Social Network Analysis in the Study of Ethnic Inequalities

FRANK KALTER

Abstract

Standard large-scale survey designs and methods enabled integration research to progress far in recent decades, emphasizing especially the structural aspects of ethnic minorities' integration. To further increase our understanding, the role social aspects play in the complex process of integration merits more attention. Within this endeavor, network analytical designs and techniques provide a particularly promising complement to the standard empirical research agenda. Network analysis provides adequate measures for diverse subaspects of social integration and allows to tackle key open questions and issues, such as disentangling mechanisms of choice from those of opportunity structure or of selection from influence. The use of network analytical tools in integration research corresponds to the more general program of analytical sociology calling for a stronger weight of contexts and social interactions within the next generation of empirical research. While standard survey designs and data sets study integration processes pretty much as if actors behaved in isolation, integration is actually a heavily interactive and highly complex dynamic process.

THE ROLE OF SOCIAL INTEGRATION AND SOCIAL INTERACTIONS IN THE STUDY OF ETHNIC INEQUALITIES

Research on the integration of immigrants and their descendants increased tremendously in recent decades. This is not astonishing, given the rising shares of the population with a migration background in almost all economically highly developed countries, and the societal, political, and scientific challenges societies' growing ethnic diversity entails. These challenges pertain to a multitude of diverse aspects: language, education, economic well-being, participation, identification, attitudes, values, and many more. Accordingly, integration research has long stressed that "integration" is not a monolithic concept, but one that needs to be broken down into different dimensions (Alba & Nee, 1997). It is helpful, and meanwhile common, to distinguish, at least on a very broad level, between structural integration,

social integration, and cultural integration—each dimension consisting of many more fine-grained subaspects.

Notwithstanding this shared emphasis on the multifaceted nature of integration, the bulk of mainstream quantitative research so far clearly falls into the domain of structural integration, comprising countless larger-scale studies on the integration of ethnic minorities into the labor markets and the educational systems. The strong focus on these structural aspects is well justified, as education and work are core areas, providing central resources such as knowledge, skills, status, and income, which are important for many further aspects of life; hence, the structural side is theoretically widely seen as the key dimension of integration. Classical assimilation theory (Gordon, 1964) essentially assumes that once structural integration is achieved most social and cultural aspects of integration will follow as a consequence. The underlying theoretical argument basically being that structural integration provides the opportunity structure necessary for the other integration processes to succeed.

Large-scale empirical research has advanced far in detecting important patterns of structural ethnic inequalities and in understanding major mechanisms behind them. One of the main general insights certainly is that ethnic inequalities are to a large extent actually class inequalities in disguise. In particular, comparative quantitative research reveals that for most groups in most countries, ethnic differences in educational attainment are a matter of socioeconomic status (SES) (Heath & Brinbaum, 2014), and ethnic differences in occupational attainment are to a great degree a matter of education (Heath & Cheun, 2007)—thus confirming basic human capital theory arguments.

However, while SES can usually explain the lion's share of group and country differences, it cannot tell the whole story. Even controlling for SES one finds notable effects of ethnic group membership on educational success, and even controlling for education one finds these same effects on labor market outcomes. These residual direct effects of ethnic group membership are the center of interest in current research on ethnic structural inequalities.

To explain these ethnic residuals very different types of theoretical reasoning have evolved that await stricter empirical testing (Heath, Rothon, & Kilpi, 2008; Kalter, 2011). Here, at the latest, the importance of social integration reenters the scene. Next to arguments referring to aspects of cultural integration, many of the potential mechanisms suggested can roughly be subsumed under the general idea that how minorities are embedded in social relations and interactions might be responsible, and that these social aspects are not merely a consequence, but rather, at least partly, also a cause of structural integration. Behind the major lines of reasoning, two more general approaches have become especially prevalent. The first is social capital

theory, according to which ethnic residuals might have to do with the equipment with resources that are available via social ties and networks (Portes, 1995). The basic idea builds upon the seminal work of Granovetter (1973) on the role of social contacts for labor market success, expanding it also to other structural areas such as educational attainment (Coleman, 1988) and focusing specifically on the relative roles of coethnic versus interethnic ties, often also called *bonding* versus *bridging* social capital (Putnam, 2007). A second set of frequent arguments refers to several variants of theories of discrimination (Blank, Dabady, & Citro, 2004, pp. 55–70).

These frameworks suggest that greater and more systematic attention must be paid to the "social" dimension of integration. However, the means to do so are limited given the overall data infrastructure for quantitative empirical research. Integration research has largely benefited from an increased availability of microdata from the official statistics and from a number of large-scale social surveys that provide a sufficiently large overall sample size to study minorities. As a rule, these bigger data sets contain ample information on respondents' educational, occupational, and general economic situation. Thus, they cover especially the structural dimension of integration very well, which—next to the theoretical reasons—might further explain their so far dominant role in research. Unfortunately, however, the large-scale surveys commonly used for the empirical analysis of structural ethnic inequalities often contain no information on aspects of social integration.

Those that included respective measures clearly seem able to confirm that social integration might indeed be an important piece of the puzzle. An example is the German Socioeconomic Panel (GSOEP), which has intensively been employed to study the impact of contacts and friendship ties (to coethnics and natives) on the labor market integration of the classical immigrant groups in Germany (Kalter, 2011; Kanas, Chiswick, van der Lippe, & van Tubergen, 2012; Lancee, 2012). Other prominent examples are the Mexican Migration Project (MMP, Aguilera & Massey, 2003); the Children of Immigrants Longitudinal Study (CILS, Portes & MacLeod, 1999); or the Dutch Social Position and Use of Welfare Facilities by Immigrants survey (SPVA, Lancee, 2010).

However, even if measures are available, the means of standard survey research to address key open questions of social integration by design remain severely restricted. Against this background, network analytical studies are a necessary and especially promising complement to standard survey designs. Network analytical tools have a long history and well-proven utility in the social sciences; they immediately correspond to the central ideas around the concepts of social integration and social interactions. Moreover, the development of new techniques and models that provide new opportunities to

contribute to the key open questions carved out to date by empirical integration research has progressed tremendously.

In the following, we seek to illustrate with selective examples rather than in a systematic manner how the network analytical approach might contribute. In the first section, we show how it helps in deriving theoretically more meaningful measures of many important subaspects of the concept of social integration. In the second section, we outline how it helps in better detecting the causes behind social integration, not least because of its unique allowance to adequately control the opportunity structure and "natural" dynamic interaction processes. In the third section, we show how new techniques can perhaps help to tackle the fundamental problem of disentangling the exact causal interplay between social and other important aspects of integration. We conclude by putting the ideas and potentials into a more general setting, arguing that the use of new network analytical tools in integration research can be subsumed under the more general program of analytical sociology that emphasizes the role social relations and social interactions in the explanation of social phenomena.

TOWARD BETTER MEASURES OF WHAT SOCIAL INTEGRATION REALLY MEANS

As mentioned above, measures of ethnic minorities' social integration have been applied quite successfully in standard survey designs. Among the particular instruments used, ego-centered network questions are the most sophisticated. Respondents are asked to name a number of specified ties, for example, the three best friends, and to report certain characteristics of these ties. This information is then used to construct variables of interest for the analyses; here, the relative share of majority members or coethnics among the ties is the most frequently used indicator. Though relatively time-expensive, the approach is in principle quite flexible, and can, for example, target many different resources of the named persons so as to very narrowly capture the concept of relevant social capital.

Within an explicit network design, however, sociometric questions ask a respondent whether there are certain specified relations to each of the other respondents. This then leads to a complete network specific for the respective relation. Figure 1, for example, shows a friendship network for a German classroom within the Children of Immigrants Longitudinal Survey in Four European countries (CILS4EU, Kalter *et al.*, 2015). It results from the sociometric question:" Who are your best friends in class? "The colors denote different ethnic backgrounds (yellow, majority without migration background; green, Turkish background; and red, any other background). The size of a dot represents the "strength" of a migration background (large,
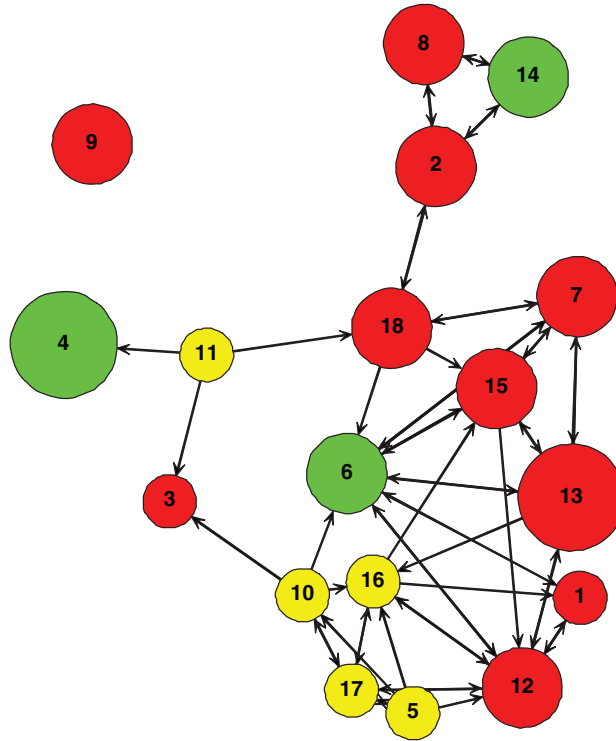
Figure 1   Example of a classroom friendship network from the CILS4EU data.

born abroad; medium, at least one parent born abroad; and small, both parents native-born). Arrows represent friendship nominations, pointing from a nominator to the nominee.

Figure 1 shows, already intuitively, that the sociometric approach contains very rich information about the social integration in the classroom. In general, it bears many well-known comparative advantages. In the following, we stress four points that seem particularly important in the context of ethnic minority research.

The first advantage is obviously that the information on the ties stems from interviews with these persons themselves and is thus much more comprehensive and reliable. In integration research, the benefits of this fact already start with the very concept of ethnicity itself. The evidence of a person's social integration as indicated by the share of minority members among the nominated friends might differ according to the definition of ethnic minority groups. In Figure 1, for example, students 6 and 14 would have equal value (100%) when applying a wide concept. However, student 6 would have a value lower than 14, if student 1, who belongs to the third generation, would count as "majority" in a more narrow definition of ethnic minorities. In an

ego-centered approach, it seems almost impossible for a respondent to know all the relevant details about his social ties needed to classify their ethnicity correctly, for example, whether this person's grandparents were born abroad, or—as is common in the United Kingdom—someone subjectively identifies with a certain group or not. Moving from the pure ethnicity of the social ties to the social capital they include, the issues continue. This holds especially when "softer" characteristics become theoretically relevant aspects, which is very much the case within integration-related research questions—language proficiency, cultural knowledge, or national identification of the social ties being obvious examples.

The second, closely related point is that integration in general and social integration in specific are not one-sided processes (Alba & Nee, 1997), but heavily interactive. Information on how others, for example, majority class-mates, treat a minority student at interest is obviously an important part of the story. Looking back at Figure 1, the fact that student 6 is nominated as a friend by a majority student (10) makes him, in a specific sense, somewhat better integrated than student 14. Note that having information on the behavior and preferences of others also opens a door to measuring and studying processes of discrimination in fresh new ways. This holds true all the more, as the network approach allows us to examine very different kinds of relations between any two persons, among them so-called negative ties such as disliking or bullying (Tolsma, van Deurzen, Stark, & Veenstra, 2013). Many surveys still try to grasp discrimination by including questions on perceived discrimination, despite long-standing doubts about the validity of these measures and thus the potential of drawing any causal conclusions (Blank *et al.*, 2004, p. 16ff).

The third advantage of the sociometric approach is that, casually speaking, it allows to study social integration at "higher orders". Looking again at our two exemplary students in Figure 1, student 6 is better socially integrated than student 14 in the sense that he is befriended by students who themselves have relatively many friends, among them majority members. Furthermore, metaphorically speaking, overall he seems to be better "placed" within the classroom than student 14. Social network analysis provides us now with a rich repertoire of different measures that capture more precisely the general position of an individual within a given network, for example, reachability, actor centrality, or actor prestige (Wassermann & Faust, 1994). Such measures exist in many subvariants and can potentially be fine-tuned to more adequately capture theoretically relevant aspects of social integration.

Fourth, and very importantly, the measures of social integration are not restricted to being individual characteristics only. On the contrary, a major attraction of network analysis is that it has developed many helpful measures describing characteristics of the network as a whole, such as density,

cliquishness, cohesiveness, and amount of clustering (Jackson, 2008, p. 20ff). Many questions and discussions in integration research are related to concepts of social integration that are basically better understood as properties of larger social units rather than of individual actors. A good example is the general debate about the potential effects of ethnic diversity on social cohesion, stimulated by a meanwhile famous article by Robert Putnam (2007). The empirical research on this topic typically employs individual-level survey data using generalized trust, reported civic engagement, attitudes toward the welfare states, or similar variables as indicators of social cohesion. Social cohesion, however, is not only a psychological and attitudinal concept, but importantly and foremost consists of relational aspects.

How ethnic diversity and social cohesion are empirically related thus can and should also be addressed taking a bird's eye view. For example, in the network in Figure 1, the students in the classroom seem fairly well connected. This can be specified more precisely in network analytical terms: a very simple measure, for example, would be network density, which is defined as the number of actual ties in the network divided by the number of all ties possible. The value for the network in figure would be 0.18. One can also attach numerical values to the ethnic diversity of the classroom. Applying the meanwhile common Herfindahl-based index, the value for the classroom in Figure 1 is 0.84. On the basis of this logic, Kalter and Kruse (2015) show that in the representative sample of 184 classroom networks in Germany within the CILS4EU study, there is no correlation between ethnic diversity and network density. They also find similar results for the representative classroom samples in England, the Netherlands, and Sweden. Findings change only slightly upon application of more sophisticated indices of social cohesion. The example thus shows that the network analytical approach delivers a fresh, and in some respects more adequate empirical view of important long-standing questions in integration research.

TOWARD THE MECHANISMS BEHIND SOCIAL INTEGRATION

If social integration is an important piece of the ethnic inequality puzzle, then the factors accounting for it move into the focus of integration research. In particular, thinking back to the above-mentioned idea of classical assimilation theory—it is important to analyze whether social integration is more than just a mere consequence of the opportunity structure deriving from structural integration, and, if so, why. Here, recently developed multivariate models in network analysis meanwhile provide a rich toolbox of techniques.

One of the techniques that has already received considerable attention for ethnic minority-related topics is Exponential Random Graph Models (ERGM) or, synonymously, p* models (Robins, Pattison, Kalish, & Lusher,

2007). Basically, these apply a logistic regression approach to dyads of network, thus allowing to assess which factors influence whether any two persons within such a network have a certain relation or not. The explaining factors can include characteristics of the individuals on either ends of a tie as well as characteristics of the dyad itself, for example, homogeneity of both individuals with respect to certain characteristics, whether they share other ties, and more complex structural features.

This has accounted for much recent progress, especially in the study of ethnic or racial homophily (Kruse, Smith, van Tubergen, & Maas, 2016; Moody, 2001; Mouw & Entwisle, 2006; Stark, 2011; Wimmer & Lewis, 2010). The finding is almost universal that friendships tend to be strongly ethnically homogenous, which is often interpreted as an explicit preference of ethnic group members: the unwillingness to integrate socially, on the part of the minorities, or social discrimination, on the part of the majority. However, the reasons for this can be very different and rather diverse and are hard to disentangle using standard survey methods. First of all, it could simply be a matter of opportunity structure. In this respect, the network analytical approach in general and the ERGMs in particular allow a uniquely adequate control, as the pool from which friends can be chosen at all is specified by the complete network and, casually spoken, enters the denominator of the effect estimation. Second, ethnic homogeneity can also result from preferences for or the impact of characteristics that are only related to ethnicity, but should not be confused with an explicit preference for ethnicity itself. For example, students might prefer to befriend students from a similar social class background, as this means a similar economic situation of their families, allowing them to engage in similar leisure activities. Similarly, additional and less obvious structural arrangements might foster the ethnic homogeneity of ties; students from the same ethnicity might for several reasons be more likely to share different tracks within schools and extracurricular activities or come from the same neighborhood. ERGM allows us to control for all this.

Finally, important built-in network mechanisms, sometimes called *balancing mechanisms*, can amplify the ethnic homogeneity of social ties, thus overestimating potentially underlying preference effects. Most basically, friendship choices and other sorts of social relations tend to be reciprocated. So even if A chooses B because of an ethnic preference, the fact that B chooses A might be due to simple reciprocity and itself not reveal any ethnic preference. Similarly, triads tend to closure, so if A and B have a relation and B and C have a relation, it is very likely that A and C will also have a relation. It is a strategic feature of ERGMs that they very conveniently and flexibly allow to control for these kinds of "natural" network mechanisms when assessing tendencies for ethnic friendship choices.

TOWARD DISENTANGLING THE COMPLEX RELATION BETWEEN DIFFERENT ASPECTS OF INTEGRATION—SELECTION VERSUS INFLUENCE

The network analytical approach also gives us a better methodological grip on a key issue in integration research: the direction of causality between different aspects of integration. As sketched above, the literature suggests that many mechanisms that consider certain aspects of social integration lead to structural ethnic inequalities, such as the Granovetter type of social capital effects on labor market outcomes. However, as also noted with reference to classical assimilation theory, arguments in the other direction are at least likewise plausible. Obviously, the answer to what is the right direction is of major importance, not least for any integration-related policies and measures. Here, studying networks in longitudinal perspective offers some new strategic tools of analysis that promise much better insights. They do so by enabling us to empirically disentangle the two important general mechanisms of selection and influence.

Let us assume, for example, that we are dealing with two ethnic groups—*blues* and *yellows*—and that *blues* on average do worse in school than *yellows*. Let us also assume that, at a certain point in time (t), those *blues* who perform better have relatively more *yellows* as friends. (If we think of *blues* as representing an ethnic minority and *yellows* as representing the majority this is empirically a quite frequent scenario.) This situation is illustrated by some small networks in the right column (time t) in Figure 2, where the size of a dot expresses school performance and lines represent friendships. Basically, this relation could result from the fact that for the *yellows* those *blues* who do better are more attractive choices as friends and/or that the more successful *blues* are more likely to select *yellows* as friends (because these are more likely good performers). This would represent mechanisms of selection as illustrated by the transition from time $t-1$ to time t in Figure 2, where the focus is always on the *blue* in the middle. It could also be, however, that those *blues* who are more strongly befriended by *yellows* (for whatever reason) at time $t-1$ profit from these ties and become better performers at time t. This would correspond to the selection mechanisms sketched in Figure 2.

Figure 2 thus shows that similar constellations at time t can arise from different starting points at time $t-1$ via the different mechanisms of selection versus influence, and that similar starting points at $t-1$ can lead to different constellations at time t. Comparing networks over time thus allows to distinguish selection effects from influence effects.

Meanwhile, sophisticated statistical techniques allow these ideas to be applied to empirical network panel data. Tom Snijders and his workgroup
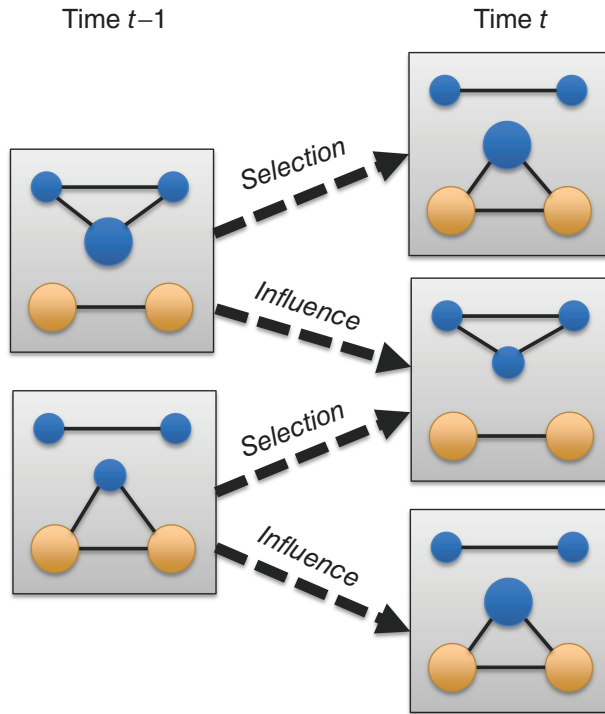
Figure 2   Illustration of mechanisms of selection and influence in small networks; focus is on the blue dot in the middle.

developed stochastic actor-oriented models (SAOM) for network dynamics (Snijders, van de Bunt, & Steglich, 2010) that permit uniquely strict tests. Basically, these are agent-based simulation models assuming that actors make choices about changing their social ties and their behavior. The decision to form or cut specific ties and the decision for or against a specific change in behavior are assumed to be dependent on a set of variables—pretty much like in a regression model. Without going further into technical details of the complex and assumption-rich estimation procedure, the important thing is that this yields coefficient estimates and estimates for their standard errors both for variables related to the network dynamics and, simultaneously, for variables related to the behavior dynamics—among them coefficients that directly capture the selection and influence mechanisms. Estimation can be conducted with a software program called *SIENA* (*Simulation Investigation for Empirical Network Analysis*), which is meanwhile integrated in the general software package R and in this form also known under the name RSiena (Ripley, Snijders, Boda, Vorce, & Preciado, 2015).

That SAOM techniques are meanwhile well established in many fields is proved by the long list of published applications on the SIENA website

(www.stats.ox.ac.uk/~snijders/siena/). A frequently researched topic, for example, is the coevolution of adolescents' friendship networks and different forms of deviant behavior or delinquency, such as nicotine, drug, and alcohol consumption, or carrying a weapon. With the rising shares of ethnic minority students among the youth in almost all countries, variables of ethnicity have occasionally also attracted interest, not only among the controls. In the course of the vivid activities and progress, researchers are increasingly aware of the potential of SAOM tools for addressing classical questions of integration research, and some have already targeted these more explicitly.

A recent example is the paper by Leszczensky, Stark, Flache, and Munniksma (2015), which uses the data of the Arnhem School Study (TASS, see Stark, 2011) to study the coevolution of friendship networks and host country identification, thus disentangling the causal relationship between aspects of social integration and cultural integration. Although there is an empirical correlation between the strength of identification with the host country and the number of native friends among adolescent immigrants, the study does not support the hypothesis that influence mechanisms are at work. On the selection side, there is also no evidence for the assumption that immigrant youth who identify more strongly with the Netherlands are more likely to prefer native-born Dutch friends. Interestingly, the analyses show that, in turn, native-born Dutch significantly prefer immigrants who identify more strongly with the Netherlands. The study is thus an especially telling proof that in order to correctly understand the mechanisms behind integration processes, it is important to consider relational aspects. While the example focuses on the interplay between social and cultural aspects of integration, it is easy to imagine similar interesting applications targeting the relation between ethnic minorities' social integration and structural aspects, such as school performance and truancy.

NETWORK ANALYSIS, INTEGRATION RESEARCH, AND THE PROGRAM OF ANALYTICAL SOCIOLOGY

In this essay, we have outlined the potential of social network analysis and some new developments in that field for the study of ethnic inequalities. In particular, we have exemplified how they can increase our understanding of the precise role of social aspects in the complex process of integration. Network analytical designs and techniques represent a promising complement to the survey data-based standard empirical research agenda; they provide particular adequate measures for diverse subaspects of the concept of social integration and the recent development of sophisticated statistical network methods allows to tackle key open questions and issues of integration

research, such as disentangling the mechanisms of choice versus those of opportunity structure or of selection versus influence.

The growing awareness and use of new network analytical tools in integration research is well in line with a more general theoretical movement and orientation that has recently become known and more visible under the label "analytical sociology" (Hedström & Bearman, 2009). Next to more epistemological messages emphasizing the general need for truly mechanism-based explanations, a major impetus of this approach lies in the fact that—while doubtless standing on the firm ground of methodological individualism—it puts more attention and relative weight on the impact of social contexts and social interactions rather than on all too deep details of action theories (Kalter & Kroneberg, 2014).

Large-scale research survey data analysis has been a huge success story in many fields, due not least to the fact that it can be guided by explicit and elaborated theories of action (Kroneberg & Kalter, 2012). Human capital theory has always played a dominant role in migration and integration research and, as briefly sketched at the beginning, is as a rule able to account for much of what is going on in fields such as the labor market or education. Despite all the progress, however, a major limitation of quantitative empirical ethnic inequality research has been that standard survey designs and data sets force us to assume that actors behave independently in isolation (Snijders & Steglich, 2015). Integration, however, is—like all interesting social phenomena—a heavily interactive and highly complex dynamic process, in which the actions of one actor immediately constitute an important context and condition for the actions of the other, and so forth. The next generation of empirical research must complement the traditional individual survey data approach by designs and strategies of analysis that take these contextual and interactional processes into explicit account. For many key open questions, longitudinal network analytical designs seem to be among the most promising of these tools.

REFERENCES

Aguilera, M. B., & Massey, D. S. (2003). Social capital and the wages of Mexican migrants: New hypotheses and tests. *Social Forces*, *82*(2), 671–701.

Alba, R., & Nee, V. (1997). Rethinking assimilation theory for a new era of immigration. *International Migration Review*, *31*(4), 826–874.

Blank, R. M., Dabady, M., & Citro, C. F. (Eds.) (2004). *Measuring racial discrimination*. Washington, D.C.: National Academies Press.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, *94*(Supplement 95), 95–120.

Gordon, M. M. (1964). *Assimilation in American life: The role of race, religion and national origins*. New York, NY: Oxford University Press.

Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology*, *8*(6), 1360–1380.

Heath, A., & Brinbaum, Y. (Eds.) (2014). *Unequal attainments. Ethnic educational inequalities in ten western countries*. Oxford, England: British Academy; Oxford University Press.

Heath, A., & Cheun, S. Y. (Eds.) (2007). *Unequal chances. Ethnic minorities in western labour market*. Oxford, England: British Academy; Oxford University Press.

Heath, A. F., Rothon, C., & Kilpi, E. (2008). The second generation in Western Europe: Education, unemployment, and occupational attainment. *Annual Review of Sociology*, *34*, 211–235.

Hedström, P., & Bearman, P. (Eds.) (2009). *The Oxford handbook of analytical sociology*. New York, NY: Oxford University Press.

Jackson, M. O. (2008). *Social and economic networks*. Princeton, NJ: Princeton University Press.

Kalter, F. (2011). The second generation in the German labor market. In R. Alba & M. C. Waters (Eds.), *The next generation: Immigrant youth in a comparative perspective*. New York: NYU Press.

Kalter, F., Heath, A., Hewstone, M., Jonsson, J. O., Kalmijn, M., Kogan, I., & van Tubergen, F. (2015). Children of immigrants longitudinal survey in four European countries (CILS4EU). GESIS Data Archive, Cologne. ZA5353 Data file Version 2.1.0, doi: 10.4232/cils4eu.5353.2.1.0

Kalter, F., & Kroneberg, C. (2014). Between mechanism talk and mechanism cult: New emphases in explanatory sociology and empirical research. In J. Friedrichs & A. Nonnenmacher (Eds.), *Kölner Zeitschrift für Soziologie und Sozialpsychologie, Special Issue 54: Social Contexts and Social Mechanisms* (pp. 91–115). Wiesbaden, Germany: Springer VS.

Kalter, F., & Kruse, H. (2015). Ethnic diversity, homophily, and network cohesion in European classrooms. In R. Koopmans, B. Lancee & M. Schaeffer (Eds.), *Social cohesion and immigration in Europe and North America: mechanisms, conditions, and causality*. London, England: Routledge.

Kanas, A., Chiswick, B. R., van der Lippe, T., & van Tubergen, F. (2012). Social contacts and the economic performance of immigrants: A panel study of immigrants in Germany. *International Migration Review*, *46*(3), 680–709.

Kroneberg, C., & Kalter, F. (2012). Rational choice theory and empirical research. Methodological and theoretical contributions in Europe. *Annual Review of Sociology*, *38*, 73–92.

Kruse, H., Smith, S., van Tubergen, F., & Maas, I. (2016). From neighbours to school friends? How adolescents' place of residence relates to same-ethnic school friendships. *Social Networks*, *44*(1), 130–142.

Lancee, B. (2010). The economic returns of immigrants' bonding and bridging social capital: The case of the Netherlands. *International Migration Review*, *44*(1), 202–226.

Lancee, B. (2012). The economic returns of bonding and bridging social capital for immigrant men in Germany. *Ethnic and Racial Studies*, *35*(4), 664–683.

Leszczensky, L., Stark, T. H., Flache, A., & Munniksma, A. (2015). Disentangling the relationship between young immigrants' host country identification and their friendships with natives. *Social Networks*, *44*, 179–189.

Moody, J. (2001). Race, school integration, and friendship segregation in *America*. *American Journal of Sociology*, *107*(3), 679–716.

Mouw, T., & Entwisle, B. (2006). Residential segregation and interracial friendship in schools. *American Journal of Sociology*, *112*(2), 394–441.

Portes, A. (1995). Economic sociology and the sociology of immigration: A conceptual overview. In A. Portes (Ed.), *The economic sociology of immigration* (Vol. *29*, pp. 1–41). New York, NY: Russell Sage Foundation.

Portes, A., & MacLeod, D. (1999). Educating the second generation: Determinants of academic achievement among children of immigrants in the United States. *Journal of Ethnic and Migration Studies*, *25*(3), 373–396.

Putnam, R. D. (2007). E pluribus unum. Diversity and community in the twenty-first century. The 2006 Johan Skytte prize lecture. *Scandinavian Political Studies*, *30*(2), 137–174.

Ripley, R.M., Snijders, T.A.B., Boda, Z., Vorce, A., & Preciado, P. (2015). *Manual for RSiena*. Retrieved from http://www.stats.ox.ac.uk/~snijders/siena/RSiena_Manual.pdf

Robins, G., Pattison, P., Kalish, Y., & Lusher, D. (2007). An introduction to exponential random graph (p*) models for social networks. *Social Networks*, *29*, 173–191.

Snijders, T. A. B., & Steglich, C. E. G. (2015). Representing micro–macro linkages by sector-based dynamic network models. *Sociological Methods & Research*, *44*, 22–271.

Snijders, T. A. B., van de Bunt, G. G., & Steglich, C. E. G. (2010). Introduction to stochastic actor-based models for network dynamics. *Social Networks*, *32*, 44–60.

Stark, T. H. (2011). *Integration in schools*. *A process perspective on students' interethnic attitudes and interpersonal relationships* (ICS dissertation)*.* Groningen.

Tolsma, J., van Deurzen, J., Stark, T. H., & Veenstra, R. (2013). Who is bullying whom in ethnically diverse primary schools? Exploring links between bullying, ethnicity, and ethnic diversity in Dutch primary schools. *Social Networks*, *36*, 51–61.

Wassermann, S., & Faust, K. (1994). *Social network analysis: Methods and applications (structural analysis in the social sciences* (Vol. *8*). Cambridge, England: Cambridge University Press.

Wimmer, A., & Lewis, K. (2010). Beyond and below racial homophily: ERG models of a friendship network documented on Facebook. *American Journal of Sociology*, *116*, 583–642.

FRANK KALTER SHORT BIOGRAPHY

Frank Kalter is a professor of sociology at the School of Social Sciences at the University of Mannheim, Germany. Currently, he also serves as the director of the Mannheim Centre for European Social Research (MZES). He is a fellow of the European Academy of Sociology (EAS) and has been its president from 2011 to 2015. His major research interests include migration, the integration of immigrants and their children, and the formal modeling of social processes.

RELATED ESSAYS

Misinformation and How to Correct It *(Psychology)*, John Cook *et al*.
Enduring Effects of Education *(Sociology)*, Matthew Curry and Jennie E. Brand
Cognitive Processes Involved in Stereotyping *(Psychology)*, Susan T. Fiske and Cydney H. Dupree
Controlling the Influence of Stereotypes on One's Thoughts *(Psychology)*, Patrick S. Forscher and Patricia G. Devine
Culture and Social Networks *(Sociology)*, Jan A. Fuhse
Migrant Networks *(Sociology)*, Filiz Garip and Asad L. Asad
Ethnic Enclaves *(Sociology)*, Steven J. Gold
Immigrant Children and the Transition to Adulthood *(Sociology)*, Roberto G. Gonzales and Benjamin J. Roth
Racial Disenfranchisement *(Political Science)*, Vincent L. Hutchings and Davin L. Phoenix
Emerging Trends in Social Network Analysis of Terrorism and Counterterrorism *(Sociology)*, David Knoke
Immigration and the Changing Status of Asian Americans *(Sociology)*, Jennifer Lee
Immigrant Sociocultural Adaptation, Identification, and Belonging *(Sociology)*, Sarah J. Mahler
Political Inequality *(Sociology)*, Jeff Manza
Immigrant Health Paradox *(Sociology)*, Kyriakos S. Markides and Sunshine Rote
Politics of Immigration Policy *(Political Science)*, Jeannette Money
The Role of School-Related Peers and Social Networks in Human Development *(Political Science)*, Chandra Muller
Health and Social Inequality *(Sociology)*, Bernice A. Pescosolido
Latinos and the Color Line *(Sociology)*, Clara E. Rodríguez *et al.*
Digital Methods for Web Research *(Methods)*, Richard Rogers
Stereotype Threat *(Psychology)*, Toni Schmader and William M. Hall
Assimilation and Its Discontents *(Sociology)*, Min Zhou