

## Historical Social Network Analysis\*

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### INTRODUCTION

In the past two decades, social network analysis (SNA) has become a major analytical paradigm in sociology and now occupies a strategic place in disciplinary debates on a wide variety of issues.<sup>1</sup> Historians, however, have been slow to adopt the approach for at least three reasons. First, the conceptual orientation of sociologists practicing historical social network analysis (HSNA) remains unfamiliar to the majority of professional historians. Just when SNA was maturing in the late 1980s and 1990s, the interdisciplinary interest in social science theory among historians, so characteristic of the 1970s and early 1980s, began to wane. The subsequent turn toward post-modernist thinking in history left the profession increasingly uninformed about both classical and contemporary social theory.<sup>2</sup> Second, those quantitatively-oriented historians who might be predisposed to use SNA's specialized statistical methods constitute less than a quarter of the profession today, thus the risk of SNA finding its way into mainstream historical scholarship is low to start.<sup>3</sup> Third, SNA's data requirements are formidable. SNA demands evidence of social interaction among all members of a social system for a variety of behaviors, and thus necessitates a broad range of high-quality records for the place, time and activities being studied. Because historians are plagued by an incomplete historical record and imperfect understandings of past social relations, HSNA remains an inherently problematic enterprise. Yet despite conceptual, methodological and evidentiary obstacles, SNA possesses real potential for historical analysis.

This essay does three things. First, it reviews the essential tenets of SNA as a method of social analysis. Second, it provides a brief overview of the underlying historical vision guiding SNA. Third, using a concrete example from a nineteenth-century European peasant community, it illustrates how HSNA can advance our understanding of historical kinship, which remains

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1. Barry Wellman, "Structural Analysis: From Method and Metaphor to Theory and Substance", in B. Wellman and S.D. Berkowitz (eds), *Social Structures: A Network Approach* (New York, 1988), pp. 19–61; Mark S. Mizruchi, "Social Network Analysis: Recent Achievements and Current Controversies", *Acta Sociologica*, 37 (1994), pp. 329–343; and Mustafa Emirbayer, "Manifesto for a Relational Sociology", *American Journal of Sociology*, 103 (1997), pp. 281–317.

2. Peter Novick, *That Noble Dream: The "Objectivity Question" and the American Historical Profession* (New York, 1988), pp. 522–629.

3. John F. Reynolds, "Do Historians Count Anymore? The Status of Quantitative Methods in History, 1975–1995", *Historical Methods*, 31 (1998), pp. 141–148.

one of the more important, yet most elusive matters in contemporary social history. More than a decade ago, Charles Tilly argued that the real task of social history lay in “(1) documenting large structural changes, (2) reconstructing the experiences of ordinary people in the course of those changes, and (3) connecting the two”.<sup>4</sup> Tilly’s challenge remains as vital today as ever, and this essay shows how a network analytic approach can help to meet it.

Network analysts maintain that SNA is a distinct theoretical and methodological approach.<sup>5</sup> They point not only to operating precepts and assumptions about social structure and behavior, but also to the wide assortment of methods that a broad focus on social relations have forced analysts to develop. While SNA’s pedigree reaches back into the 1930s and the field of sociometry, SNA matured in the late 1970s and 1980s as practitioners in sociology, social psychology and anthropology developed analytical concepts and measures to exploit new forms of data collected about economic, political and social structures of the modern world. The International Network for Social Network Analysis (INSNA), established in 1976, has served as a forum for network analysts in the social and medical sciences for more than two decades.<sup>6</sup> INSNA’s journal, *Social Networks*, was founded in 1978 to disseminate a growing body of network research. Explicitly network analytic work also appears regularly in the two major American sociological journals, the *American Journal of Sociology* and the *American Sociological Review*. Today, SNA represents a mature, self-conscious analytical perspective, and its place in disciplinary studies of human behavior is assured.

### SNA BASICS

The social network perspective consists of four basic propositions that together give coherence to the larger approach. First, actors in all social systems are viewed as “interdependent rather than independent”.<sup>7</sup> Second, the linkages or relations among actors channel information, affection and other resources. Third, the structure of those relations or ties among actors both constrain and facilitate action. Fourth, and finally, the patterns of relations among actors define economic, political and social structure. Critics argue that SNA’s excessive focus on structural relationships tends to minimize the role of individual agency, and that this represents a major weakness of the approach.<sup>8</sup> A case can be made, however, that SNA neither

4. Charles Tilly, “Retrieving European Lives”, in Olivier Zunz (ed.), *Reliving the Past: The Worlds of Social History* (Chapel Hill, 1985), p. 31.

5. Wellman, “Structural Analysis”, pp. 19–30; Stanley Wasserman and Katherine Faust, *Social Network Analysis: Methods and Applications* (New York, 1994), pp. 3–25.

6. See INSNA’s website at [www.heinz.cmu.edu/project/INSNA](http://www.heinz.cmu.edu/project/INSNA).

7. Wasserman and Faust, *Social Network Analysis*, p. 4.

8. Valerie A. Haines, “Social Network Analysis, Structuration Theory and the Holism-Individualism Debate”, *Social Networks*, 10 (1988), pp. 157–182; Mustafa Emirbayer and Jeff Goodwin, “Network Analysis, Culture, and the Problem of Agency”, *American Journal of Sociology*, 99

denies nor downplays human agency. Community network analysts, in particular, view human behavior as largely instrumental, and explicitly portray people acting consciously and purposefully. As the relative importance of agency and structure in human affairs remains a general problem in social theory and social history, the matter will be neither easily nor quickly resolved.<sup>9</sup>

SNA's basic precepts stand in sharp contrast to traditional social analysis, which normally uses differences in the attributes of individuals (wealth, age, education) to define social structure, and relies on standard descriptive (e.g. mean and standard deviation) and predictive (e.g. regression) statistics to convey central tendency and model variation. Rather than the individual person, group or institution, SNA views the ties or linkages between two or more persons, groups or institutions as the essential units of analysis. Those ties may, in turn, be ones of resource transfer (creditor-debtor), association (shared membership) or biological connection (kinship), among others. Whatever the nature of the ties, the "social network" is the amalgamation of ties among actors and the "social structure" is the pattern those ties assume. Special statistical procedures designed to formalize SNA notions about the density of ties (what proportion of all potential ties actually exists), the centrality of actors (which actor can be reached by the most people), and structural equivalence (do actors have similar patterns of ties), among others, all contribute to a unique analytical vocabulary and toolbox that further distinguishes SNA from conventional social analysis.<sup>10</sup>

Perhaps the most fundamental analytical division in SNA is between a whole network (WN) and an egocentric (EC) approach. The WN approach seeks to capture all essential relations or ties among actors in a social system. All members are theoretically included and all relevant ties are documented and analyzed. Analysts of modern business behavior and interlocking

(1994), pp. 1411–1454; Steven Brint, "Hidden Meanings: Cultural Content and Context in Harrison White's Structural Sociology", *Sociological Theory*, 10 (1992), pp. 194–208; Harrison C. White, "Social Grammar for Culture: Reply to Brint", *ibid.*, pp. 209–213; and idem, *Identity and Control* (Princeton, NJ, 1992).

9. As a starting point, see Anthony Giddens, *Central Problems in Social Theory* (London, 1979); and Philip Abrams, *Historical Sociology* (Ithaca, 1982).

10. Wasserman and Faust, *Social Network Analysis* contains complete explanations of most network measures, and is virtually a one-stop methodological guide. See Bonnie Erickson, "Social Networks and History: A Review Essay", *Historical Methods*, 30 (1997), pp. 149–157. Most network measures have been incorporated into the software package UCINET (Steven Borgatti, Martin Everett and Linton C. Freeman, *UCINET IV*, Analytic Technologies (Natick, MA, 1995), [www.analytictech.com](http://www.analytictech.com)). Older, but still useful, guides are S.D. Berkowitz, *An Introduction to Structural Analysis* (Toronto, 1982); David Knoke and James Kuklinski, *Network Analysis* (Beverly Hills, 1982); and John Scott, *Network Analysis: A Handbook* (Newbury Park, 1992). See also Peter V. Marsden and Nan Lin (eds), *Social Structure and Network Analysis* (Beverly Hills, 1982), and Ronald S. Burt and Michael Minor (eds), *Applied Network Analysis: A Methodological Introduction* (Beverly Hills, 1983).

corporate directorates illustrate this research tradition.<sup>11</sup> By contrast, analysts of egocentric networks study the ties that single individuals possess and use. Research questions in this tradition focus on the nature and quality of ties, and how those relations serve to structure individual life by opening up or closing down channels of affection, support and action.<sup>12</sup> Some network analysts contend that the whole network approach is the more powerful of the two approaches because it presumes to capture the essence of a social system, and because the vast majority of specialized statistical techniques that analysts have developed in the past thirty years are designed for whole networks.<sup>13</sup>

WN methods are grounded in graph theory as a network may be portrayed easily and comprehensibly as a matrix. Rows and columns represent all actors in the social system and the contents of individual cells the existence and nature of the relationship between any two network members. Consider, for example, the small groups of individual investors who underwrote the risks of ocean-going commerce in the early modern world. A 1765 London insurance syndicate could be represented by the matrix,  $X$ ,

	Smith	Parish	Herder	Willis	Cotton	Hoyle
Smith	–	1	0	0	0	0
Parish	1	–	0	0	0	1
Herder	0	0	–	0	0	1
Willis	0	0	0	–	0	1
Cotton	0	0	0	0	–	1
Hoyle	0	1	1	1	1	–

and the cell contents,  $X_{ij}$ , whether members had any previous underwriting ties or experience with each other. A one would indicate the presence of an earlier tie and a zero the absence of a tie. It is clear that the members had only modest experience with each other. Indeed, the density of the network is .33, which means that only 33 per cent of all possible ties exist.<sup>14</sup> Equally clear is that Hoyle had been involved previously in syndicates with four of the investors, and that he was the most connected or central member of the network.

It is from matrix representations of ties such as this that WN methods

11. Mark S. Mizruchi, *The American Corporate Network: 1904–1974* (Beverly Hills, 1982); and idem, *The Structure of Corporate Political Action: Interfirm Relations and Their Consequences* (Cambridge, MA, 1992).

12. Barry Wellman, Peter J. Carrington and Alan Hall, "Networks as Personal Communities", in Wellman and Berkowitz, *Social Structures*, pp. 130–184.

13. Wasserman and Faust, *Social Network Analysis*, pp. 17–19.

14. Density,  $\Delta$ , is defined as  $2L/g(g-1)$ , where  $g$  is the number of actors (investors), and  $L$  is the number of ties present. As ties are bi-directional, the number of ties ( $L$ ) is thus assessed on only one diagonal, i.e.  $L$  is equal to 5, not 10: *ibid.*, pp. 101–103, 164.

can extract information about patterns of ties and the structure of the social system being studied; density is but one of many measures that might be used. In this respect at least, the WN approach enjoys an advantage over the EA approach since the methods of conventional social analysis cannot be employed on a matrix conceptualized as a complete social system. At the same time, WN measures such as density can be used as attributes in an egocentric analysis. In conjunction with standard social data such as age, wealth or residence, for example, it might be that unsuccessful syndicates tended to be those composed of investors who had previous experience with each other, that is networks with high densities. Although this might seem to contradict commonsense notions that experience would be an advantage, the network notion that new information tends to flow through networks that are not dense with overlapping ties could well explain the pattern.<sup>15</sup> New men brought to any syndicate a collectively larger store of information that the group could use to assess better the risks of any particular voyage or trading enterprise. Thus WN and EC approaches can be employed together with real analytic gain.

Darrett B. and Anita H. Rutman's "community study" of Middlesex County, Virginia, in the seventeenth and eighteenth centuries illustrates both the demanding data requirements of the WN approach as well as the enormous payoff of using WN methods in historical research.<sup>16</sup> While conceptually the WN approach presumes to capture a social system completely, practically this means collecting from all available sources all possible instances of social interaction, a formidable task under the best of circumstances. The Rutmans conducted a collective biography or prosopography of more than 12,000 persons who resided in Middlesex between 1650 and 1750 long enough to be caught in the historical record. From tax, court and church records they collected information on social interactions that bound people as buyers and sellers of property, or as executors of estates, guardians of minors, witnesses at marriages and as godparents at baptisms. They used civil and ecclesiastical registers of births, marriages and deaths to reconstruct the kinship of Middlesex residents so that they could analyze what interactions were those with kin. The Rutmans' explicit network analytic approach allowed them to see change in the overlapping of kinship and friendship ties as the demographic regime improved from the seventeenth to the eighteenth centuries, to capture the geographic concentration of kinship ties within neighborhoods, and to measure the contrasting balance in local and provincial ties among the county's elite and commoners. It was network analytic

15. Mark Granovetter, "The Strength of Weak Ties: A Network Theory Revisited", in Peter Marsden and Nan Lin (eds), *Social Networks and Social Structure* (Beverly Hills, 1982), pp. 105–130.

16. Darrett B. and Anita H. Rutman, *A Place in Time: Middlesex County, Virginia, 1650–1750*, 2 vols (New York, 1984).

methods in particular that helped the Rutmans to uncover key features of the social structure of a community in the early modern world.<sup>17</sup>

The data requirements of the EC approach are arguably less severe than the WN approach, but nonetheless still formidable. Since EC analysts focus on the nature and quality of ties individuals possess, sources that reveal the subjective importance of social ties are often more important than those that simply document those ties. A few qualitatively revealing diaries or collections of personal correspondence can sustain an EC analysis since the object of study is to analyze the social network of an individual, never the entire social system that the WN approach seeks to comprehend. Women separated by westward migration in the nineteenth-century United States, for example, left voluminous personal accounts in diaries and letters that reveal the composition of their emotional networks and how those often spatially far-flung network members served to sustain them over time in different objective circumstances.<sup>18</sup> Historical accounts that document affection or social support have been used to reconstruct visions of networks in the past, but not in systematic ways characteristic of contemporary egocentric SNA.<sup>19</sup> Indeed, the promise of the EC approach in HSNA has yet to be realized.

Analysts in the egocentric tradition have reconceptualized contemporary personal networks as “personal communities”. These analysts study individuals’ ties with kin, neighbors, friends and coworkers, and how they actively use those ties in the conduct of everyday life.<sup>20</sup> Findings about the size,

17. There are excellent works of HSNA that employ WN methods, but these remain the product of only a handful of historical sociologists. See, for example, Peter S. Bearman, *Relations into Rhetorics: Local Elite Social Structure in Norfolk, England, 1540–1640* (New Brunswick, NJ, 1993); Bearman and Glenn Deane, “The Structure of Opportunity: Middle-Class Mobility in England, 1548–1689”, *American Journal of Sociology*, 98 (1992), pp. 30–66; Bearman and Kevin D. Evertt, “The Structure of Social Protest”, *Social Networks*, 15 (1993), pp. 171–200; John F. Padgett and Christopher K. Ansell, “Robust Action and the Rise of the Medici, 1400–1434”, *American Journal of Sociology*, 98 (1993), pp. 1259–1319; Ansell, “Symbolic Networks: The Realignment of the French Working Class, 1887–1894”, *American Journal of Sociology*, 103 (1997), pp. 359–390; Roger V. Gould, *Insurgent Identities: Class, Community, and Protest in Paris From 1848 to the Commune* (Chicago, 1995); and idem, “Patron-Client Ties, State Centralization, and the Whiskey Rebellion”, *American Journal of Sociology*, 102 (1996), pp. 400–429.

18. See, for example, John Mack Faragher, *Woman and Men on the Overland Trail* (New Haven, 1979), pp. 110–143; Carroll Smith-Rosenberg, “The Female World of Love and Ritual: Relations Between Women in Nineteenth-Century America”, *Signs*, 1 (1975), pp. 1–30; and Elizabeth Hampsten, *Read This Only to Yourself: The Private Writing of Midwestern Women, 1880–1910* (Bloomington, IN, 1982). Although these works represent an older strain in women’s history that has given way to more postmodernist concerns about the relationship of gender to race and class, their findings remain relevant for egocentric HSNA.

19. The classic example of the egocentric approach in history remains Alan MacFarlane, *The Family Life of Ralph Josselin, A Seventeenth-Century Clergyman: An Essay in Historical Anthropology* (Cambridge, 1970).

20. The most prominent advocate of the personal community model is Barry Wellman. See Wellman and Barry Leighton, “Networks, Neighborhoods and Communities”, *Urban Affairs*

composition, character and support functions of contemporary personal networks provide a point of departure for discussing the utility of the “personal community” model for HSNA.

1. *Size*: Analysts have estimated that contemporary North Americans and Western Europeans have an average of about 20 strong, active ties and 1,500 weaker ties. Active ties provide people with most of their significant affection, support and social contact. Weak ties integrate and speed the diffusion of information; strong ties, by contrast, impede diffusion as they connect people in similar social circles.<sup>21</sup>
2. *Composition*: Kin comprise 30 to 45 per cent of all active ties; friends, neighbors and coworkers constitute the remaining part. Most intimate kin are immediate kin, and are about equally divided between spouses, parents or adult children (depending on age) and siblings.<sup>22</sup>
3. *Spatial Dispersion*: Personal communities are rarely either local residential groups or spatially dispersed networks, but rather a combination of both. Critically, there is no association between frequency of contact and the strength of relationships.<sup>23</sup>
4. *Interconnection*: Most members of personal community networks are not connected with each other. On average, only one-third of all possible ties actually exist, thus there is little structural basis for network members to work together to provide social support.
5. *Support*: Networks provide a broad range of support, but most members provide only specialized support. Kin behave differently from friends in rendering support. Ties between parents and adult children are the strongest and most broadly supportive. Siblings are similar to friends in providing emotional support, while extended kin are the least likely of all network members to provide any support. In sum, contemporary

*Quarterly*, 14 (1979), pp. 363–390; Wellman, “The Community Question Re-evaluated”; Wellman *et al.*, “Networks as Personal Communities”; and Wellman, “An Egocentric Network Tale”, *Social Networks*, 15 (1993), pp. 423–436. See also Claude S. Fischer, *To Dwell Among Friends: Personal Networks in Town and City* (Chicago, 1983).

21. Manfred Kochen (ed.), *The Small World* (Norwood, NJ, 1989); Mark Granovetter, “The Strength of Weak Ties”, *American Journal of Sociology*, 78 (1973), pp. 1360–1380; Herbert Gans, “Comment”, *ibid.*, 80 (1974), pp. 524–529; and Granovetter, “The Strength of Weak Ties” . . . Revisited”.

22. Barry Wellman and Scot Wortley, “Brothers’ Keepers: Situating Kinship Relations in Broader Networks of Social Support”, *Sociological Perspectives*, 32 (1989), pp. 273–306; idem, “Different Strokes From Different Folks: Community Ties and Social Support”, *American Journal of Sociology*, 96 (1990), pp. 558–588; Wellman, “The Place of Kinfolk in Community Networks”, *Marriage and Family Review*, 15 (1990), pp. 195–228.

23. Barry Wellman, “Are Personal Communities Local? A Dumptarian Reconsideration”, *Social Networks*, 18 (1996), pp. 347–354.

personal communities have distinct divisions of labor, and network members are rarely interchangeable parts.<sup>24</sup>

The analytical imperatives of HSNA, in general, and of the personal community model in particular, derive from what Barry Wellman calls the “community question”, or what happened to community and community life in the transition from the pre-modern to the modern worlds?<sup>25</sup> The historical vision underlying the community question belongs to Ferdinand Tönnies, whose portrayal of the shift from *Gemeinschaft* to *Gesellschaft* was an attempt to understand the changes that attended urbanization, industrialization and bureaucratization in the Western world at the end of the nineteenth century. Tönnies argued that there was a fundamental difference between communally (*Gemeinschaft*) and contractually (*Gesellschaft*) organized societies.<sup>26</sup> He assumed that social, economic and political life would be fundamentally different in each. He thought that in largely rural, communally-organized societies ties would be principally with kin and neighbors, and that social relationships would be densely knit; that is, most people would be connected with each other in some way. By contrast, Tönnies asserted that social relationships in modern, urbanized, industrial society would be more sparsely knit and would be with friends and acquaintances who were neither kin nor connected with each other. In sum, in the transition to the modern world, urbanization and attending migration ruptured spatial constraints on life, and instrumental, contractual social arrangements superseded customary behavior and informal communal control.

Tönnies’ view was part of a particularly nineteenth-century European debate about the transformation of society, but he bequeathed to later generations of European historians the disciplinary imperative to understand the destruction of isolated, territorial, immobile, rural communities, and the construction of new, spatially dispersed, communities of interest. Although Tönnies’ vision of the traditional European world turned out to be essen-

24. Wellman and Wortley, “Brothers’ Keepers”; idem, “Different Strokes From Different Folks”; and Wellman, “Which Types of Ties and Networks Give What Kinds of Social Support?”, in Edward Lawler, Barry Markovsky, Cecilia Ridgeway and Henry Walker (eds), *Advances in Group Processes* (Greenwich, CT, 1992), vol. 9, pp. 207–235.

25. Barry Wellman, “The Community Question: The Intimate Networks of East Yorkers”, *American Journal of Sociology*, 84 (1979), pp. 1201–1231; idem, “Studying Personal Communities”, pp. 61–80; idem, “The Community Question Re-evaluated”, in Michael Peter Smith (ed.), *Power, Community and the City* (New Brunswick, NJ, 1988), pp. 81–107; idem, “Structural Analysis”. The following section draws upon Barry Wellman and Charles Wetherell, “Social Network Analysis of Historical Communities: Some Questions from the Present for the Past”, *History of the Family*, 1 (1996), pp. 97–121, which discusses how European and American historians have approached community.

26. Ferdinand Tönnies, *Community and Organization* (London, 1955; 1st pub. 1887).



tially wrong, his legacy shaped the debate for nearly a century.<sup>27</sup> Work on the importance of kinship in historic Europe illustrates both the power of Tönnies' legacy and the utility of HSNA.

From the early 1960s, family historians addressed Tönnies' assertion that modernization destroyed kinship as the social glue of the traditional world. They initially constructed a vision of a diminution of kinship as a force in family life, emphasizing a reorientation of affective bonds away from kin and toward spouses and children, leaving kin in early modern Europe with severely diminished roles.<sup>28</sup> Michael Anderson later undermined the diminution of kinship view by demonstrating that people received critical support from kin during the stressful adjustment to urbanization and industrialization.<sup>29</sup> While Tamara Hareven showed families turning to kin in everyday life as well as during major life-course transitions such as migration,<sup>30</sup> the view that ultimately prevailed was one of kinship-crisis, in its simplest form, that people used kin mostly in times of dire need.<sup>31</sup>

During the same three decades family demographers wrestled with the question of whether people in the past had enough kin to live in complex family households (multiple lineal generations or collateral family groups), which were presumed to have been the living arrangements of choice before the pressures of urbanization and industrialization created the mobile nuclear family that could respond easily to changes in the demand for labor. Researchers soon discovered that most people in Western Europe from the fifteenth century onward lived in nuclear families, belying the assertion that industrialization forced a massive structural change in family life, but also

27. Charles Tilly, "Misreading, then Rereading, Nineteenth-Century Social Change", in Wellman and Berkowitz, *Social Structures*, pp. 332–358. For accounts of traditional community life that invalidate Tönnies' views, see Keith Wrightson and David Levine, *Poverty and Piety in an English Village: Terling, 1525–1700* (New York, 1979); David I. Kertzer and Dennis P. Hogan, *Family, Political Economy, and Demographic Change: The Transformation of Life in Casalecchio, Italy, 1861–1921* (Madison, WI, 1989); David Warren Sabean, *Property, Production, and Family in Neckarhausen, 1700–1870* (Cambridge, 1990); and Leslie Page Moch, *Moving Europeans: Migration in Western Europe Since 1650* (Bloomington, IN, 1992).

28. Phillipe Aries, *Centuries of Childhood: A Social History of Family Life*, trans. Robert Baldick (New York, 1962); Edward Shorter, *The Making of the Modern Family* (New York, 1975); and Lawrence Stone, *The Family, Sex, and Marriage in England, 1500–1800* (New York, 1977).

29. Michael Anderson, *Family Structure in Nineteenth-Century Lancashire* (Cambridge, 1971).

30. Tamara K. Hareven, *Family Time and Industrial Time: The Relationship Between the Family and Work in a New England Industrial Community* (New York, 1982). Hareven echoed many of Raymond Firth's and Elizabeth Bott's findings for Londoners in the 1950s and 1960s: Bott, *Family and Social Network: Roles, Norms, and External Relationships in Ordinary Urban Families* (London, 1957); and Firth, Jane Hubert, Anthony Forge *et al.*, *Families and Their Relatives: Kinship in a Middle Class Sector of London: An Anthropological Study* (London, 1969).

31. Peter Laslett, "Family, Kinship, and Collectivity as Systems of Support in Pre-Industrial Europe: A Consideration of the 'Nuclear-Hardship' Hypothesis", *Continuity and Change*, 3 (1988), pp. 153–175; Charles Wetherell, Andrejs Plakans and Barry Wellman, "Social Networks, Kinship, and Community in Eastern Europe", *Journal of Interdisciplinary History*, 24 (1994), pp. 639–663, recast Laslett's nuclear-hardship as kinship-crisis.

raising the issue from one of demography to one of culture. Did people in the past choose to live in nuclear families or did demographic constraints thwart their desire to live in extended families? The discovery of complex household forms in Southern and Eastern Europe only confounded the matter. Some demographers asserted that both pre- and post-industrial demographic regimes provided people with sufficient numbers of kin to make complex family living arrangements possible; others maintained that this only happened in the nineteenth century.<sup>32</sup> Although neither position prevails and family historians and family demographers continue to pursue separate research agendas,<sup>33</sup> the critical question for an HSNA of historic European kinship is how general demographic constraints created genealogical, and hence kinship, structures that affected the possibilities for different living arrangements and the composition of personal community networks.

Historians have routinely uncovered people interacting with kin when conveying or receiving property, or at demographic events such as births, marriages and deaths that create or destroy kin. Indeed, traditional social historical evidence dealing with property and population only serves to reinforce high level generalizations that people used and valued kin and kinship, and that kin rendered support at times of need. Yet beyond this, historians have not systematically analyzed such behavior. SNA and the personal community model help to reformulate questions about historic kinship in ways that provide a concrete research agenda.

First, questions about kinship may be recast in terms of genealogical structure. Exactly how many people in a given locale were actually related? A satisfactory answer to this extremely difficult question will alone confirm or deny the impression that almost everyone was related to almost everyone else in the isolated rural communities of the traditional European past.<sup>34</sup> In network terms, the issue is a matter of kinship density: again, the proportion of all possible ties that actually exist. Kinship density, in turn, can suggest

32. Steven Ruggles, "Availability of Kin and the Demography of Historical Family Structure", *Historical Methods*, 19 (1986), pp. 93–102; idem, *Prolonged Connections: The Rise of the Extended Family in Nineteenth-Century England and America* (Madison, 1987); and David I. Kertzer, "The Joint Family Household Revisited: Demographic Constraints and Household Complexity in the European Past", *Journal of Family History*, 14 (1989), pp. 1–15.

33. Steven Ruggles, "Family Demography and Family History: Problems and Prospects", *Historical Methods*, 23 (1990), pp. 22–33, is the most explicit statement of the division.

34. For comments on the issue by family historians, see, for example, Andrejs Plakans, "Identifying Kinship Beyond the Household", *Journal of Family History*, 2 (1977), pp. 3–27; and David I. Kertzer, "Kinship Beyond the Household in a Nineteenth-Century Italian Town", *Continuity and Change*, 7 (1992), pp. 103–121. Among family demographers, the issue is inextricably tied to simulations. See, for example, James E. Smith, "The Computer Simulation of Kin Sets and Kin Counts", in John Bongaarts, Thomas Burch and Kenneth Wachter (eds), *Family Demography: Methods and Their Applications* (Oxford, 1987); Ruggles, *Prolonged Connections*; and Wendy Post, Frans van Poppel, Evert van Imhoff and Ellen Kruse, "Reconstructing the Extended Kin-Network in the Netherlands with Genealogical Data: Methods, Problems, and Results", *Population Studies*, 51 (1997), pp. 263–278.

whether there was any structural basis for kin to act collectively to assist when disaster befell a relative? In short, was kinship density high enough to support the kinship-crisis view of traditional social welfare?

Second, the personal community model provides specific questions about historic kinship based on substantial empirical research on contemporary egocentric networks. Was the place of kin in past personal communities different from that in the contemporary world? Was individual social support as specialized as it is today? From this network analytic perspective, historians need not ask if people had cousins or grandparents, but rather whether they had siblings, parents or adult children since these are the most important ties in the contemporary world. Answers to these structural questions will then allow specific instances of economic and social support to be placed in context and cross-temporal comparisons drawn. In sum, an HSNA of kinship can refocus the community question because the notion of personal communities makes better analytic sense than any simple vision of historical kinship or undifferentiated community support.<sup>35</sup> An HSNA of historic kinship also promises to rejoin the concerns of family historians and family demographers.

#### A CASE STUDY

The landed estate of Pinkenhof in the Russian Baltic province of Livland, now part of Latvia, during the late eighteenth and nineteenth centuries provides a case study for a preliminary HSNA of kinship.<sup>36</sup> Agricultural estates such as Pinkenhof served as the principal economic units in the Baltic agrarian regime, and were themselves subdivided into estate lands and peasant farmsteads whose size and number changed very little over time. Pinkenhof's peasants operated farmsteads for themselves and provided corvée labor as serfs on estate lands before emancipation in 1819, and labor as farmstead rents after that. Migration was controlled and peasants did not

35. See Tamara K. Hareven, "The History of the Family and the Complexity of Social Change", *American Historical Review*, 96 (1991), pp. 95–124; and Glen Elder, "Families and Lives: Some Developments in Life Course Studies", in Hareven and Andrejs Plakans (eds), *Family History at the Crossroads: A Journal of the Family Reader* (Princeton, 1987), pp. 179–199.

36. The following discussion draws largely on Andrejs Plakans and Charles Wetherell, "The Kinship Domain in an East European Peasant Community: Pinkenhof, 1833–1850", *American Historical Review*, 93 (1988), pp. 367–371; idem, "Family and Economy in an Early Nineteenth-Century Baltic Serf Estate", *Continuity and Change*, 7 (1992), pp. 199–223; Wetherell *et al.*, "Social Networks, Kinship, and Community in Eastern Europe"; Plakans and Wetherell, "Migration in the Later Years of Life in Traditional Europe", in David I. Kertzer and Peter Laslett (eds), *Old Age in Past Times: The Historical Demography of Aging* (Berkeley, 1995), pp. 156–174; and Wetherell and Plakans, "Intergenerational Transfers of Headships over the Life Course in an Eastern European Peasant Community, 1782–1850", *History of the Family*, 3 (1998), pp. 333–349. All provide fuller discussions of Eastern European kinship, serfdom and emancipation, as well as mobility, the peasant economy and living arrangements in Pinkenhof from 1782 to 1850.

gain the right to own land until the early 1860s. Like thousands of other such estates in the Baltic before the mid-nineteenth century, Pinkenhof was a relatively isolated, rural community with a largely immobile population, just what Tönnies thought characterized the traditional European world.

Evidence about kinship in Pinkenhof comes from a series of nominal censuses, or so-called “revisions of souls”, taken in the Russian Empire between 1795 and 1850. All contain some relational data about the farmstead head and his or her immediate family and co-resident kin, but the 1850 revision is unique. It includes relational information about all members of each enumerated farmstead, where people had been in 1833, the year of the last revision, thus allowing inter-farm movement to be tracked, and when people had died or migrated during the period between the two revisions. The essential information extracted from the revisions for reconstructing kinship was data on birth, death and parentage. Because the revisions identified the marital status of all and the parentage of most peasants, kinship could be computed to five lineal and collateral steps. If one knows, for example, that Janis is both the brother of Maris and the father of Andrejs, then by following a few simple rules it is easy to reckon that Maris is Andrejs’ father’s brother, or uncle, and all of Maris’ children are Andrejs’ cousins. Together, the 1833 and 1850 revisions provide enough information about each individual to allow the population to be completely reconstructed from 1833 to 1850 and kindreds assembled for the 1,569 people living on the estate in 1850.<sup>37</sup>

Each peasant in Pinkenhof in 1850 had an average of nine relatives, which represented less than 1 per cent of the entire population.<sup>38</sup> Although possibly understated by 10 per cent, the kinship density in Pinkenhof was so low that it offers little guidance beyond refuting the general assertion of widespread kin connectedness in the traditional European past.<sup>39</sup> But we can go further. Unlike in most of Western Europe, marriage in Pinkenhof did not result in the formation of a separate household; newly married couples tended to reside on the groom’s farmstead, creating complex households of two or more nuclear or conjugal family groups. Each farmstead had a designated head who dealt with estate authorities, managed the farmstead’s workforce, settled disputes and generally oversaw the farmstead’s population. As Pinkenhof farmsteads contained an average of twelve to thirteen people, headship was a position of status, power and responsibility in Baltic peasant society.

37. See Plakans and Wetherell, “The Kinship Domain”, pp. 363, 367–371 for a fuller discussion of the evidence.

38. Kin are defined as genealogical relations within three collateral or lineal steps, which incorporates such normal kin types as parents, children, siblings, aunts, uncles, cousins, grandparents and grandchildren. The mean number of kin among the 1,569 residents of Pinkenhof was 9.3 ( $s = 9.3$ ; median = 7). Among the 1,438 peasants with kin, the average was 10.1 ( $s = 9.2$ ; median = 7).

39. Plakans and Wetherell, “The Kinship Domain”, p. 368 and n. 24.

Given the importance of farmsteads, kinship ties between residents of different farms provide another view of Pinkenhof's social structure. Formal whole network measures help to describe that structure. Among the 123 farmsteads in Pinkenhof, there were 352 actual ties, for a density of .047, which is to say that only 4.7 per cent of all possible kinship ties actually existed. However, given the additional network notion of reachability to "a kin of a kin" (two steps), Pinkenhof farmsteads possessed ties to an average of 27 or 22 per cent of all other farmsteads.<sup>40</sup> From this perspective at least, kinship in Pinkenhof created a social structure that connected any one farmstead with a fifth of all other farmsteads. Additionally, if adult Pinkenhofers possessed 1,000 active ties, far fewer than in the contemporary world, then the 837 adults over 20 in 1850 probably knew every other adult on the estate. Thus, while individual kinship embeddedness may have been low, kin ties among farmsteads were far more extensive; this in turn suggests structural reasons for supposing that kinship-crisis social support may have been a reality where complex household forms prevailed. Discovering instances of such assistance remains the task of future work.

Assessing the place of kin in the lives of individual peasants remains far more difficult because the evidence at hand reveals only structural possibilities rather than the historical reality. Nonetheless, possibilities come first. Could the peasants of Pinkenhof have constructed personal communities that included kin to the same extent as people in the contemporary world? Using the example of East York, in Toronto, Canada, as a robust point of comparison, the answer is no.<sup>41</sup> Although Pinkenhof's peasants had an average of nine kin, only four to five were other adults. East Yorkers included six kinds of ties in their personal communities: spouses, parents and adult children, siblings, extended kin, coworkers and friends. While most adults in Pinkenhof had kin ties with spouses and parents or adult children, most had only one adult sibling and one extended kin. Table 1 shows that the typical personal community of an adult East Yorker was split half and half between kin and friends. In Pinkenhof, that split would have been closer to one-third/two-thirds because the pool of both immediate and extended kin was smaller.<sup>42</sup> Thus, in order for Pinkenhofers to have assembled personal

40. Wasserman and Faust, *Social Network Analysis*, pp. 107, 159–161. Pinkenhof farmsteads had direct kin ties with an average of 5.7 ( $s = 4.7$ ) other farmsteads, and from these to an average of another 21.4 ( $s = 15.6$ ) farmsteads. Thus farmsteads had ties to an average of 27.1 ( $s = 19.8$ ) additional farms through at most one intermediate step. Short chains of two or less are thought to be highly effective channels of aid and information.

41. Wellman, "The Community Question Re-evaluated", provides a comparison of findings that indicates East York is a good benchmark for the size and composition of contemporary personal communities.

42. Spouses are often excluded from profiles of personal communities because they provide so much more support than any other network member: see, Barry Wellman and Beverly Wellman, "Domestic Affairs and Network Relations", *Journal of Social and Personal Relationships*, 9 (1992), pp. 385–409; Wellman *et al.*, "Networks as Personal Communities". The absence of large pools of

Table 1. *Size and composition of personal communities in Toronto, 1978 and Pinkenhof, 1850*

	Toronto, 1978		Pinkenhof, 1850			
	N	%	Actual N	Hypothetical N	%	
Spouse	1	8.3	1	1	8.3	
Parent/adult child	1	8.3	1	1	8.3	
Siblings	3	25.0	1	1	8.3	
Extended, kin	1	8.3	50.0	1	8.3	33.3
Coworkers	1	8.3	5	2?	16.7	
Friends and neighbors	5	41.7	50.0	6?	50.0	66.7
Totals	12	100.0	9	12	100.0	
Sample N	33		837			

Sources: East York Social Network Study, 1978, Centre for Urban and Community Studies, University of Toronto; Eighth (1833) and Ninth (1850) Imperial Revisions, Central National Historical Archive, Riga, Latvia. Baltic Microfilms, D112, J.G. Herder Institute, Marburg a.d. Lahn, Germany.

Note: Ns, except sample size, are medians.

networks of the size East Yorkers enjoyed, they would have had to include more non-kin. More generally, the pre-modern demographic regime of Pinkenhof clearly limited the number of immediate and extended kin that Pinkenhof peasants could have included in their personal networks, confirming that kinship was structurally different from that in the contemporary world.

The number and kind of adult kin Pinkenhofers possessed varied predictably with age, and in ways that indicate important patterns of kin-life. As Figure 1 displays, adults in their twenties still had parents and siblings; in their thirties they acquired spouses and collateral kin and retained their parents. In their forties, however, Pinkenhof peasants experienced a sea change in their kindreds as they rapidly began losing both siblings and parents at the same time their own children were maturing. By their late fifties, most people had living adult children, but few other kin. Less than one in ten Pinkenhofers over sixty had a living sibling and only one in five had any other extended kin; yet seven in ten had an adult child somewhere on the estate.<sup>43</sup>

The farmstead system of the Baltic agrarian regime further constrained contact with kin. Pinkenhof peasants lived in a "barracks society", in which communal living arrangements prevailed.<sup>44</sup> Housing consisted of structures

immediate kin in Pinkenhof, however, argues for including spouses; for a profile that excludes spouses, see Wetherell *et al.*, "Social Networks, Kinship, and Community in Eastern Europe", esp. Table 1, p. 652.

43. See *ibid.*, Table 2, p. 653.

44. Plakans and Wetherell, "Kinship Domain", p. 371.

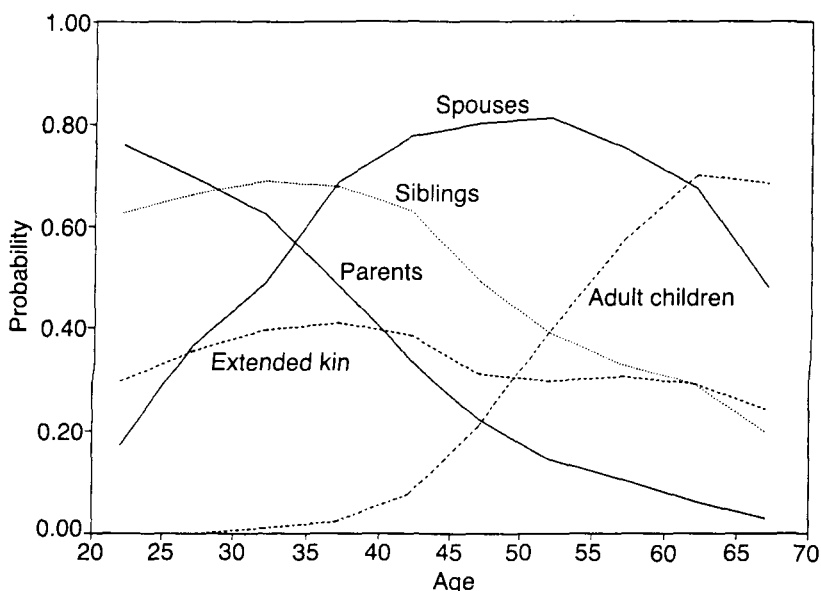


Figure 1. Probabilities of having select kin, by age, Pinkenhof, 1850

Sources: Eighth (1833) and Ninth (1850) Imperial Revisions, Central National Historical Archive, Riga, Latvia. Baltic Microfilms, D112, J.G. Herder Institute, Marburg a.d. Lahn, Germany.

Note: Lines are three-point moving averages.

with large common rooms and perhaps one or two adjoining rooms. People lived, ate and worked together in close, if not intimate, proximity throughout the year. Yet the pool of kin people could use to assemble personal communities that resembled East Yorkers' was even smaller given the possibilities that existed for residents of the same farm. Only slightly more than a third of all adults lived with a parent or an adult child, less than a third with a sibling, and less than an eighth with an extended kin. Fewer than half of young, mostly unmarried, adults in their twenties lived with a parent or sibling – the two most important affective and supportive ties in contemporary personal communities. If Pinkenhof adults formed their strongest ties with their parents, adult children and siblings as they do today, then most of them had to do it off the farm. The situation, however, was decidedly different for a minority of peasants.

Historians have consistently maintained that Baltic peasants valued having kin close at hand and that, given the opportunity, they would live with kin. In part this was a matter of availability, but it was also a matter of ability. Those most able to gather kin together were the heads of Pinkenhof's farmsteads, who possessed the authority to hire and fire the farmstead's workforce. Figure 2 reveals the contrasting situations for heads and their coresident kin on the one hand, and for hired farmhands and their families

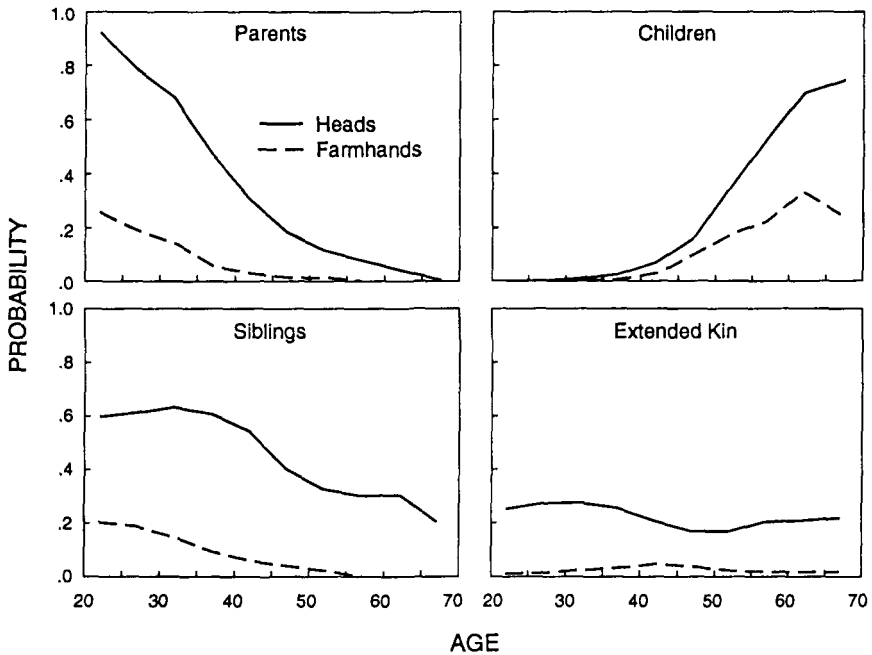


Figure 2. Probabilities of residing with select kin, by age and farmstead status, Pinkenhof, 1850  
 Sources: Eighth (1833) and Ninth (1850) Imperial Revisions, Central National Historical Archive, Riga, Latvia. Baltic Microfilms, D112, J.G. Herder Institute, Marburg a.d. Lahn, Germany  
 Note: Lines are three-point moving averages.

on the other. Overall, more than half of those who were either heads themselves or their coresident relatives lived with an adult child, and nearly half with an adult sibling. The experience of hired farmhands stands in stark contrast. Less than 16 per cent had a coresident parent or adult child, less than 10 per cent an adult sibling, and less than 3 per cent an extended kin – not a very bright picture for forming personal communities out of coresident kin.<sup>45</sup>

To establish demographic and residential constraints on the opportunities for forming personal communities from kin does not describe the reality. Certainly the peasants of Pinkenhof had friends and neighbors to whom they could turn for companionship, affection and assistance. To think otherwise would be to deny a world we know existed in the eastern European past. Because the possibilities of assembling personal communities in which kin constituted a significant part were limited, Pinkenhofers probably turned to adults living on their own and nearby farmsteads to form emotionally and socially supportive personal networks. Indeed, if Pinkenho-

45. Wetherell *et al.*, "Social Networks, Kinship, and Community", Table 3, p. 656.



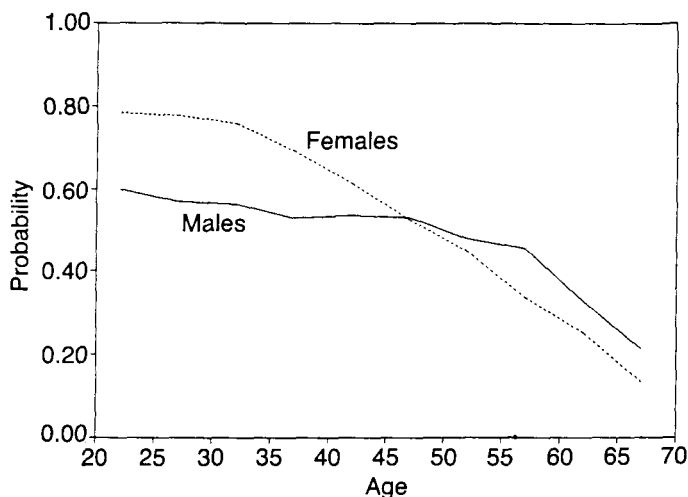


Figure 3. Probabilities of residing with a person of the same sex and age, by gender, Pinkenhof, 1850

Sources: Eighth (1833) and Ninth (1850) Imperial Revisions, Central National Historical Archive, Riga, Latvia. Baltic Microfilms, D112, J.G. Herder Institute, Marburg a.d. Lahn, Germany.

Note: Lines are three-point moving averages.

fers constructed personal communities of any size, they needed to use more non-kin than kin. Whether peasants sought out friends of the same age and sex is difficult to determine, but the society was sufficiently sensitive to age differences to assume Pinkenhofers preferred to make friends with people their own age.

For the most part, adults in Pinkenhof had little trouble finding other adults of the same age and sex somewhere on the estate. Yet, as Figure 3 reveals, living with someone of the same age (defined here as within five years) and gender was a luxury of youth, as adults tended to live increasingly in age-varied circumstances as they grew older.<sup>46</sup> The dynamics of the farmstead system in Pinkenhof worked to segregate both men and, especially, women from their peers as they aged. Throughout most of their adult years, whether as heads, sons of heads, or farmhands, men tended to live with other men of the same age. The odds, however, were never better than six in ten. Initially at least, women fared better. As daughters of farmstead heads or female farmhands, nearly eight in ten females in their twenties could expect to reside with other women until they married in their late twenties. As they married, moved to other farmsteads with their husbands,

46. The median difference in age between the 33 individuals in the second, 1978 East York Social Network Study, and the 208 people in their intimate personal networks was 5 years (mean = 8.3,  $s = 9.4$ ). East York Social Network Study, 1978, Centre for Urban and Community Studies, University of Toronto. Used with permission.

and started families of their own, women tended to reside less and less with other women their age. After both men and women reached their mid-forties – just as they experienced their sea change in kin life – they became increasingly less likely to live with others of the same sex and age. By the time they reached sixty they were residentially isolated from their peers. If they did not form friendships with the younger adults with whom they increasingly lived, the elderly would have had to maintain their dwindling number of same-age relationships off the farm.<sup>47</sup>

### CONCLUSION

This preliminary HSNA of historic kinship reveals three things. First, that individual kinship density was extremely low because the pre-modern demographic regime of Pinkenhof left adults with few immediate or extended kin.<sup>48</sup> Kinship connections between households, however, connected any one farmstead with more than 20 per cent of all the rest, which provides structural reasons for supposing that the kinship-crisis view of historic social support prevailed. Second, individual residents of Pinkenhof did not have enough kin to construct the kind of social networks that exist today. The patterns in the kin life of Pinkenhof adults, with a major shift in the mid-forties from being adult children with siblings to being parents of adult children with few, if any, siblings, indicate that the kin component of past personal networks would have changed significantly over the life course. Third, particular economic and social circumstances of the larger Baltic agricultural regime undoubtedly affected the construction and maintenance of the Pinkenhofer's personal networks. Both the living arrangements and division of power on individual farmsteads worked both to stratify farmstead populations and to force upon them a profound intimacy. Whether peasants considered the five other unrelated adults with whom they lived and worked to be significant members of their personal communities remains impossible to say, but it seems likely that some were also friends who provided sociability, affection and emotional support. The decreasing tendency to live with others of the same sex and age probably worked against forming friendships with other coresident adults over the life course and produced a profound isolation among the elderly.

The analytical imperatives of both the WN and EC approaches in SNA helped to reformulate existing questions about historic kinship in new ways. A WN assessment of individual kinship density effectively belies the assertion of widespread kin connectedness in traditional peasant communi-

47. Wetherell *et al.*, "Social Networks, Kinship, and Community", Table 4, p. 658.

48. Plakans and Wetherell, "The Kinship Domain", and Charles Wetherell and Andrejs Plakans, "Fertility and Culture in Eastern Europe: A Case Study of Riga, Latvia, 1867–1881", *European Journal of Population*, 13 (1997), pp. 243–268.

ties. Conceptualizing community as collections of personal relationships, however, provides historians with a blueprint for evaluating when, how and why people in the past used kin and non-kin in the course of their lives. The findings of social network analysts that people need and seek emotional and economic support of different kinds, from different kinds of people, suggest new analytical imperatives. It is not enough now to look solely at how people used kin in times of crisis. Rather, historians need to pursue how people in the past used the kin and friends they had, for different things, throughout the life course, and in the context of the opportunities they enjoyed and the constraints they faced courtesy of demography and culture. Other approaches might be applied to the problem, but HSNA contains the essential perspectives that cannot only advance the debate, but also help historians to meet Tilly's challenge to connect the lives of ordinary people to large-scale change in meaningful ways.

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A classic statement of structural sensibilities.

Emirbayer, Mustafa, "Manifesto for a Relational Sociology", *American Journal of Sociology*, 103 (1997), pp. 281–317.

Forceful statement on the current state and future needs of relational (largely SNA) thinking in sociology.

Tilly, Charles, "Do Communities Act?", *Sociological Inquiry*, 43 (1973), pp. 209–240.

Landmark essay in HSNA that posed questions about collective political action that analysts are still trying to answer today.

Wellman, Barry and S.D. Berkowitz (eds), *Social Structures: A Network Approach* (New York, 1988).

A comprehensive statement of SNA as a paradigm of social inquiry. Heavily weighted toward the egocentric approach, but includes discussions of the whole network approach. Remarkably clear and readable.

##### *Methods*

Borgatti, Steven, Martin Everett and Linton C. Freeman. *UCINET IV*, Analytic Technologies (Natick, MA, 1995).

Comprehensive software package that calculates most network analytic measures. Good documentation.

Wasserman, Stanley and Katherine Faust, *Social Network Analysis: Methods and Applications* (New York, 1994).

A one stop, detailed guide to network analytic methods. Heavy going but comprehensive.

### *Applications*

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Perhaps the best example of whole network HSNA. Demonstrates that network structure – and hence HSNA – can plausibly explain a major historical event.

Gould, Roger V., *Insurgent Identities: Class, Community, and Protest in Paris from 1848 to the Commune* (Chicago, 1995).

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