

Chapter IV. Social Networks of Jazz Musicians

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The structure of a community is defined by affiliation patterns—that is, the social relationships that link members of the community. These relationships vary in strength, from the extraordinarily strong bonds within families to the weaker links connecting friends and acquaintances. In combination, these relationships define the community's social network. Such relationships are reciprocal: your family members consider you a family member, and your friends and acquaintances consider you a friend or acquaintance. Merely knowing about people, such as Hollywood celebrities or political personalities, does not make them a part of the social network, however. Rather, social networks are created by the social relationships that bind together families and communities.

Social relationships serve as conduits through which resources flow. These take many forms, from assistance when help is needed to the exchange of pleasantries during informal interaction. For policy makers as well as scholars and observers, one indication of the resources potentially available to an individual is the number of others to whom that individual is linked. This defines the size of the individual's personal network, and it serves as an indicator of social status. An indication of the *cohesiveness of a community* is the density of social ties within that network. The mean personal network size of community members also serves as an indicator of *social capital*.

Social relationships can be structured in many different ways. Some communities are divided into independent and isolated racial or ethnic groups. In Robert Putnam's terms, these are communities based on *bonding social capital*—that is, group solidarity based on dense within-group social ties. Other communities are more integrated, with abundant cross-group ties—in Putnam's terms, communities with *bridging social capital*. These structural features

are important for understanding community dynamics. For example, when cross-group ties are sparse, the potential for conflict is great. Inequality also affects affiliation patterns. Some communities are highly stratified, with most interactions occurring among those of equal income, social status, and education. Others are more egalitarian, with abundant cross-status ties. Therefore, social networks may both reflect patterns of social inequality and determine the manner in which it is structured.

Some social ties are based on similarity. This tendency of similar persons to form social bonds was described by Galton more than a century ago and is termed *homophily*. Other bonds are based not on similarity but on difference. This is *heterophily*. Though opposites, homophily and heterophily can coexist. For example, musicians may form bonds based on the style of music in which they both specialize (homophily) while also forming groups with musicians who play different instruments (heterophily). Studying affiliation patterns provides a means for understanding both social differentiation (i.e., separate but equal) and social inequality (i.e., separate and unequal).

This chapter focuses on affiliation patterns revealed by our study of jazz musicians in two metropolitan areas, New York City and San Francisco. The study initially included New Orleans and Detroit as well, but owing to delays in the beginning of the study, less data on network structures were gathered from those two cities. The aims were to determine the organizing principles of the community of jazz musicians, including an assessment of the extent to which these differ from those of other social groups.

Creating an Appropriate Study Sample

The Respondent-Driven Sampling Method

This is the first time respondent-driven sampling (RDS) has been used to study artists. The recognition of this sampling method's potential as a means for studying artists grew out of a symposium supported by the Princeton University Center for

Arts and Cultural Policy, the Columbia University Teachers College Research Center for Arts and Culture, and the National Endowment for the Arts Research Division. Previously, the RDS method had been used to study "hidden populations," so-called because 1) no list of population members is available from which samples can be drawn, making the size, location, and boundaries of the population unknown, 2) members have privacy concerns and create informal networks that outsiders find hard to penetrate, and 3) the population is small relative to the general population. (Please see Poetics 28(4), "Finding the Beat: Using Respondent-Driven Sampling to Study Jazz Musicians;" by Douglas Heckathorn and Joan Jeffri for more detail). For nearly a decade RDS has been used as part of AIDS-prevention projects to find injection drug users and other groups at risk of HIV infection. The initial applications were in several small cities in Connecticut. Its use has now expanded to most major U.S. cities, as well as Amsterdam, Marseilles, Russia, Vietnam, Thailand, and China. RDS has also been employed to study other groups, including Vietnam War-era draft resisters who left the United States for Canada and urban Native Americans. The advantages of the RDS method become apparent when it is compared with the more traditional ways hidden populations have been studied.

General population surveys: A very large sample would be required to ensure that even a small number of jazz musicians were included. For example, based on population estimates calculated as part of this project (see the appendix), in San Francisco more than 350 individuals would have to be contacted to locate one jazz musician, and in New York more than 550 would have to be contacted. General population surveys are also unable to reach those with unstable living arrangements (several families living in one apartment even though one name appears on the lease, for example). Finally, data from the U.S. Census are limited and do not separate jazz musicians from other types of musicians or composers.

Location sampling: Identifying locations where members of the desired population can be found and then deploying interviewers requires that the population cluster in large, public places. For a group such as jazz musicians, this precludes a

representative sample, because not all jazz musicians attend jazz clubs and festivals.

Institutional samples: Using institutions such as artists' unions is the traditional method for studying artist populations. However, jazz musicians lack a consistent institutional affiliation. In New York fewer than one-quarter of jazz musicians are members of the American Federation of Musicians (AFM), and in San Francisco the figure is less than 10 percent. Furthermore, the two groups are significantly different. Compared with nonunion members, union members have substantially higher incomes (51 percent more income in New York, 17.2 percent more in San Francisco), are much older (6.6 years older in New York, 10.3 years older in San Francisco), and have higher levels of professional activity. Therefore, a sample drawn from union members would overrepresent the most experienced and accomplished members of the jazz musician community at the expense of those who are beginning their careers or whose work has received less recognition.

Chain-referral sampling: A small number of initial subjects, called seeds, are identified and asked to refer researchers to other members of the population; the sample expands during subsequent referrals or recruitment waves. This has traditionally been viewed as a form of convenience sampling about which no claims of representativeness can be made because the initial subjects from a hidden population cannot be selected randomly, and other biases are added as the sample expands from wave to wave. For example, individuals who know many other people (i.e., those with larger networks) tend to be oversampled because the number of recruitment paths leading to them is greater.

The perception of chain-referral methods changed with the advent of a new class of sampling methods termed adaptive/link-tracing designs. Whereas in traditional approaches, the sampling plan is fixed before sampling begins, in adaptive sampling, the plan changes as information accumulates during the sampling process. These approaches are more computationally demanding than traditional methods, but they are also generally more efficient, especially for sampling clustered populations.

Respondent-driven sampling is a form of chain referral sampling that extends this emerging body of

theory. RDS was designed using a statistical theory of the chain-referral sampling process to restructure this process to eliminate biases resulting from the choice of initial subjects, and to weight the sample to compensate for the effects of differences in network sizes and other remaining sources of bias. In this way, RDS produces statistically valid estimates of population size and network characteristics from samples of hidden populations,

including estimates of the variability of these estimates. (Please see Social Problems 49, "Respondent-Driven Sampling II: Deriving Statistically Valid Population Estimates from Samples of Hidden Populations," by Douglas Heckathorn for a description of the procedures employed for calculating estimates of population size and homophily.)

Figure 1: Recruitment Network for jazz musicians in New York.

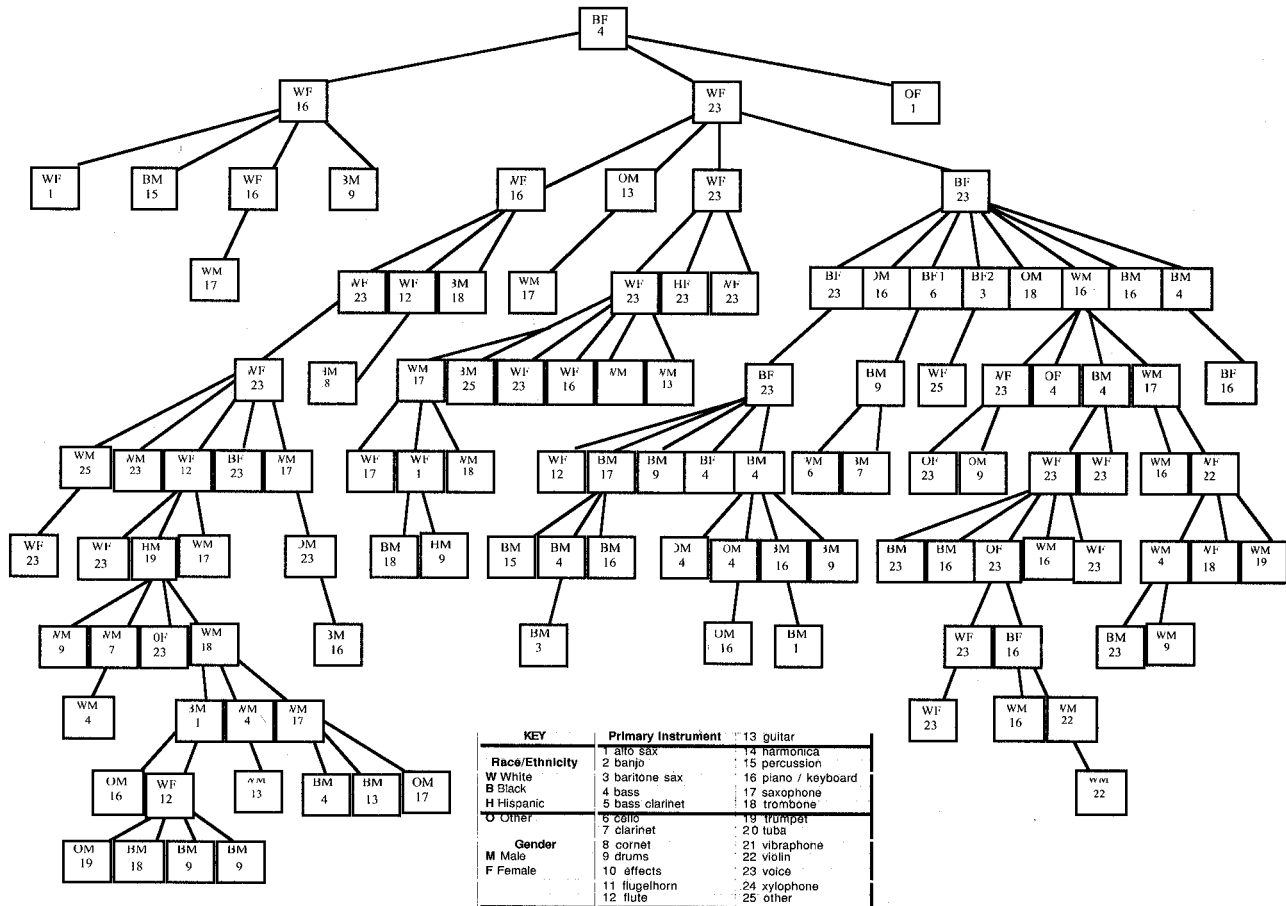


Figure 1 shows the largest single recruitment chain from our study of New York jazz musicians. It began when a black female bass player recruited a white female keyboard player, a white female singer, and a female alto saxophone player of "other" race or ethnicity. Over the course of 10 waves, the chain expanded from the single seed to include more than 100 respondents. As is apparent, this chain penetrated deeply into the New York jazz musician network. It also has considerable geographic range: the seed lived near Times Square, the first-wave recruits were separated by 3.5 miles, and the distance

increased to 40 miles for wave two and 55 miles for wave three. Thus distant parts of the metropolitan area were reached after only a few waves.

Conditions for RDS

For RDS to work effectively, the population under study must be linked by a contact pattern: members of the community under study must know one another. Jazz musicians fulfill this requirement because they generally perform together and develop their skills working together, so even those who do

not join unions or attend jazz festivals are nonetheless linked to the jazz musician community through their relationships with other musicians.

The RDS method requires enlisting the help of the musicians themselves and therefore involves them directly in the study. Since the method is based on a peer-referral system, motivating peer recruitment is critical. In this study each jazz musician who was interviewed was given four coupons to pass along to fellow jazz musicians whom she recruited for interviews; the recruiter was given \$10 for being interviewed, plus \$15 each for up to four recruits who showed up to be interviewed.

Advantages of RDS

In addition to targeting a more representative group of jazz musicians than traditional methods allow, RDS is a community-based method that requires jazz musicians to refer one another. This prevents the sample from becoming filled with the most marketable, famous, or visible jazz musicians or only those who join particular organizations.

A comparison of the findings of jazz musicians in the RDS study with those of the AFM union study revealed major differences. For example, as noted above, the income of union jazz musicians is vastly different from that of musicians in the RDS sample. This information has policy implications and can help the jazz community decide where to invest future attention and resources.

The RDS method allows us to analyze the social networks of jazz musicians—that is, who hangs out with whom, including the degree to which this depends on ethnicity, musical style, or other factors. Also, by using a method of analysis based on capture-recapture in comparing the AFM and RDS responses, we have been able to project the actual size of the jazz universe in three of the study cities. The AFM union survey told us what proportion of union members were jazz musicians in each city. Combined with information on the total number of union members in each city (New Orleans = 1,014, New York = 10,499; San Francisco = 2,217), this allowed us to estimate the number of union members who were jazz musicians. Finally, the RDS survey told us what proportion of all jazz musicians in each city were union members. We then

calculated the estimated size of the jazz universe in these cities as follows:

New Orleans = 1,723 jazz musicians

New York = 33,003 jazz musicians

San Francisco = 18,733 jazz musicians

These numbers tell us that a large proportion of jazz musicians are not members of the union and reinforces the appropriateness of using the RDS method to locate these musicians (see appendix).

Implementation Issues and Challenges

To begin to understand the differences as well as the commonalities among jazz musician communities, we initiated the study in four metropolitan areas: New York, San Francisco, New Orleans, and Detroit. City coordinators were chosen in each city to run the project locally. Six to eight well-connected jazz musicians—the seeds—were invited to start the process by being interviewed. During the interviews they were told in detail about the project and enlisted to distribute four coupons.

Because we were concerned that not enough female jazz musicians would be recruited, three coupons could be given to any jazz musician, but one had to be given only to a female jazz musician. (Any skewing was accounted for statistically after the data were analyzed.)

Delay in timetable: Because of procedures in the government, the timetable for the study was delayed by several months, putting some of our city coordinators at a disadvantage. Detroit, in particular, had already hired its staff yet could not start on time, so when the study began, some resources were depleted. The September 11 disaster caused further delays. These factors substantially reduced the resources and time available for the study.

Contact pattern and use of coupons: In most RDS studies done to date, it takes only four waves of recruitment to reach deep into the community. When the community lacks cohesion, however, recruitment chains have difficulty crossing group boundaries; so more waves may be required. This was a special problem in Detroit, where jazz venues have been declining for a number of years; the jazz community is locally strong but very fragmented into jazz old-timers, established jazz artists, women jazz artists, and young emerging jazz artists. Although some people might appear in more than

one category, there was little communication among the four groups, and jazz musicians neglected to pass out coupons, especially across groups.

Scheduling Interviews: Given the demands on musicians' time, scheduling interviews proved challenging. Some city coordinators enlisted the help of jazz musicians in "talking up" the study. In San Francisco, the city coordinator found that many individuals needed further explanation about how studies are conducted and the rationale for the RDS method, so she hired jazz artists as public relations representatives to go out into the jazz community and promote the study. She and her staff also promoted the study personally at jazz clubs, bars, and festivals. In New York, several presentations were made to jazz groups to inform them of the study and ask for their help. We found that community acceptance was important for a peer-recruitment method to be effective.

In each *city*, an interview venue was chosen that would be accessible to jazz musicians, but in all cities (and especially Detroit), musicians often lived as much as one or even two hours away. Often, transportation was a problem. Although interviewers were flexible and went to locations where jazz musicians congregate, this was more difficult in Detroit, where there are fewer such locations; weather, poor transportation, and a difficult economy were further complications. In addition, musicians would book appointments for interviews and then cancel three, four, even five times, or simply not show up, despite phone call reminders from city coordinators. Therefore, jazz musicians are a population for which arranging face-to-face interviews is especially challenging.

Incentives: The financial incentives were extremely modest. For his own interview and the redeemed coupons of musicians he recruited, a jazz musician could make \$70: \$10 for his interview and \$15 for each of his four recruits. Most earned less, however; our total cost per musician interviewed was \$25, consisting of \$10 for the interview and \$15 for that musician's recruiter. The incentives were nevertheless important as a token of appreciation. In Detroit, the money was appreciated. In San Francisco, some musicians said the money wouldn't even pay for gas and donated it back to the study. In New York, some complained that we should have paid union minimum for their time (the interviews

took an average of one to one and one-half hours each).

Management of the project: The four city coordinators were brought to New York for an intensive two-day training session to learn the method, master the necessary computer programs, ask questions, and begin to use each other as resources. Several conference calls were held throughout the study period to share information and get peer support and advice.

The project was management-heavy, partly because this was a first-time methodology for artists, but also because it required separate checking accounts and tracking for coupons, constant scheduling and rescheduling of interviews, and substantial outreach. It was also an expensive study for the arts. The cost per musician was \$25, with a target of 1,200 musicians for all four cities.

Responses: The initial plan for the study was to interview 300 jazz musicians in each metropolitan area. Because of the delay in starting the study and the time and resource constraints, only 59 responses were obtained in Detroit—not enough for analysis. (Information on Detroit musicians who are members of the AFM appears in *Changing the Beat*, Volume II.) In New Orleans, only 110 jazz musicians were interviewed—again, an insufficient number. The following report on jazz musician networks is therefore based on interviews with 264 New York jazz musicians and 300 San Francisco jazz musicians. Musicians from all cities were also interviewed by phone in the AFM union study.

Differentiation and Stratification in Jazz Musician Networks

Network size has been intensively studied because it serves as an indicator for individual characteristics, including social status, prestige, and integration into the community. Therefore, examining clustering by network size provides a sense of the overall structure of that community.

Respondents were divided into three groups based on network sizes. Average network sizes were much larger in New York, averaging 223.8, than in San Francisco, where they averaged 65.8. The ranges were also divergent. In New York, the middle half of respondents had network sizes between 100 and 300. The corresponding figure for San Francisco was 20

to 90. Therefore, different breakpoints were used to differentiate network sizes. A small network was defined as 200 or fewer in New York, and 20 or fewer in San Francisco. A large network was defined as 300 or more in New York, and 50 or more in San Francisco.

The measure for network clustering, homophily, is defined as follows. The homophily index is positive when social relationships within the group are favored. For example, it is 100 percent if all ties are within the group (clustering is maximal), and 50 percent if half the ties are formed within the group, and the other half are formed through random mixing (that is, ties form as though group membership does not matter). A positive index value indicates that the group is cohesive. Factors such as race, ethnicity, education, income, and age generally serve as important sources of cohesion. In this study we determine the extent to which this is also the case for jazz musicians.

The homophily index is zero for categories that are socially irrelevant, such as whether one was born in an odd or an even month. With respect to such categories, social ties are formed exclusively through random mixing. Therefore, zero index values serve

to identify factors that the community does not consider relevant.

The homophily index is negative if ties tend to form with those outside rather than inside the group, such as sexual relationships among heterosexuals. The index is -100 percent if all ties are outside the category—that is, if there are no within-group ties.

The analyses of clustering by network size reveal that network size strongly affects affiliation. (See Table I.) In New York, those with the largest networks are the most homophilous, forming networks as though 23 percent of the time they form a tie to another large-network person, and the rest of the time they form ties through random mixing. The medium-network persons are less homophilous. Musicians in the large group with the smallest networks have strong heterophily, forming ties as though 48 percent of the time they form a tie outside their group, and the rest of the time they form ties randomly. Thus, those with smaller networks do not associate primarily with one another, but rather form ties to those with larger networks.

Table I: Affiliation by Network Size

	New York			San Francisco		
	Homophily (percent)	Mean Network Size	Population (percent)	Homophily (percent)	Mean Network Size	Population (percent)
Network Size						
Small	-48.1	73	63.6	-31.1	13	74.6
Medium	15.2	214	29.8	14.4	37	21.1
Large	23.1	511	6.6	35.4	162	4.4

The same pattern exists in San Francisco. Even though average network sizes are much smaller than in New York, the pattern of relationships based on relative network sizes is strikingly similar. Those with small networks are strongly heterophilous, those with medium networks are mildly homophilous, and those with large networks are more strongly homophilous.

A more refined examination of the community structure involves examining not merely each group's strength of affiliation to itself (i.e., homophily) but also each group's strength of affiliation to each other group. In essence, the affiliation index is a measure of social distance that varies from 100 percent (maximally close) to -100 percent (maximally distant). (See Table II.)

Table II: Affiliation Index by Network Size

Source of Tie by Network Size	Recipient of Tie by Network Size					
	New York			San Francisco		
	Small	Medium	Large	Small	Medium	Large
Small	-48.1	31.1	9.3	-31.14	9.77	16.25
Medium	-52.9	15.2	24.5	-52.34	14.36	29.02
Large	-39.9	5.4	23.1	-62.96	16.68	35.4

In New York, though the small-network group is strongly negatively affiliated to itself (-48.1 percent), it has a substantial positive affiliation to the middle-network group (31.3 percent). That is, it has formed ties with the middle-network group as though 31.3 percent of the time it formed a tie to that group, and the other 68.7 percent of the time it formed a tie through random mixing. The small-network group also has a modest but positive affiliation to the large-network group (9.3 percent). Thus, those with small networks form ties as though their principal orientation is toward the middle-network group.

The middle-network group has a different affiliation pattern. It affiliates most strongly toward the large-network group (24.5 percent) and more weakly to itself (15.2 percent), and it is strongly negatively affiliated toward those with small networks (-52.9 percent). Thus, the affiliation between the small- and middle-network groups is inconsistent: positive from the small- to middle-network groups, and negative in the opposite direction. This may reflect a process in which poorly connected musicians seek ties with those who are better connected but avoid others who are poorly connected and seldom succeed in forming ties to well-connected peers. The middle-network group exhibits a similar orientation toward the large-network group but is more successful in forming ties to this group. Finally, the large-network group has a substantial self-affiliation (23 percent), with a near-zero affiliation to the middle group (5.4 percent), and a strong negative affiliation toward the small-network group.

Affiliation patterns in San Francisco are again similar. All three groups have negative affiliations toward the small-network group, and the medium- and large-network groups affiliate more strongly with the large- than with the medium-network

group. The most significant difference is that in San Francisco, the small-network group affiliates more strongly with the large- than with the medium-network group, indicating that the least well connected San Francisco musicians may have greater access to those who are very well connected. Nevertheless, the difference—only about 6 percent—is not large and cannot outweigh the very strong negative affiliation (-63 percent) of the large-network group to the small-network group.

These patterns of affiliations suggest that the overall network structure of these jazz musician communities resembles a tree: leaves represent those with small networks, branches represent those with middle-size networks, and the trunk represents those with large networks. Leaves are seldom connected either directly to one another or to the tree's trunk; rather, the branches serve as the intermediaries both between leaves and from the leaves to the trunk system. So too are musicians with small networks seldom connected either directly to one another or to those with large networks, but instead are most strongly connected to those with medium networks. This reflects a *core-periphery structure*, in which an elite that is densely networked with itself is linked to peripheral actors who are less well connected. The term used to describe an actor in the periphery is *sycophant*, and this is a structure that reflects social inequality.

In contrast to a caste system, in which cross-status ties are infrequent, the core-periphery structure has a more egalitarian character, because lower-status members affiliate with higher-status members. However, it also has an elitist structure, because the highest-status members are insulated from contact with the lowest-status members. Therefore, it can be described as moderately egalitarian. In comparison with many other sectors

of U.S. society, this represents an unusual degree of egalitarianism and suggests that the reputation for egalitarianism of jazz musicians may not be undeserved.

Affiliation by Demographic Factors

Overall in U.S. society, level of education is strongly correlated with social status and income, so it serves as an important determinant of affiliation patterns. This is not the case in the New York City jazz musician community, however. Although college graduates account for 65.8 percent of this community, and noncollege graduates 34.2 percent, education was found to have no significant effect on

affiliations. (See Table III.) That is, the homophily levels for college graduates and nongraduates are -3.9 percent and 4.7 percent, respectively. This means that college graduates form their social networks as though 3.9 percent of the time they seek out a noncollege graduate, and the other 96.1 percent they form a tie irrespective of education level. Thus education has almost no effect on affiliation. Similarly, nongraduates form networks as though 4.7 percent of the time they form a tie to another noncollege graduate, and the other 95.3 percent of the time, they form a tie irrespective of education. For both groups, then, level of education is virtually irrelevant.

Table III: Affiliation by Demographic Terms

	New York			San Francisco		
	Homophily (percent)	Network Size	Population (percent)	Homophily (percent)	Network Size	Population (percent)
Level of Education						
College Graduate	-3.9	219	65.8	22.5	78	40
Nongraduate	4.7	232	34.2	-11.6	52	60
Race						
White	26.9	234	58.1	-13.3	53	63.6
Black	19.9	211	33	26.5	85	23.1
Other	-16.6	209	8.9	7.0	90	13.3
Gender						
Male	31.3	223	58.3	-0.1	66	85.9
Female	34	232	41.7	-33.6	66	14.1
Age						
18-34	14.8	147	18.7	-16.4	35	75.8
35 or older	49.5	248	81.3	43.7	94	24.2

In San Francisco the pattern is different. College graduates are moderately homophilous, at 22.5 percent, and noncollege graduates are heterophilous, at -11.6 percent, so they differentially form ties with those whose education level is higher. This

contradicts the customary pattern in which associations tend to form among those with equal levels of education. Compared with network size, however, education is not a substantial determinant of affiliation in the jazz musician community.

For the analysis of affiliation by race and ethnicity, respondents were divided into three categories: non-Hispanic white, non-Hispanic black, and "other," including Hispanics, Asian Americans, Native Americans, and other groups. Hispanics were not treated as a separate category because of their small numbers—only 2.8 in New York and 4.1 percent in San Francisco. In New York, race and ethnicity have a substantial effect on affiliation, with homophily levels of 26.9 percent for whites, 19.9 percent for blacks, and -16.6 percent for the small "other" category. In contrast, in San Francisco, whites are heterophilous, at -13.3 percent, while blacks are somewhat more homophilous, at 26.5

percent, than in New York, and the "other" group has a mild homophily of 6.9 percent.

When affiliation by race and ethnicity is examined, the contrast between New York and San Francisco becomes more apparent. (See Table IV.) Racial and ethnic boundaries between blacks and whites have been maintained in New York; with each group having positive affiliation toward itself (homophily) and negative affiliation toward the other. In contrast, boundaries for whites have dissolved in San Francisco, with whites having negative self-affiliation and mildly positive affiliation toward other groups.

Table IV Affiliation Index by Race

Source of Tie by Race	Recipient of Tie by Race					
	New York			San Francisco		
	White	Black	Other	White	Black	Other
White	26.9	-31.6	-9.3	-13.3	1.9	8.1
Black	-25.2	19.9	1.4	-35	26.5	2.2
Other	11.6	10.2	-16.6	-8.7	2.4	6.9

Race- and ethnicity-based homophily is lower among jazz musicians than among other populations that have been studied using RDS. For example, in a study of network structure in several small cities in Connecticut, homophily levels for whites varied from 27 percent to 37 percent, with a median of 36 percent, and for blacks they varied from 30 percent to 50 percent. Therefore, despite the presence of a moderate level of race-based homophily for some groups in some cities, the overall results support the view that jazz musicians are a racially inclusive group.

Like race, gender has complex effects on affiliations among jazz musicians. In New York, homophily levels are 33.9 percent for female musicians and 31.2 percent for male musicians. In contrast, in San Francisco, females are heterophilous, at -33.6 percent, but males have near-zero homophily, at 0.1 percent. Therefore, whereas in New York there are independent male and female music scenes, in San Francisco females interact indirectly, through males. This suggests that female

jazz musicians have higher status in New York, a factor that may be related to their proportion within the community, 41.7 percent in New York versus only 14.1 percent in San Francisco.

Age is also a significant factor affecting affiliation among jazz musicians. In New York, the homophily of musicians aged 18 to 34 is 14.8 percent, and that of musicians 35 or older is a very substantial 49.5 percent, so both groups are homophilous. This is consistent with a cohort structure, in which individuals associate with those of similar age. The homophily of older musicians is greater, so older musicians exclude younger ones to a rather substantial degree, whereas younger musicians are more inclusive of older musicians.

The pattern is different in San Francisco, where the homophily of older musicians is comparable to that in New York but younger musicians have negative homophily: they tend to interact indirectly through older musicians. This imbalance results, in part, because older musicians tend to have 69

percent larger networks in New York, and 169 percent larger networks in San Francisco. The larger networks of older musicians reflect their greater professional experience and recognition. Therefore, whereas the age network in New York corresponds to a cohort structure, in San Francisco it fits a core-periphery structure, with younger musicians in the subordinate position. Thus the social position of both women and younger musicians is better in New York.

Income and Affiliation

Income is a variable that generally has powerful effects on affiliation patterns, with individuals associating primarily with those within their own income category. However, among jazz musicians the pattern is different. First, consider income derived from music, including performing or teaching. Respondents were divided into two income groups, based on whether they earned less or more than \$12,000 from music. (See Table V.)

Table V: Affiliation by Financial Factors

	New York City			San Francisco		
	Homophily (percent)	'Network' Size	Population (percent)	Homophily (percent)	'Network' Size	Population (percent)
Income from Music						
\$0-\$12,000	-4.5	159	63	-15	46	86.7
\$12,001 or more	39.9	284	37	27.5	126	13.3
Personal Income from All Sources						
\$0-\$30,000	-7.2	193	65.1	-4	53	76.2
\$30,001 or more	19.4	272	34.9	37.4	87	23.8
Household Income						
\$0-\$30,000	-2.6	184	55.3	-4.5	49	70.7
\$30,001 or more	25.6	255	44.7	26.7	73	29.3

In both cities, the pattern is similar. Consistent with expectations, homophily for the higher-income group (\$12,001 or more in earnings from music) is substantial and positive: 39.9 percent in New York, and 27.5 percent in San Francisco. However, contrary to the usual pattern, the lower-income group is not homophilous; instead, it is mildly heterophilous: -4.5 percent in New York, and -15 percent in San Francisco. Therefore, the lower-income group orients not toward its own members but rather to the higher-income group.

The failure of lower-income jazz musicians to form a cohesive group may reflect unfulfilled aspirations. For example, in New York, an estimated 73 percent reported they were satisfied or somewhat

satisfied with their music, and only 3 percent were not satisfied. In contrast, fulfillment of career aspirations was lower: 47 percent said that their aspirations had been satisfied or somewhat satisfied, and fully 48 percent said they had not been satisfied. This reflects the low average income for jazz musicians. For example, in New York City, the mean personal income for jazz musicians in the RDS sample is \$17,400 for college graduates and \$10,000 for noncollege graduates; and in San Francisco the corresponding figures are \$15,800 and \$9,700. In contrast, according to the 2000 census, the mean personal income for those with bachelor's degrees is \$51,600, and for high school graduates, \$24,300. Personal incomes among jazz musicians are

comparable to those of members of the general population with far lower levels of education. For example, on average, those in the general population with less than a ninth-grade education earn more (\$18,400) than do jazz musicians who are college graduates in either New York or San Francisco. Furthermore, fewer than 10 percent of college-educated jazz musicians earn as much as the average college graduate. Only a minority of respondents,

8.6 percent in New York, and 7.3 percent in San Francisco, reported personal incomes in excess of \$60,000. Therefore, as with other artist groups, choice of jazz as a career often involves considerable financial sacrifice.

Affiliation and Professional Activity

Affiliations are also affected by the form and level of professional activity. (See Table VI.)

Table VI: Affiliation by Professional Activity

	New York			San Francisco		
	Homophily (percent)	Network Size	Population (percent)	Homophily (percent)	Network Size	Population (percent)
Possessing a Recognized Body of Work						
Yes	18.2	140	18.7	36.4	76	45.9
No	50.1	232	81.3	3.1	50	54.1
Music-Related Travel						
Yes	41.3	231	80.1	43.8	89	39
No	3.1	140	19.9	-21.4	37	61
Union Member (AFM)						
Yes	35.2	298	22.3	11.0	113	8.1
No	-3	175	77.7	-6.2	58	91.9

When respondents in New York were asked whether they had produced a recognized body of work, about one in five (18.7 percent) answered in the affirmative, and this group exhibited modest homophily. Those who said no exhibited stronger homophily, 50.1 percent. This may reflect competition to establish ties to the small number of musicians whose work has been recognized, thereby producing exclusion homophily. In contrast, in San Francisco nearly one-half (45.9 percent) reported having produced a recognized body of work. This group of recognized musicians was homophilous, at 36.4 percent. The nonrecognized group had near-zero homophily, perhaps reflecting greater success in establishing ties to those in the recognized group.

Affiliation is also affected by music-related

travel. Homophily among travelers is 41.3 percent in New York and 43.8 percent in San Francisco, suggesting that traveling provides the opportunity to form social bonds.

Finally, union membership is a basis for affiliation. In New York, where union membership is more common (22.3 percent), union members exhibit considerable homophily, 35.2 percent, whereas nonunion members exhibit none, -3 percent. This may reflect the higher degree of professional activity of union members. It may also reflect other factors associated with union membership. For example, none of the New York respondents aged 18-24 were union members, and only 21 percent of those aged 25-34 were union members, but union membership climbed to 41

percent for those 35-44, 47 percent for those 45-54, 41 percent for those 55-64, and 67 percent for those over 65. Therefore, affiliation by union membership may reflect, in part, affiliation by age. Union members also have substantially larger networks, which, as we have seen, also affects affiliation. Union membership had weaker effects on affiliation in San Francisco, where union membership is less common.

Affiliation by Style of Music and Principal Instrument

The *effect* of style of music on affiliation

patterns is substantial, though in general slightly weaker than factors associated with professional activity. We present results for the SIX most popular of the 21 styles of music identified in the questionnaire. (See Table VII.) Those who play in a style are consistently more homophilous than those who do not because playing in a style is a basis for affiliation, whereas those who do not play in the style are a heterogeneous mix of those playing in other styles. In San Francisco, homophily by musical style varies from 8.7 percent for those who play funk to 38 percent for those who play bop.

Table VII: Affiliation by Style of Music (Yes = Plays in Style)

	New York City			San Francisco		
	Homophily (percent)	Network Size	Population (percent)	Homophily (percent)	Network Size	Population (percent)
Bop						
Yes	19.3	244	15.9	38	77	45.4
No	9.6	218	84.1	-0.8	47	54.6
Cool						
Yes	15.6	286	3.1	31.7	75	39.3
No	-0.3	221	96.9	12.5	59	60.7
Mainstream						
Yes	25.1	270	18.9	13.3	92	19.9
No	4.5	212	81.1	-14.6	50	80.1
Swing						
Yes	16	255	6.7	17.1	77	32.1
No	1.8	218	93.3	-9.1	53	67.9
Funk						
Yes	19.8	263	5	8.7	71	35.3
No	4.2	220	95	-2.7	62	64.7
Fusion						
Yes	13.6	333	3.6	21.4	76	28.3
No	-1.2	217	96.4	1	61	71.7

The percentage who play in each style is greater in San Francisco than in New York: San Francisco musicians are less specialized, playing in an average of 7.1 styles, compared with 2.3 styles for New York musicians. Therefore, the level of specialization by style is greater in New York.

Affiliation can also be based on a musician's principal instrument (See Table VIII). In fact, principal instrument sometimes has greater effects on affiliation than does style, as measured by homophily. The patterns are explicable. Because usually only one person in an ensemble plays keyboards, bass, or drums, to the extent that associations are based on performing together, one would expect these musicians' associations to be

weak. Indeed, all three groups are heterophilous, though to varying degrees, from -4.8 percent for drummers to -61.4 percent for keyboard players in San Francisco. Bass players are strongly heterophilous in both cities. Conversely, because singers and saxophone players commonly perform together, one would expect them to be more homophilous, and indeed both groups are homophilous in both cities, with the exception of singers in San Francisco, who are mildly heterophilous. It is also notable that nonsingers are homophilous in both cities, perhaps indicating the presence of an independent instrumental music scene.

Table VIII: Affiliation by Principal Instrument (Yes = Plays Instrument)

	New York City			San Francisco		
	Homophily (percent)	Network Size	Population (percent)	Homophily (percent)	Network Size	Population (percent)
Voice						
Yes	31.7	201	28.7	-8.9	51	11
No	39.8	228	71.3	22.9	67	89
Saxophone						
Yes	6.6	220	14.3	16.4	122	5.1
No	8.3	224	85.7	-3.9	59	94.9
Keyboards						
Yes	-5.6	248	13.6	-61.4	64	8.6
No	-2.2	219	86.4	-0.3	66	91.4
Bass						
Yes	-35.1	248	11.4	-57.5	88	9.4
No	-2.2	221	88.6	-4.8	63	90.6
Drums						
Yes	-48	217	7.1	-4.8	66	10.5
No	0	225	92.9	0.3	66	89.5

Conclusion

This analysis reveals the complexity of the social structure of the community of jazz musicians. It examines stratification by connections within the community (network size), level of professional activity, and financial stability. This population lacks the powerful stratification based on income and education that is found elsewhere in U.S. society. The structure of associations is also affected by strictly musical factors, such as musical style, in a

complex manner that varies from style to style.

What the RDS method shows, or perhaps underscores, is the egalitarianism of jazz musicians: they are a racially inclusive group for whom affiliation patterns are strongly affected by travel and touring and union membership, and less affected by education and income levels. One final conclusion should be emphasized: the strength of connections among jazz musicians reveals that this is a community of considerable cohesion.