relevant actor attributes, that is, when diversity goes together with high segregation in the network. Bridging cultural holes leads to weak identities, thus to a greater disposition towards cultural change and adaptation in the host society.

Interestingly, not only nationality, also the country of residence emerges as a culturally relevant attribute: brokering between people from different nationalities in the same country makes the migrant culturally more adaptive, just as much as brokering between people from the same nationality who are currently living in different countries. Geography shapes culture and spawns cultural divides just like nationality: in this sense, being transnational, that is, brokering between different countries, means being exposed to and mediating between different cultures, thus it fosters cultural adaptivity.

On the subject of economic incorporation, structural brokerage seems to lose its relevance. A different network formation, with *cohesion* among different alter attributes, is associated to economic incorporation among Sri Lankans in Milan. The positive effects of cohesion, rather than brokerage, for economic incorporation are explained by traditional arguments made in migration studies on "closure" social capital and its weight in migrants' economic strategies. Yet again, not any kind of cohesion is beneficial for the path to labor market incorporation. The ideal networks seem to be those where cohesion does exist, but it embraces different kinds of actors; the networks where differences are not segregated into separate subgroups; in a single phrase, the networks with *diversity within closure*. Diversity within cohesive networks limits the downsides of closure that are well documented in the social capital literature. It allows the migrant to rely on strong and dense network structures, sources of reciprocity and mutual trust, while limiting the negative effects of homogeneity, social control, pressure, and resistance to innovation that closure can also bring about.

Three main points should be retained as summarizing the results in this chapter:

i) There exist network effects on migrant assimilation that do not depend on individual characteristics traditionally used to predict the patterns of migrant incorporation into host societies. These effects may even be *better* predictors of assimilation outcomes than socio-demographic variables.

ii) Network composition, that is, the degree to which the migrant is connected to people with certain attributes, matters to both cultural and economic assimilation. More than connectedness to a specific attribute or alter category, it is attribute diversity within the network that has positive effects on cultural adaptation and economic incorporation.

iii) Also network structure plays an important role, but not always in the same way. Cultural adaptation seems to be fostered by structural brokerage, while network closure is more relevant to migrant economic incorporation. In any case, structure must be *qualified* for its effects on assimilation to emerge: not any kind of brokerage facilitates cultural adaptation, but brokerage between differences; not any kind of closure benefits economic incorporation, but diversity within closure. The index of segregation proposed in the previous chapter effectively combines structure and composition to capture the specific structural patterns that matter the most to migrant assimilation.

Chapter 7

Conclusions: the social capital of diversity, cohesion and segregation in transnational networks

The people whom we know, and how they know each other, affect much of our life, independently from our own individual characteristics. In the dissertation, this observation was applied to international immigrants and their path of cultural and economic adaptation to receiving societies. The analyses used data from two surveys on personal networks of Latin American, African, and Asian migrants interviewed in Barcelona, Spain, and in Milan, Italy.

The survey in Barcelona was funded by the American National Science Foundation and managed in 2005-2006 by Chris McCarty (University of Florida) and José Luis Molina (Universitat Autònoma de Barcelona). It was the first survey to specifically focus on immigrants' personal networks, as sampled by a fixed list of 45 social contacts, their attributes, and the relations among them. Social contacts, the "nodes" or "actors" of personal networks, were defined very broadly: they could be close relatives, extended family, friends or acquaintances. Yet, they had to be *current* and *active* social contacts: people that the migrant had met in the past two years, and that he could currently contact if he wanted. The relations between contacts, the "ties" of personal networks, were broadly defined as well: a relation existed between two contacts in the migrant's network, if the migrant reported them to know each other. Data on a total of 289 personal networks of Argentinian, Dominican, Moroccan, Senegalese and Gambian migrants from the Spanish survey were used in this dissertation.

The Italian survey was inspired by the work in Barcelona, and adopted the same def-

inition of social contacts and personal networks: in particular, it used exactly the same "name generator", that is, the question asked to elicit a list of contacts. The survey in Milan was part of a research project on the personal networks and assimilation patterns of Sri Lankan immigrants in the city. I managed the project, which was funded by the Center for Interdisciplinary Studies in Economics, Psychology and Social Sciences (CISEPS) at the University of Milan-Bicocca, and Centro Studi Luca d'Agliano (LdA), in the years 2011-2012. The survey was prepared in one year of ethnographic work throughout 2011, mostly based in Milan; participant observation and interviews were also carried out during about three weeks of ethnographic work in Sri Lanka, in the home villages of some key informants in the area of Kuliyapitiya (June 2011). The actual survey started in December 2011, and 107 Sri Lankans were interviewed in Milan during the following four months. The preliminary ethnographic work proved to be crucial for different aspects of the project: establishing a rapport of trust between the researchers and the Sri Lankan community in Milan; defining the relevant and appropriate questions to be asked in the survey interviews about the subjects of interest; designing a sampling strategy and actually collecting the sample; carrying out the interviews in a relationship of cooperation and mutual interest and trust between interviewers and respondents; interpreting the quantitative results from the survey data.

In the analyses for this dissertation, immigrants' personal networks were studied in both their composition and structure: I was interested in both who the migrant's social contacts are, that is, the pattern of actor attributes; and how these contacts know each other, that is, the pattern of relations in the networks.

A step forward was proposed, beyond the dichotomy between compositional and structural network measures. Network composition and structure where combined in an analysis of the *structural segregation* of actor attributes: in other words, an analysis of the pattern of relations among actors *with specific attributes*, and the resulting mix or segregation of actor attributes in the cohesive subgroups of personal networks.

Two specific attributes of social contacts were central to the study: nationality and country of residence. Most analyses in these pages were concerned with where migrants' contacts are from, and where they currently live. In particular, this was the case for the analysis of segregation and cohesion of actor attributes in network structure: its goal was describing and measuring the extent to which actors from different nationalities, and currently living in different countries, know each other in migrant personal networks (cohesion); or rather are unconnected, with the migrant brokering between them (segregation).

Where the migrant's social contacts are from, where they currently live, and the pattern of relations among them, were regarded as the independent variables that affect how the migrant adapts to the host society. These variables were used, in particular, to open a new perspective on immigrant transnationalism. Transnationalism was indexed exclusively by personal network data, in contrast to traditional operationalizations based on migrants' involvement in cross-border behaviors and practices. This network approach proved to yield new insights on transnational migration.

Concerning the dependent variable, assimilation was conceived of as the migrant's cultural and economic adaptation to the host society: an individual path, rather than a group process, which was described by individual measures. Specifically, cultural assimilation was measured by an Acculturation Rating Scale which measured the degree to which the migrant accepted or enjoyed cultural traits, tastes and values of the host society. Economic assimilation, or incorporation, was measured by a combination of employment and income data: immigrants who are employed and earn an income above the poverty line were considered to be economically incorporated in the host society.

Given the different focus of the Spanish and the Italian survey on the subject of immigrant assimilation, cultural assimilation could be measured on the Spanish sample only, and specifically on Moroccan and Senegambian immigrants; while economic incorporation could be studied on the Italian sample only (Sri Lankan immigrants). Thus, the conclusions on how personal networks and network transnationalism affect assimilation patterns are drawn from the Spanish sample on the cultural dimension, and from the Italian sample on the economic dimension of assimilation.

The relevance of network transnationalism

Social network data lead to reappraise the scale of immigrant transnationalism. Transnationalism of social networks seems to be a much more pervasive reality among immigrant minorities, than transnationalism as measured by involvement in cross-border economic, political, or cultural activities. In the latter operationalization, transnationalism emerges as the characteristic of a minority of contemporary international migrants. For example, using one of the most extensive databases on the topic, the data from the CIEP project on Latin American immigrants in the United States, Portes et al. (2002) find that regular economic transnationalism involves a small proportion of immigrant minorities, when it is defined as self-employment in firms whose success depends on regular contacts with foreign countries. Using the same data source, Guarnizo et al. (2003) show that only a small minority of international immigrants engage in continuous transnational political activism. According to these studies, while broader defini-

tions of transnational involvement are possible, which would increase the pool of those who can be labelled as "transnational migrants", regular and sustained transnationalism is in fact the characteristic of a small minority of contemporary immigrants, around 10% to 15%.

Personal network data return quite a different picture on the scale of immigrant "regular and sustained" transnationalism. They show that transnationalism is a common and widespread reality among the *majority* of the immigrant populations. In other words, network transnationalism appears to have a larger scale than the transnationalism of cross-border practices and behaviors. Having at least 30% of one's personal network in a foreign country is the norm for international immigrants, and a relevant part of them have as much as a half of their network either in the home country or in the co-national diaspora around the world (see tables in Ch. 4, section 4.1.1). The relevance of this finding cannot be overstated, as we are dealing here with the *current* and *active* networks of migrants – not with remote acquaintances from the past. In many cases, a large proportion of these transnational connections are primary, family relations: around one in five social contacts of our respondents are family in the home country. To set a threshold for the definition of transnational migrants, if we define a migrant to be transnational when at least 30% of his personal network is abroad, then we must conclude that the majority of international immigrants are transnational, according to our data.

When looking at the geographical diversity of these networks, an interesting, defining characteristic of transnational networks emerges: the personal networks of international immigrants are much more diverse in contacts' countries of residence than in contacts' nationalities. There are many more countries of residence than nationalities in these networks, and this is true not only in whole personal networks, but for their single cohesive subgroups as well. In other words, both the whole personal networks of international migrants, and the particular groups of people that compose them, are far more homogeneous in the nationalities of actors than in the places where actors currently live (Ch. 5, section 5.3.4).

Two observations qualify the claim that the transnational component is active and central in the personal networks of international migrants: the migrant's social contacts abroad are often the closest emotionally; and they are among the most central (in the network sense of centrality) in the personal networks.

When the emotional closeness of social contacts, as evaluated by Ego, is examined, connections abroad appear to be on average more intimate to immigrants than rela-

tions in the host country[1]. This result likely reveals a deterioration of human relationships among co-national immigrants in the host country, which has been documented by existing qualitative research and by our own ethnographic work in Milan. Several reasons account for a worsening of personal relationships among co-national migrants in the receiving countries: migrants' own sentiment that migration corrupts traditional values and mores and makes people "obsessed" with work and money; excessive demands and expectations from immigrants' relatives and friends; the material harshness and emotional stress of immigrant life in European cities; the entry of money and economic exchange in friendship and family relationships that were exclusively regulated by reciprocity in the home country (Ch. 4, section 4.1.4).

Irrespective of what causes physically close relations to be less intimate emotionally, on the other hand, the emotional closest contacts are likely to be those to whom Ego turns the most for affective support: and these are often the transnational contacts in the home country or the diaspora. Thus, less face-to-face interaction does not imply emotional distance in migrants' transnational networks. Today's communication technologies contribute to this, allowing for cheap and frequent interaction across borders and over long distances. Daily use of international phone calls and video calls on the Internet has been observed in our ethnographic work among Sri Lankans in Milan. In any case, regardless of how much affective support migrants actually draw from their network abroad in everyday life, levels of emotional closeness show that transnational networks are relevant not merely in their size, but also in terms of the migrant's personal, intimate and affective involvement.

Connections abroad are not only a large proportion of migrants' networks, and a relevant part of these in terms of Ego's affective engagement. They are also very central in personal networks: they are important contacts, in that they know many of the migrant's *other* contacts (Ch. 4, section 4.2). This is true for both relations in the home country, and contacts in the international diaspora.

The centrality of transnational connections is not just a homophily effect, whereby people of the same nationality (e.g. Ego's co-nationals) or in the same country (e.g. Ego's home country) tend to know each other, and transnational contacts are very central precisely *because* they are many. In fact, transnational contacts know other types of contacts too, including people in the migrant's current country of residence. Thus, the personal networks of international migrants are transnational in that *both* Ego's *and* alters' rela-

[1] Of course, controlling for co-nationality and the type of relation (family versus friends and acquaintances).

tions cross national borders.

In Ch. 4, the study of alters' centrality, a *structural* characteristic of migrant networks, suggests that compositional measures alone may yield an incomplete description of transnational networks. The analysis of a very basic structural index as actor degree centrality very much emphasizes the weight of cross-border relations in these networks, and leads to consider the relevance network *structure*, as well as composition, to understanding network transnationalism.

The structural component: cohesion and segregation in transnational networks

A major premise of this dissertation was that not only what kind of people the migrant knows, also the relations existing among these people, are relevant to describing the patterns of transnationalism and assimilation. In other words, both composition and structure must be taken into account, and possibly combined, for a thorough analysis of transnational networks. Ch. 4 introduced structure at the individual-actor level, analyzing the centrality of actors in immigrant personal networks. In the rest of this dissertation, structure is studied at the network level, focusing on the subgroup structure of personal networks: that is, the way the pattern of relations creates cohesive and separate subgroups in the networks. Cohesive subgroups are sets of nodes which are tightly connected to each other, but sparsely connected to the rest of the network. The Girvan-Newman algorithm is used in Ch. 5 to identify such subgroups, and to generate an array of network-level measures that can trace together the whole structural form of the network.

Network composition and structure are interesting each in its own right. Yet, throughout these pages I argued that network effects on migrant assimilation may be better understood by combining these two dimensions. This means, besides considering the distribution of actor attributes, and separately the distribution of relations, studying the pattern of relations *between relevant attributes*. In this case, relevant actor attributes are nationality and countries of residence: composition and structure are combined in the sense that the analysis focuses on how actors from different nationalities, or in different countries, are connected to each other and fall in the same cohesive subgroups, or rather are unconnected and belong to separate subgroups of the network.

In Ch. 5, I explored a method for studying the pattern of relations between attributes. It starts from network structure, and then proceeds to examining attributes across structure: first, it identifies cohesive subgroups; then, it analyzes how actor attributes are distributed across these subgroups. The goal is to understand whether and how actor attributes shape, guide and constrain the formation of cohesive subgroups in personal

networks. Given the starting, overall level of network diversity, are cohesive subgroups homogenous or are they diverse with respect to relevant attributes? Are attributes segregated or rather mixed in network structure? Do structural subgroups bring together similar people, or rather different people, with respect to relevant attributes? To what extent do people from different nationalities know each other and fall in the same subgroups? To what degree do people in different countries talk to each other and are in the same cohesive areas of the network?

I proposed a measure to capture this dimension of attribute *segregation* in network structure, which I called the index of subgroup segregation. This measure draws on the entropy index of spatial segregation, and applies it to network structure: it uses entropy as a measure of diversity, and records the *reduction* of entropy that we observe when "zooming in" from the whole network to its cohesive subgroups. If a very diverse network is split into very homogenous subgroups, the index of subgroup segregation records a high segregation of attributes in network structure: actors from different nationalities or in different countries fall into separate subgroups and do not know each other. If the degree of diversity is the same in the whole network and in its subgroups, the index measures a low segregation (mix or cohesion) of attributes in network structure: actors from different nationalities or in different countries know each other and fall into the same cohesive subgroups (Ch. 5, section 5.2). Attribute segregation in network structure is measured separately for actor nationalities and countries of residence: the "national" index of subgroup segregation refers to nationalities; the "geographical" index of subgroup segregation refers to countries of residence.

Chapter 5 showed how the index of subgroup segregation, besides being logically consistent as a measure of segregation in network structure, effectively captures segregation versus cohesion of attributes in real-world personal networks (section 5.3). Furthermore, this measure extracts new, non-redundant information from the data, that cannot be predicted by either of the two dimensions that it combines, namely network composition or network structure separately (sections 5.3.2 and 5.3.3). Compositional or structural measures alone cannot anticipate the level of attribute segregation in network structure: in other terms, given the same frequencies of attributes (composition), and given the same pattern of relations (structure), the way attributes are connected to, or rather segregated from each other, varies significantly in real migrant networks. There is something inherent within how actors with similar or different attributes connect to each other, that varies in real personal networks, yet is not captured by compositional or structural metrics: the index of subgroup segregation measures this variation.

The notion of segregation versus cohesion of attributes in the network is easily linked to the concept of structural brokerage: if nationalities or countries of residence are segregated in A's network, then A is a structural broker between different nationalities or countries of residence (Ch. 5, section 5.3.1). Thus, the index of subgroup segregation can be thought of as an index of brokerage *between different attributes*. This relates the discussion to consolidated research on closure versus structural brokerage as social capital. The latter, in particular, has been widely documented as a source of resources and advantages to network actors, and often described as the social capital of "bridging" positions or "structural holes". However, the notion of brokerage used here is more specific than the traditional one: the focus in not on purely structural brokerage, that is, on a bridging position between *any kind* of network actors; rather, the index of subgroup segregation captures Ego's brokerage between actors *with different attributes*, and specifically from different nationalities or in different countries of residence. This as been called "brokerage between differences" in this dissertation. Conversely, a lack of brokerage, as indicated by a low index of subgroup segregation, means closure or cohesion among contacts in different nationalities or countries, or "diversity within closure".

The notion of "brokerage between differences" underlies a major focus in this study: the effects of brokering and mediating, transferring information, reconciling resources, observing attitudes, forming identities, *between different communities*. Different communities may be people in different national and ethnic groups, or in different polities and geographical places. Brokerage between differences is a structuralist notion that tries to capture the benefits of being the broker between different communities, and taking advantage of the the unbalance, inequality, reciprocal interest, even conflict between them.

One of the major points in this dissertation is that this notion of brokerage between differences defines two fundamentally distinct types of transnationalism and social integration, as embodied by immigrants' personal networks: a "brokering" versus a "cohesive" type (see Figure 5.3 in the introduction to Ch. 5). Given the same level of connectedness to contacts abroad, a situation of "transnational brokerage" emerges when the migrant bridges otherwise unconnected contacts who live in different countries; whereas "transnational cohesion" describes the opposite case, in which the migrant is embedded in a dense network where his contacts in different countries tend to know each other and fall into the same subgroups. Likewise, given the same level of connectedness to the host society, a "brokering" type of social integration is represented by personal networks in which the migrant brokers among otherwise unconnected contacts of different nation-

alities, particularly co-nationals and natives; a "cohesive" type characterizes networks with a high density of relations among personal contacts of different nationalities.

The index of subgroup segregation, applied to the geographical and the national dimensions, gauges this variation. On a cartesian plane, this index, and the combination of its determinants (network diversity and subgroup diversity), locate the three logically distinct cases of "Total homogeneity", "Maximum segregation" and "Minimum segregation" among countries or nationalities in personal networks (see Figures 5.2 and 5.12 on pp. 121 and 140). "Maximum segregation" and "Minimum segregation" correspond to the brokering versus the cohesive type of transnationalism, if the *geographical* dimension is considered; they represent the brokering versus the cohesive type of social integration, in the *national* dimension.

It is my argument that the difference between "Maximum segregation" and "Minimum segregation", or equivalently between the brokering versus the cohesive type of network transnationalism and social integration, is not only logically meaningful, as discussed in Ch. 5; it is also empirically relevant. Being empirically relevant means two things:

i) that this difference can be actually found in the data;

ii) that this difference is reflected in different outcomes on the dependent variable of interest, namely immigrant assimilation.

The first claim was proved in Ch. 6 by cluster analyses that extracted typologies of personal networks, which exactly correspond to the three extreme cases of "Total homogeneity", "Maximum segregation" and "Minimum segregation" in the geographical and national dimensions (section 6.1.2). Also network typologies on compositional variables (frequencies of alter classes) seem to be consistent with the distinction between the brokering and the cohesive types of transnationalism and social integration. Transnational networks more centered on the home country show a more brokering type of transnationalism, whereas a more cohesive transnationalism characterizes transnational networks more connected to the international diaspora. Similarly, "marginalized" networks with many connections to co-national immigrants exhibit more of a brokering type of social integration, while a cohesive type is more typical of "assimilated" networks with many relations to natives of the host society.

The second claim, namely that brokerage versus closure among nationalities and countries of residence are relevant to immigrant assimilation patterns, was proved by predictive models for cultural assimilation and economic incorporation.

Transnational networks and assimilation patterns

The goal of Ch. 6 was to understand whether and how migrant personal networks are associated to patterns of assimilation in the cultural and economic domain. The results of this chapter allow us to discuss the hypotheses made in the Introduction (Ch. 1).

Hypothesis 1. There is a specific network effect on assimilation patterns, independently and separately from migrants' individual characteristics.

This hypothesis is strongly supported by results in Ch. 6. Compositional and structural characteristics of personal networks turn out to be significantly associated to outcomes of cultural and economic assimilation, controlling for individual variables. Thus, the network effect is independent and separate from individual characteristics known to be relevant to immigrant adaptation to host societies, such as sex, age, time since migration, educational level, proficiency in the language of the host society, and legal status.

Hypothesis 2. Network composition matters to assimilation patterns. In particular, more diverse networks, in *both* contacts' nationalities *and* countries of residence, facilitate immigrant assimilation.

This hypothesis can be accepted for both the cultural assimilation and the economic incorporation of migrants. The attributes of social contacts, specifically their nationality and country of residence, affect assimilation patterns. In particular, *diversity and balance* among different actor attributes in the network, rather than connectedness to actors with a specific attribute, are positively associated to assimilation (Hypothesis 2.a). This holds true in both the national and the geographical dimension, that is, when both nationality and country of residence are considered as relevant attributes (Hypothesis 2.b).

Both national and geographical diversity of the network foster migrants' cultural adaptation: having connections to people from many different national backgrounds, and currently living in many different countries, is related to higher acculturation scores (section 6.1.4). National diversity of the network, that is, a balance of relations to co-nationals, natives and contacts from other nationalities, is also related to higher odds of the migrant being employed with an income above the poverty line, which is the operationalization of economic incorporation in this study (section 6.2.3). However, the evidence is more mixed on *geographical* diversity and economic incorporation. Overall geographical diversity in the network is not significantly associated to the probability of being employed with a good income. On the other hand, *low* geographical segregation, which indicates geographical diversity of contacts *within closed cohesive subgroups*, has

a positive effect on economic incorporation.

Hypothesis 3. Network structure is relevant to assimilation patterns. In particular, structural brokerage among unconnected alters from different nationalities or in different countries is positively associated to assimilation.

This hypothesis is supported only in part. Models in Ch. 6 show that network structure matters to assimilation: networks operate and affect assimilation differently depending on the pattern of connectivity among alters, in particular among alters *with different attributes*. The brokering and the cohesive types of transnationalism and social integration, as reflected in migrant personal networks, are related to different assimilation outcomes. However, structural brokerage between differences has a positive effect on cultural assimilation, *not* on economic incorporation. On the contrary, connectedness or closure among actors in different nationalities and countries are associated to better results of economic assimilation.

In any case, brokerage and closure must be qualified for their effect on assimilation to emerge: not any type of structural brokerage, and not any type of structural closure are relevant. Purely structural variables are not significant in the models in Ch. 6. Rather, what matters to assimilation is brokerage and closure *among different attributes*, namely different nationalities and countries of residence: in other words, what is relevant is where the network is located between the extremes of transnational brokerage versus transnational cohesion, and between the brokering versus the cohesive type of social integration. This variation is captured by the index of subgroup segregation.

The structural effects of personal networks are not the same in the cultural and economic dimensions of immigrant assimilation. According to data on Moroccan and Senegambian immigrants in Barcelona, mediating between different nationalities and countries of residence, or "brokering between differences", is positive for cultural adaptation (section 6.1.4). Subgroup segregation turns structural holes into cultural holes, according to the notion proposed by Pachucki and Breiger (2010): networks where contacts from different nationalities and in different countries form separate, homogeneous subgroups are those where Ego mediates the most between cultural differences. In contrast, attribute mix within cohesive subgroups brings about cultural similarity, and "flattens" cultural holes. At the same time, factional networks are more likely to feature weak, simplex ties, which leads to weak and multiple identities (Smith-Lovin, 2007). Bridging cultural holes and developing weak ethnic identities contribute to a higher ability and propensity for the migrant to become culturally assimilated.

Concerning economic assimilation, in the data on Sri Lankan immigrants in Mi-

lan, it is not structural brokerage, but rather "diversity within closure" that increases the odds of the migrant being successfully incorporated into the host labor market (section 6.2.3). The optimal network formation here is one where national and geographical diversity exists, yet actors with different attributes are connected to each other: the migrant is not a broker between differences, but he is embedded in diverse cohesive structures. Networks of this kind bring together two resources equally important to migrants' economic advancement: the strength of cohesive communities as a source of social capital, and the connectedness to different social circuits resulting from diversity. Closely knit communities generate ethnic solidarity, mutual trust and reciprocal obligations, the kind of "closure" social capital whose benefits to first-generation migrants have been widely documented in migration studies. On the other hand, diversity within closed communities limits the downsides of network closure, like redundant information, social pressure, excessive social obligations, and hostility to innovation (Portes and Sensenbrenner, 1993; Pathirage and Collyer, 2011).

As far as immigrant transnationalism is concerned, network data allow us to assess **Hypothesis 4** on transnationalism as stated in the Introduction: the proposition that social network transnationalism is a relevant phenomenon among international immigrants, yet with a significant variation in immigrant populations. **This hypothesis can be accepted** in light of the evidence discussed in Chapters 4 and 5, and recalled above, on the relevance of network transnationalism. The transnationalism of social networks is indeed a relevant phenomenon among international migrants: a great proportion of immigrants in our samples have a large transnational component in their current and active personal network. Transnational contacts are many, very central, and very close emotionally to the migrant, if distant physically. On the other hand, network transnationalism varies in degree and type among immigrants: this makes social networks a source of effective metrics for both describing migrant transnationalism, and studying its association to assimilation patterns.

On the relationship between transnationalism and assimilation, **Hypothesis 5** in the Introduction predicted that the degree and type of migrant transnationalism affect the patterns of assimilation. **This hypothesis is supported** by results in the previous chapters, although the association between network transnationalism and assimilation outcomes appears to be a complex one.

In Ch. 6, the relevance of diversity and balance to positive assimilation outcomes suggests a non-linear, non-monotone relationship between transnationalism and assimilation, as in an inverted U curve (see section 6.3 and Fig. 6.7). Both very low levels and

very high levels of transnationalism are associated to poor assimilation outcomes; in contrast, "average" levels of transnationalism, which imply a diverse and balanced personal network, are associated to the best assimilation outcomes. This kind of relationship helps explain the results from compositional measures in Ch. 4, which did not show a clear negative or positive association between transnationalism, as measured by the number of cross-border relations, and assimilation, as indexed by connectedness to the host society (see section 4.1.1 in Ch. 4). Rather, multiple different combinations emerged, whereby immigrants could be both well assimilated and highly transnational, as well as poorly assimilated and not transnational (a positive association between transnationalism and assimilation); or they could exhibit high degrees of assimilation together with low degrees of transnationalism, and vice versa (a negative association between transnationalism and assimilation).

These findings, and the inverted U curve between transnationalism and assimilation, are consistent with research from cross-cultural psychology that suggests how connectedness to the home culture and society, and participation in the host culture and society, should be conceived as two separate, orthogonal dimensions; and finds that the best assimilation outcomes are associated with a balance between the two dimensions, that is, "Integration" as a mode of acculturation, or a diverse and balanced personal network between home and host country (Berry, 1997).

In particular, the value of national and geographical diversity means that there is a positive component of transnationalism to assimilation. More transnationalism does not necessarily mean less assimilation, and the immigrants who are most involved in relationships with the home country are not necessarily the least adapted to the host society. In this sense, evidence from transnational migration to Europe turns out to be in line with findings on transnational Latin American immigrants in the United States, which proved that incorporation into the host society does not reduce practices of "sociocultural" transnationalism (Itzigsohn and Saucedo, 2002); and similarly, that the most assimilated immigrants are often the most regularly involved in transnational political or economic activities (Guarnizo et al., 2003; Portes et al., 2002).

Besides the *degree* of transnationalism, a major finding in Ch. 6 is that the structural *type* of transnationalism, and the distinction between transnational brokerage and transnational cohesion, also matter to immigrant assimilation. Yet again, results are different on acculturation and economic incorporation. Cultural adaptivity increases with a brokering type of transnational network (section 6.1.4). This suggests that brokering between different countries creates cultural holes and adaptive identities, just like brokering between different nationalities. Geography, as well as nationality, is a culturally

relevant attribute, which shapes cultures and creates cultural differences (section 6.3).

On the other hand, a cohesive type of transnationalism seems to be more beneficial to immigrants in the economic domain. Not simply closure, but *transnational closure* is a source of social capital as mutual trust and reciprocal obligations among first generation immigrants (section 6.2.3). The geographical index of subgroup segregation grasps here something that appeared to be crucial to the economic success of transnational immigrants during our ethnographic work in Milan and Sri Lanka. Closely knit transnational networks generate "enforceable trust" across borders, and enable or facilitate transnational economic activities, in particular transnational entrepreneurship. The consolidated theoretical arguments on community closure as a source of mutual trust that enables immigrant economic action (Light, 1972; Portes and Sensenbrenner, 1993) may be updated here to embrace the case of *transnational* community closure and *transnational* economic action. The geographical index of subgroup segregation offers an operationalization of this concept.

Besides the social capital of reciprocal trust in transnational communities, national and geographical diversity within closure, as measured by the subgroup segregation indexes, may also reveal another mechanism behind immigrants' economic success. Dense and closed transnational networks, and closely knit communities including actors from different nationalities, may signal a pattern of more stable and "committed" migration, as opposed to sojourning migration: a situation in which the migrant has relocated together with his family, thinks of migration as a more stable move, thus is more willing to make place-specific investments in human capital that lead to economic advancement in the host country (Nee and Sanders, 2001; Kogan, 2006). Migrants with a dense family network in the host country are more likely to introduce native friends to their family; which lowers national subgroup segregation in their network; as well as to preserve dense connections with networks in the home country through their family, which decreases geographical subgroup segregation. In this way, the index of subgroup segregation may help recognize different strategies of migration and incorporation which have been traditionally distinguished in migration studies.

Taken together, the hypotheses supported by this study call attention to a third level of immigrant adaptation, namely the meso-level of social networks, beyond the micro- and the macro-level. The patterns of immigrant assimilation do not depend only on the micro-level of individual characteristics, like human capital and demographic variables; nor do they depend exclusively on the macro-level of institutional factors, public policies, the welfare state, urban contexts etc. The evidence discussed in this dissertation strongly

supports the claim that the meso-level of social relations is a third, crucial component to assimilation. This is the level of social structure, which shapes, guides, constrains or enables individual action; social networks uncover and expose its mechanisms. Both migration studies and migration policies should take into account the relevance of the meso-level of social networks, and particularly of transnational social networks, to immigrant adaptation in receiving societies.

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