Birds of a Feather Sing Together*

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Abstract

This article presents an ecological theory of musical preference. A core idea of the theory is that musical forms depend on people for their existence. The theory argues that people are a resource for types of music; musical forms compete for the time, energy, and preferences of individuals. Musical types carve out niches in different sociodemographic segments of society. According to the theory, the niche pattern develops because musical preferences are transmitted through homophilous social network ties; similar people interact with each other and develop similar musical tastes. The article develops six hypotheses that relate individuals' social positions to their musical preferences. Tests with 1993 General Social Survey data support these hypotheses.

Nobody knows everyone, and no one can do everything. These well-known facts have important implications for patterns of musical preference and familiarity. In this article, I present an ecological theory that develops the explanatory power of these facts. While students of culture have traditionally argued that people consume musical forms when they attend concerts, listen to music, and take music lessons (DiMaggio & Useem 1978; Peterson 1992; Weber [1922] 1978), this article argues that musical forms consume people. People are a limited resource that musical forms need for survival. The theory uses this idea in combination with two

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assumptions about social networks to provide an account for the observation that different people like different types of music.

An Ecological Theory of Musical Preference

Borrowing heavily from McPherson's (1983) ecological theory of voluntary association, I develop an ecological theory of musical preference. Simple assumptions about information flow, social interaction patterns, and time constraints generate novel hypotheses relating people's social structural positions to their musical preferences and familiarity. In this section, I present these assumptions, which are the foundation of the theory.

MUSICAL PREFERENCE AND SOCIAL NETWORK TIES

Musical preferences spread. People develop preferences for types of music that they did not previously like. Any theory of musical preferences must address this fact. I argue that *musical preferences spread through social network ties (network transmission assumption).* People develop musical tastes similar to those of the people with whom they interact. People are exposed to and learn about various types of music through their network ties. Ties to kin and close friends are particularly influential.

The idea that musical preferences spread through network ties is widely accepted in the culture literature. DiMaggio and Useem (1978) and Marsden et al. (1982) suggest that cultural preferences are transmitted via normal channels of socialization, namely interaction with parents and peers. One reason teenagers give for their own Music Television (MTV) viewing is that their friends watch (Sun & Lull 1986).

Music historians also find evidence consistent with the network transmission assumption. Many southern blacks learned about and adopted styles of blues that were popular in different parts of the South through social contact with other black agricultural laborers who wandered the South in search of employment (Jones 1963). Artis (1975) explains how the folk music tradition of central Appalachia was maintained through a process of inheritance whereby parents passed musical knowledge to children generation after generation.

HOMOPHILY

The second assumption of the theory, called the *principle of homophily*, is that *people who are similar in sociodemographic characteristics are more likely to interact with each other than are people who are dissimilar.* In other words, birds of a feather flock together. This assumption is employed extensively in studies of social networks (Laumann 1973), voluntary associations (McPherson, Popielarz, and Drobnic 1992;

McPherson and Ranger-Moore 1991; McPherson and Smith-Lovin 1987), and structural sociology (P. Blau 1977a,1980). A long tradition of empirical work shows that individuals who are similar on any of a large number of characteristics including age, education, occupation, social status, and race are more likely to be friends, associates, or spouses than chance predicts (P. Blau, Blum & Schwartz 1982; Galton 1883; Marsden 1987; Schiller 1932).

Together, the network transmission assumption and the principle of homophily imply that people will like the types of music that are preferred by people similar to themselves. That is, birds of a feather sing together.

The network transmission assumption and the principle of homophily contain an account for the process by which musical preferences diffuse through a population. The question I have not addressed yet is why preference for each type of music does not spread from acquaintance to acquaintance until everyone eventually likes all types of music. The answer cannot be that the social structure is composed of cliques not connected by network ties or chains of network ties. Milgram's (1967) small world studies (see also Travers & Milgram 1969) indicate that there is probably a chain of mutual acquaintances linking every pair of individuals on earth.

TIME CONSTRAINTS

The reason that everyone does not like every type of music is that liking a type of music requires the expenditure of time and energy. Liking a type of music involves much more than stating a preference for it. Music is at the center of many social phenomena, and liking is woven through these phenomena. Large numbers of people gather for concerts and other professional music performances. There is a continuous flow of customers into and out of stores that sell music, stereos, or musical instruments. Dance clubs attract many people. Radio stations abound, and some television channels are devoted to music. Church services usually involve musical performances. School bands play at sports events. Music classes are offered at all levels of the educational system. People also listen to, play, sing with, dance to, and talk about music within small groups of friends. Participation in these music-related activities is necessary for the development and maintenance of the strong feelings people have toward particular types of music.

As is the case with all activities, participation in musical activities requires expenditure of time and energy.[1] That the time and energy that a person can devote to musical participation are limited leads to the third assumption: *the more a person likes one type of music, the less time and energy that person has to develop and maintain preferences for other types (time constraints assumption).*[2]

Together, the time constraints and network transmission assumptions have an important implication. The effect of one's associates' musical preferences on one's own preferences depends on time availability. A person's exposure to a type of music

is more likely to lead to that person's development of a taste for that type of music if that person has much free time than if that person faces many time constraints. Because people face time constraints, musical preferences are influenced more by relative levels of exposure to various types of music than by absolute levels. Suppose a person has five friends, one of whom likes country music, often wears T-shirts depicting singers of country music, and listens only to country music radio stations. Social interaction with the friend who likes country music exposes this person to country music. Suppose the four other friends are not enthusiastic about any type of music; social contact with them will not tend to expose this person to types of music. This person's exposure to country music through one friend may result in this person's development of a taste for country music. However, exposure to country music through one friend is less likely to result in the development of a preference for country music in a person who has four other friends who are reggae enthusiasts. With high levels of exposure to reggae music from a majority of one's friends, this person is very likely to join his or her friends in activities related to reggae music. She or he is likely to develop a strong preference for reggae music and to engage in activities involving reggae music even when his or her friends are not present. This person's participation in these activities imposes time constraints on his or her development of a preference for country music.

The idea that one's cultural tastes and practices are affected by one's relative levels of contact with people with different preferences is supported by research on the media use of adolescents. Larson, Kubey, and Colletti (1989) find that teenagers who spend more time with their family spend more time watching television than do other teenagers. They also find that teens who spend more time with friends their own age spend more time listening to music than do other teenagers.

To summarize, the theory argues that musical tastes are transmitted through social network ties, that network ties are homophilous, and that a person's liking for one type of music imposes time constraints on the development or maintenance of other musical preferences. In the following sections, I use these assumptions to develop the argument that people are a resource for which musical forms compete. Types of music carve out niches in a resource space defined by sociodemographic dimensions.[3]

Sociodemographic Space

Sociodemographic variables are parameters that define a multidimensional social space (Blau 1977a,1993; McPherson 1983).[4] A person's position in social space is indicated by the person's sociodemographic characteristics. The principle of homophily tells us that the probability of interaction between two people is negatively related to the distance between them in social space. Thus, most social

ties will span short distances in sociodemographic space. The distance between two people in sociodemographic space represents the social distance between them.

The concept of sociodemographic space permits illustration of the idea that similar people have similar musical tastes. The rate of preference for a given type of music varies with position in social space. Figure 1 illustrates variation in the rates of preference for two types of music along the sociodemographic dimension *age*.[5] The heights of the bars correspond to the percentage of respondents within each ten-year age bracket[6] who reported liking big band or contemporary pop/rock music very much.[7] Figure 1 does not only show that rates of preference for each of these two types of music vary with position on the age dimension. Figure 1 also demonstrates that the rates of preference for these two types of music are inversely related across age categories. The idea that different types of music are most popular in different regions of social space is directly related to the concepts of niche and competition presented below.

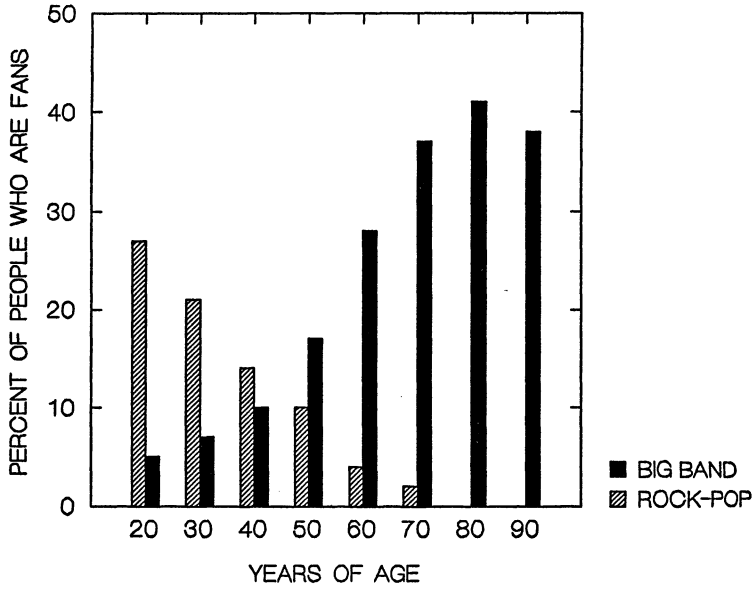
The Niche

The niche is a region of social space from which a type of music most heavily draws its resources. In other words, the musical niche is the region of social space where the type of music is most popular. For example, by observing Figure 1, we can see that the niche of rock music is in a region of social space lower on the age dimension than is the niche of big band music.

While the idea that a niche is a region of social space where a type of music is most popular is reasonably clear, operationalizing the concept involves additional simplifying assumptions (McPherson 1983). In one-dimensional social space, a niche can be defined as a segment on the given dimension. To determine the location of the niche center, I use the mean value on the given dimension of individuals who like the type of music very much. I define the niche width on a dimension as three standard deviations (1.5 to each side of the mean). For example, the niche centers on the dimension *age* for rock and big band music are 35 years and 58 years, respectively. The niche breadths are 18 to 52 years and 33 to 83 years, respectively.[8]

Niches can also be represented in two-dimensional social space. Figure 2 shows the niches of three types of music (country, heavy metal, and new age) in a social space defined by the dimensions age and years of education. Each niche is a rectangle constructed from the corresponding niche breadths on the age and education dimensions. Fans of new age music tend to be more educated than fans of country or heavy metal music. On average, fans of heavy metal music are younger than are fans of the other two types, and new age fans are younger than country music fans.[9] In this section, I develop the theory's explanation of the patterning of music preferences in niches. I do this in two steps. First, I show how the theory

FIGURE 1: Big Band and Rock Music Preference by Age



Source. General Social Survey, 1993

implies that niches will persist once they exist. Then, I give reasons for the expectation that music preferences would have developed niche patterning originally.

NICHE PERSISTENCE

Niches persist because of the selective recruitment of fans. Recruitment is selective in that nonfans who are similar to current fans (i.e., nonfans who are in the niche) are more likely to develop a preference for the type of music than are nonfans who are different from current fans. Considering the niches of two types of music, country and new age, helps to illustrate this process. Figure 2 shows these niches in a social space defined by the dimensions age and education. Person A is in the niche of new age music, and person B is in the niche of country music. If neither A nor B has a taste for any type of music, A is more likely to develop a liking for new age than B is. The principle of homophily tells us that more of A's friends are inside the niche of new age than are B's friends. Because people in the niche of new age are more likely to be fans of new age than are people outside the niche, A is expected to have more friends who are fans of new age than is B. This implies

that A is more likely to develop a preference for new age than is B. Likewise, B is more likely than A to develop a preference for country music.[10]

I have now illustrated how the assumptions of the theory provide an explanation for the persistence of niches once they exist. However, the question remains how niches develop in the first place.

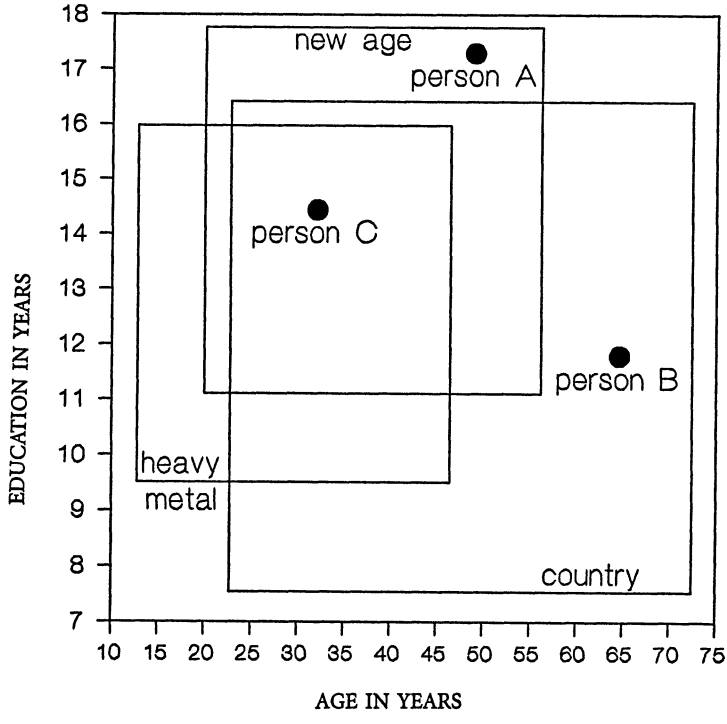
NICHE FORMATION

The reason we would expect niches to develop is that musical innovation occurs in local regions of sociodemographic space. If a musical form is created by an individual, then innovation occurs at a point in social space — an extreme form of localization. In the case that innovation occurs in groups of people who are interacting with each other, innovation will tend to be localized in social space because interaction patterns are homophilous. Therefore, from the moment a musical form is created, it occupies a niche. Because ties span short social distances, expansion of the musical form in social space occurs at the niche edges. Thus, as preferences spread, they maintain their niche arrangement.

Historical examples are consistent with the idea that musical innovation is a social process that occurs in local regions of sociodemographic space. As I discussed above, after the Civil War, southern blacks developed the type of music known as the blues. These musical innovators were similar to each other on many sociodemographic dimensions (Jones 1963). They were of the same race and they lived in the same region of the country. Most were poor, uneducated, agricultural laborers. Southern blacks who were members of the middle class were not involved in the development of the blues.

The types of music known as country and as bluegrass both have their roots in the folk music brought to North America by Scots-Irish who migrated from Ireland to the central Appalachian region in the eighteenth century (Price 1975). From the time of settlement until well into the twentieth century, this form of folk music was primarily enjoyed by the descendants of these Scots-Irish immigrants. Thus, the musical form remained localized in social space (defined by geographic as well as other sociodemographic dimensions). Fans were primarily of the same ethnicity. They were Protestants with little education who lived in the same region of the country — the South, especially the southern mountains. Country and bluegrass became distinct from each other and from their forebear, often referred to as old-timey, in the early and mid-twentieth century. These innovations were also made by people located in the region of social space associated with older mountain folk music (Artis 1975; Price 1975). Thus, there are strong empirical and theoretical reasons to believe that the niche of a new type of music develops at the same time as the musical form originates.[11]

FIGURE 2: Niches of Three Types of Music



Source: General Social Survey, 1993

THE NICHE HYPOTHESIS

In this section, I have developed the theory's explanation for the existence of niches. The prediction that niches exist is a prediction about the distributions of preferences for different types of music. Above, I described these distributions by saying that tastes for different types of music are localized, or concentrated, in different regions of social space. However, the predicted distribution can be described in more detail. The distribution is unimodal. At the center of a niche is a region of social space where the type of music is most popular. In regions of the niche surrounding the niche center, the type of music is less popular than in the center, but more popular than in regions of social space even farther from the niche center. A consequence of the shape of these distributions is the

> *Niche hypothesis:* A person's probability of liking a type of music is negatively related to the person's social distance from the niche center of that type of music.

The niche hypothesis is the individual-level analogue to the prediction that tastes for a type of music will have a unimodal distribution in social space. According to the theory, an individual in the center of the niche is in a region where the type of music is most popular. Because social ties are homophilous, a disproportionate number of this person's friends come from the center of the niche also. Therefore, several of the person's friends are fans of the type of music, and the person has a high probability of liking the type of music. A person who is near the edge of the niche is in a region of social space where the type of music is less popular than in the niche center, but more popular than outside the niche. Therefore, a person on the niche edge is less likely to have a taste for the type of music than a person in the niche center, but is more likely to have a taste for the type of music than a person outside the niche. In sum, the farther a person is from the niche center, the fewer of the person's friends like the type of music, and the less likely is the person to have a taste for the type of music.

A HYPOTHETICAL COUNTEREXAMPLE TO THE NICHE

Considering preference distributions that would confirm or disconfirm the niche hypothesis helps us to understand the prediction that the niche hypothesis actually makes. Figure 3 shows three hypothetical distributions of tastes for a type of music on the social dimension age. Distribution A is unimodal. Such a taste distribution would support the niche hypothesis. The farther a person is from the mean of this distribution, the less likely is the person to have a taste for the corresponding type of music. Distribution B is uniform across age, and distribution C is bimodal. Distribution B or C would disconfirm the niche hypothesis.

THE NICHE CONCEPT AND THE SOCIOLOGY OF CULTURE

While application of the niche concept to sociodemographic patterns of cultural participation is new,[12] many students of culture have recognized that preferences for different forms are concentrated among different sociodemographic segments (Gans 1974; Peterson & DiMaggio 1975). For example, participants in various subcultures, such as Rastafarians, beats, and mods, are drawn from particular ethnic groups, age segments, and class backgrounds (Hebdige 1979). Although not presented as such, these patterns are examples of niches.

Music Familiarity

The ecological theory of musical preference tells us how a person's position inside or outside a niche is related to the person's familiarity with the corresponding type of music. In this section, I consider patterns of music familiarity among nonfans (i.e., people who do not like a given type of music). I focus on nonfans because the

niche concept itself has a direct implication for patterns of music familiarity. That is, since musical preferences are localized in niches and since liking a type of music requires familiarity with it, we would expect familiarity with a given type of music to be localized within the niche of that type of music.

I consider music familiarity among nonfans in order to examine effects of the niche pattern of musical preferences that go beyond this direct implication of the niche concept.

> *Familiarity hypothesis:* People located outside the niche of a type of music and who are not fans of that type of music are less likely to be familiar with that type of music than are nonfans located inside the niche.

Suppose neither person A nor person C in Figure 2 likes heavy metal music. The familiarity hypothesis tells us that C is more likely to be familiar with heavy metal music than is A because C is in the niche of heavy metal music while A is not. The principle of homophily tells us that nonfans inside the niche will have more contact with other people in the niche than nonfans outside the niche will have with people inside the niche. People in the niche are more likely to be fans of the type of music than are people outside the niche. Therefore, nonfans inside the niche are more likely to learn about the type of music through their social contacts than are nonfans outside the niche.

If we consider multiple niche overlap, these arguments have another implication.

> *Niche number hypothesis:* The greater the number of niches in which a person is located, the greater is the number of types of music with which that person is familiar.

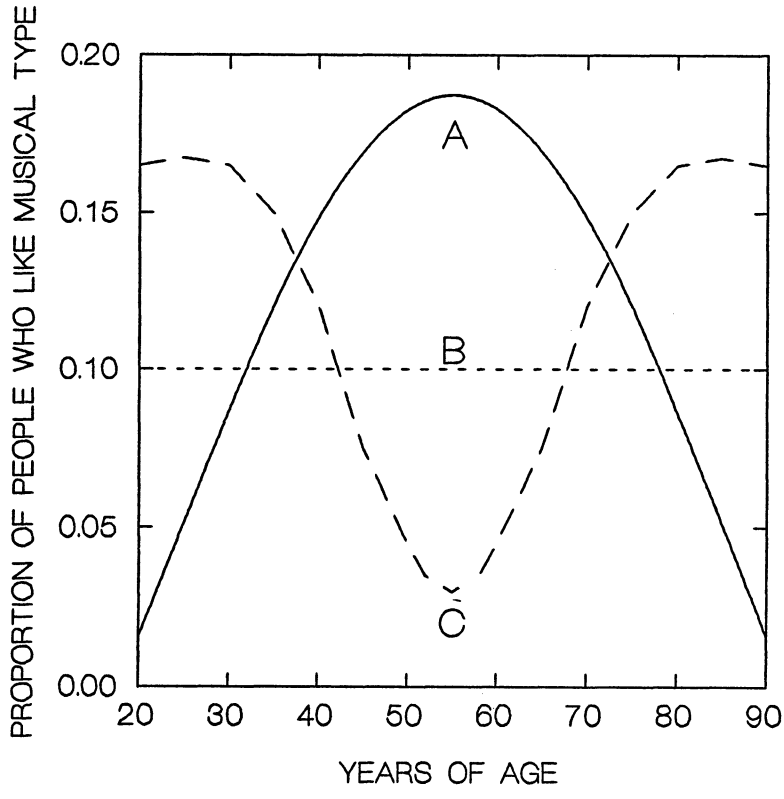
Referring again to Figure 2, the niche number hypothesis tells us that person C will be familiar with more types of music than will persons A or B because more niches intersect at C's location in social space.

Competition

The time constraints assumption implies competition. The theory is ecological in that a preference for one type of music imposes time and energy constraints on preferences and potential preferences for other types of music. The time and energy that people devote to various musical activities are limited resources for which types of music compete.

According to the theory, competition is most intense in regions of niche overlap. While all people have limited time to devote to musical activities, people in regions of niche overlap are more likely than other people to have different friends who like different types of music. Thus, the number of niches that intersect at a person's location in social space positively affects the number of types of music to which a

FIGURE 3: Hypothetical Distributions of Musical Tastes Across Age



Note.
A: The niche hypothesis predicts unimodal distributions of musical tastes.
B: Uniform taste distributions would disconfirm the niche hypothesis.
C: Bimodal taste distributions would disconfirm the niche hypothesis.

person is exposed through network ties. This idea, when combined with the time constraints assumption, gives rise to the

> *Niche overlap hypothesis:* If a person is in the niche of a particular type of music, the probability that that person will like that type of music is negatively related to the number of niches that intersect at that person's location in sociodemographic space.[13]

Referring again to Figure 2, according to the niche overlap hypothesis, the probability of liking country music is higher for person B than for person C. While both B and C are in the niche of country music, B is in only the niche of country

music. Person C is also in the niches of heavy metal and new age music. While both B and C are expected to have friends who like country music, C is more likely than is B to have friends who like heavy metal music or new age music. Therefore, C is more likely to have or to develop preferences for heavy metal music and new age music than is B. The time constraints assumption tells us that participation in the activities associated with these preferences imposes time constraints on the development or maintenance of preferences for other types of music. Therefore, C is less likely than is B to have a preference for country music.

Historical evidence supports the idea that musical forms compete with each other for the preferences of people. Jones (1963) argues that slaveowners of the southern U.S. wanted to prevent their slaves from singing various African songs and chants for two reasons. First, the songs praised gods other than the Christian god. Second, various African musical activities had been associated with attempted slave escapes and revolts. Backus (1976) explains that in order to prevent slaves from singing African songs, slaveowners made use of the fact that competition exists among musical forms to which individuals are exposed. The slaveowners encouraged their slaves to sing Christian psalms and hymns. The slaves developed a liking for these Christian songs and, as a consequence, gave up much of their traditional music.[14]

It is important to notice that competition in ecological theories does not imply a conscious process driven by conflicting interests.[15] Competition is a process by which a limited amount of a resource is distributed across a set of entities that depend on that resource for their existence. A type of music depends on people to play, listen to, or talk about it. Types of music in which no one ever invests time and energy do not exist. Only musical forms to which people devote time and energy survive the competitive process.

Preference Strength

In this section, I develop this article's final two hypotheses. These hypotheses are based on ideas presented above concerning niche overlap and on a distinction between weak and strong musical preferences. First, I discuss preference strength. An individual's liking for a type of music can have any one of many levels of intensity. For example, among people who like jazz, some have a weak preference for it while others have a strong preference. According to the theory, a strong preference for a type of music involves devotion of more time to activities associated with that type of music than a weak preference involves. For example, a weak preference for jazz might involve listening to jazz for two hours a week. A strong preference for jazz might involve listening to jazz for five hours a week, playing jazz music with friends for three hours a week, and reading about jazz for one hour a week.

In order to devote time to activities associated with a new musical preference, a person must reduce the amount of time she or he devotes to one or more other activities. One or more activities will be partially or totally displaced by the activity or activities associated with the new preference. The displaced activity may or may not be music related. Because a weak preference is associated with less time expenditure than a strong preference is, acquisition of a new weak preference is less disruptive to a person's original schedule than is acquisition of a new strong preference. A new strong preference is more likely to displace a previously developed strong preference than a new weak preference is to displace a previously developed weak preference. For example, consider a person with the strong preference for jazz described above and a weak preference for new age music involving two hours of listening per week. Suppose this person acquires a new preference for classical music. If the new preference is weak, it might only involve listening to classical music for two hours a week. There are several ways this new preference could be fit into this person's schedule without displacing activity associated with this person's preference for new age music. For example, this person could spend two hours less time per week reading the newspaper, watching television, or bicycling. However, if the new preference is strong and consumes much time, it may be quite difficult for this person to fit it into his or her schedule without displacing activity associated with this person's jazz preference. If this person acquires a strong preference for classical music, it is likely that this person's preference for jazz will be reduced to a weak preference.

Above, I stated that the number of niches that intersect at a person's position in social space positively affects the number of types of music to which the person is exposed through his or her network ties. This idea in combination with the network transmission assumption implies that the number of niches that overlap at a person's location in social space will positively affect the number of types of music that the person likes. However, because time constraints limit the number of types a person can like, unit increases in the number of niches that intersect at a person's location in social space have a diminishing effect on the number of preferences a person maintains as the number of preferences the person maintains approaches its limit.

According to the theory, this relationship between the number of niches in which a person is located and the number of types the person likes is different for different intensities of liking. Because it is easier to fit a new weak preference into an already busy schedule than it is to fit in a new strong preference, time constraints do not as severely limit the number of weak preferences a person can maintain. Even when a person experiences many demands on his or her time, it is possible for the number of weak musical preferences the person maintains to increase with the development of a new weak preference. It is less likely that a person facing similar time constraints would develop a new strong musical preference without a previously developed strong preference subsiding. This difference in the effect of

niche overlap for the number of weak and strong preferences people maintain leads to the following hypotheses.

Weak preference hypothesis: The number of weak musical preferences a person maintains is positively related to the number of niches that overlap at that person's location in social space.

Strong preference hypothesis: The number of weak musical preferences a person maintains is more strongly related to the number of niches that overlap at the person's location in social space than is the number of strong preferences a person maintains.

Data

I test the hypotheses I have presented with data from the 1993 General Social Survey. In 1993 the General Social Survey was administered to 1,606 individuals who formed a probability sample of noninstitutionalized, English-speaking persons 18 years of age or older living in the contiguous U.S. The 1993 survey included a culture module that had eighteen items devoted to eighteen types of music. Respondents were asked for their feeling about each of the types of music. Five responses ranged from "like very much" to "dislike very much." A sixth response was "don't know much about it." I use four sociodemographic variables as dimensions of social space:[16] age, occupational prestige,[17] years education, and annual family income.[18]

Methods

Testing these hypotheses requires an operational definition of the niche (see McPherson 1983). To find the location of the niche center on a single dimension, I use the mean value on that dimension of all respondents who report liking the type of music very much.[19] I define the niche width on a dimension as three standard deviations (1.5 to each side of the mean). The niche is a hyperbox constructed from the niche width on each of the four dimensions.[20]

The niche, familiarity, and niche overlap hypotheses make predictions about a person's preference for or familiarity with a type of music. Because the data include eighteen types of music, each of these hypotheses makes eighteen predictions for each respondent — one for each type of music. In testing these hypotheses, I employ a method that allows me to test each hypothesis for all eighteen types of music together. For each respondent, I generate an observation for each of the eighteen types of music. Each observation corresponds to a unique respondent/music type combination. Thus, the unit of analysis is not the individual, but the intersection of the individual and the music type.[21]

The six hypotheses I have presented constitute an analysis that focuses on eight variables. *Like very much* is a dummy variable which is one when the respondent reported liking very much the type of music to which the observation corresponds. I use this variable to operationalize preference in testing the niche and niche overlap hypotheses. A related variable is *number likes very much*, which is the number of types of music that a respondent reports liking very much.[22] I use this variable to operationalize number of strong preferences in testing the strong preference hypothesis. On average, each person reported liking 2.23 types of music very much — 12% of the types considered. The number of types liked very much by a respondent ranged from 0 to 15. Oldies rock and country were the most popular types of music. For each, one-quarter of respondents reported liking it very much. Gospel was the next most popular with 21% liking it very much. Rap was the least popular of the eighteen types with 2% of people liking it very much. Heavy metal and new age also have small followings. Each was liked very much by only 3% of the sample.

Number likes is the number of types of music that a respondent reported liking.[23] On average, each person reported liking 5.43 types of music — 30% of the types considered. The number of types liked by a respondent ranged from 0 to 18. I use the variable *number likes* to operationalize number of weak preferences in testing the weak and strong preference hypotheses.

Don't know is a dummy variable with a value of 1 when the respondent reported not knowing much about the type of music. Closely related is the variable *number don't knows*, which is the number of types of music about which a respondent reported not knowing much. The mean number of types of music about which respondents did not know much was 1.12. The modal number of types of music respondents did not know much about was 0; 58% of respondents did not report "not knowing much about it" for any type of music. The maximum value of *number don't knows* observed was 18 — the total number of types of music in the analysis. New age and reggae were the least well-known types of music. For each of these, 18% of respondents reported not knowing much about it. Country was the best known type of music with only 1% of people not knowing much about it. I use the variable *don't know*, which is an inversely coded measure of a person's familiarity with a given type of music, in testing the familiarity hypothesis. I use *number don't knows*, which is an inversely coded measure of the number of types of music with which a person is familiar, in testing the niche number hypothesis.

Niche is a dummy variable with a value of 1 when the respondent is in the niche of the type of music to which the observation corresponds. I use *niche* in testing the familiarity hypothesis. *Number niches* is the number of niches that intersect at a person's location in social space. The mean value for *number niches* is 9.64 — 54% of the eighteen niches. *Number niches* ranges from 0 to 18. I use *number niches* in testing the niche number hypothesis, the niche overlap hypothesis, and the weak and strong preference hypotheses.

The variable *distance* is the Euclidean distance in social space between a respondent and the niche center of the type of music to which the observation corresponds. *Distance* represents the social distance between a person and a niche center. The greater the value of *distance* for a given observation, the lower is the prevalence of preferences for the corresponding type of music in the respondent's social world. I use the variable *distance* in testing the niche hypothesis.

Results

I begin this section by examining the niche pattern displayed by these types of music. Table 1 presents the niche centers and breadths on each of the four dimensions. The final column gives the volumes of the niches in four-dimensional space. Age is the dimension on which the types of music differentiate the most. Smith (1994) also notes the strong relationship between music preference and age. Rap and heavy metal are the types of music with niches lowest on the age dimension while big band has the niche that is highest on the age dimension.

Table 1 illustrates the multidimensional nature of niche structure. A musical form's position on one dimension does not indicate its position on other dimensions. For example, while rap has the lowest niche on occupational prestige, bluegrass, country, and gospel have the niches lowest on education. Gospel music has one of the six highest niches on age, but it is the second-lowest on income. Big band has the niche highest on age but is much closer to the middle on the other dimensions.

The niche volume indicates the degree to which the type of music specializes in sociodemographic space. Types with small niche volumes are specialists. They draw most of their fans from small regions of social space. Heavy metal, contemporary rock, and new age are specialists. Types of music with large niche volumes are generalists. Their fans are spread over a larger region of social space. Gospel, bluegrass, and folk music are generalists.

NICHE HYPOTHESIS

Now I turn to tests of the hypotheses. According to the niche hypothesis, the greater a person's social distance from the niche center of a given type of music, the lower is the probability that the person will like that type of music. To test this hypothesis, I regress *like very much* on *distance* using logistic regression.[24] As predicted, *distance* has a negative effect on *like very much*. Moving one unit in social space away from the center of a niche decreases one's log-odds of liking that type of music very much (to not liking it very much) by .032.[25] (See Table 2, Model 1.)

MUSIC FAMILIARITY HYPOTHESES

According to the familiarity hypothesis, location inside the niche of a type of music positively affects a nonfan's probability of being familiar with that type of music. In other words, being in the niche negatively affects a nonfan's probability of not knowing about a type of music. To test this prediction, I regress *don't know* on *niche* using logistic regression. To estimate this model, I use only observations where the respondent did not report liking very much the type of music to which the observation corresponds. As the theory implies, *niche* has a negative effect on *don't know*. Being located inside the niche of a type of music decreases one's log-odds of not knowing much about a type of music by .586.[26] (See Table 2, model 2.)

The niche number hypothesis predicts that the number of niches that intersect at a person's location in social space positively affects the number of types of music with which the person is familiar. In other words, the variable *number niches* should negatively affect the number of types of music with which a person is unfamiliar. To test this hypothesis, I regress *number don't knows* on *number niches* using ordinary least squares. As predicted, *number niches* has a negative effect on *number don't knows*. For every niche that intersects at a person's location in social space, the number of types of music with which the person is unfamiliar decreases by .030. (See Table 2, model 3.)

NICHE OVERLAP HYPOTHESIS

The niche overlap hypothesis predicts that if a person is in the niche of a type of music, the probability of that person liking that type of music is negatively related to the total number of niches that intersect at that person's location in social space. Therefore, in estimating the model I use to test this hypothesis, I use only observations where the respondent is in the niche of the type of music to which the observation corresponds. Using logistic regression, I regress *like very much* on *number niches*. As predicted, *number niches* has a negative effect on *like very much*. For a person who is in the niche of music type A, every additional niche that overlaps at that person's location in social space decreases the person's log-odds of liking very much music type A by .055.[27] (See Table 2, model 4.)

PREFERENCE STRENGTH HYPOTHESES

The weak preference hypothesis predicts that the number of niches that overlap at a person's position in social space positively affects the number of weak musical preferences the person maintains. To test this hypothesis, I regress *number likes* on *number niches*.[28] The strong preference hypothesis predicts that the effect of *number niches* on *number likes very much* is weaker than the effect of *number niches* on *number likes*. To determine the effect of *number niches* on *number likes very much*, I regress *number likes very much* on *number niches*. Because of the construction of

TABLE 1: Niche Centers,[a] Breadths,[b] and Volumes of Eighteen Types of Music

	Dimension of Sociodemographic Space								
	Age (Years)		Occupational Prestige		Education (Years)		Income[c]		
Type of Music	Center	Breadth	Center	Breadth	Center	Breadth	Center	Breadth	Volume
Big Band/Swing	58	33-83	46	26-66	13.5	9.2-17.7	10.5	6.8-14.1	126,030
Bluegrass	51	26-76	42	23-61	12.0	7.0-17.0	9.9	5.9-13.9	148,660
Country/Western	48	23-72	40	22-58	12.0	7.5-16.4	10.0	5.7-14.2	134,953
Blues or Rhythm and Blues	44	20-68	43	24-62	13.6	9.2-18.0	10.3	6.1-14.4	131,364
Broadway musicals/ show tunes	53	28-77	47	27-67	14.1	10.1- 18.0	10.9	7.5-14.2	100,910
Classical music- symphony and chamber	48	23-73	48	27-70	14.7	10.7-18.6	10.9	7.7-14.2	110,887
Folk music	52	27-76	47	26-68	13.4	8.2-18.6	10.6	7.2-14.1	147,873
Gospel music	51	25-77	41	22-60	12.0	7.3-16.8	9.5	4.8-14.1	177,833
Jazz	43	21-66	45	26-64	14.1	9.9-18.3	10.6	6.8-14.3	109,748
Latin/Mariachi/ Salsa	46	25-67	44	25-63	13.6	9.1-18.0	10.1	5.9-14.4	121,411
Mood/easy listening	49	25-73	45	26-64	13.2	8.9-17.5	10.5	6.7-14.3	119,796
Newage/space music	38	20-56	46	26-65	14.4	11.1-17.8	10.8	7.3-14.4	67,970
Opera	55	28-81	48	28-68	14.6	9.9-19.3	10.7	7.1-14.2	138,942
Rap music	30	11-49	38	24-52	12.5	9.0-16.0	9.0	3.3-14.6	84,414
Reggae	32	14-51	44	25-63	13.7	9.7-17.7	10.3	6.2-14.4	90,755
Contemporary pop/rock	35	18-52	44	26-62	13.6	9.9-17.2	10.7	7.4-14.1	60,380
Oldies rock	41	22-60	43	24-62	13.5	9.6-17.3	10.6	6.8-14.4	86,776
Heavy metal	30	13-46	40	24-56	12.8	9.5-16.0	10.1	6.2-14.0	54,280

Source: General Social Survey (1993)

[a] The niche center on a given dimension is the mean value on that dimension of all respondents who reported liking very much the type of music corresponding to the niche.

[b] The niche breadth on a given dimension is a range with a lower bound 1.5 standard deviations below the center and an upper bound 1.5 standard deviations above the niche center.

[c] The GSS variable *income* was coded in the following way: <$1,000; $1,000 to $2,999; $3,000 to $3,999; $4,000 to $4,999; $5,000 to $5,999; $6,000 to $6,999; $7,000 to &7,999; $8,000 to $9,999; $10,000 to $14,999; $15,000-19,999; $20,000 to $24,999; $25,000+.

TABLE 2: Models of Music Preference and Familiarity

	Regression Technique			
	Logistic	Logistic	OLS[a]	Logistic
	Dependent Variable			
	Like Very Much	Don't Know	Number Don't Knows	Like Very Much
Independent Variable	Model 1	Model 2	Model 3	Model 4
Distance	-.032*** (.002)[b]			
Niche		-.586*** (.054)		
Number niches			-.030*** (.008)	-.055*** (.005)
Intercept	-1.330 (.042)	-2.306 (.034)	1.403 (.097)	-.962 (.076)
Likelihood Ratio χ^2	265.60***	119.96***		102.98***
R^2			.0093	
N	24,804[c]	21,725[d]	1,378	13,284[e]

[a] Model 3 is estimated with ordinary least squares because the dependent variable is not dichotomous.

[b] Standard errors are in parentheses.

[c] Number of observations is the product of 1,378 respondents and 18 types of music.

[d] Only respondent/music type observations where the respondent does not report liking very much the type of music to which the observation corresponds are used to estimate Model 3.

[e] Only respondent/music type observations where the respondent is in the niche of the type of music to which the observation corresponds are used to estimate Model 4.

*** $p < .001$ (one-tailed test)

the survey, *number likes* and *number likes very much* are negatively related to each other. Therefore, I estimate the above system of equations using seemingly unrelated regression (Kmenta 1986). This method gives more efficient estimates than ordinary least squares when errors are correlated across models.[29]

The weak preference hypothesis is supported (Table 3, model 1). *Number niches* has a positive effect on *number likes* ($b = .0308$). The estimated effect of *number niches* is also consistent with another implication of the theory. Although the theory predicts that time constraints will be more influential in the development and

maintenance of strong preferences than in the development and maintenance of weak preferences, time constraints are still expected to have considerable influence on weak preferences. This implication is confirmed by the fact that the coefficient estimate is less than one. Only in the complete absence of time constraints would we expect a coefficient of one on *number niches.*

Model 2 in Table 3 shows the results of regressing *number likes very much* on *number niches.* The strong preference hypothesis predicts that the effect of *number niches* on *number likes very much* is weaker than the effect of *number niches* on *number likes.* This hypothesis is supported. The estimated effect of *number niches* on *number likes very much* ($b = .0071$) is less than the estimated effect of *number niches* on *number likes* ($F_{1,2752}=2.819$; $p < .05$, one-tailed test; Judge et al. 1988).

The estimated effect of *number niches* on *number likes very much* indicates that there is intense competition between types of music for the strong preferences of individuals. The strong preference hypothesis predicts that the effect of *number niches* on *number likes very much* will be small. This prediction is supported; the estimated coefficient is so small that it is not significantly different from 0. This result is important because it means time that constraints have a powerful effect on the number of strong musical preferences people maintain. People are exposed to many more types of music than they can take the time to appreciate. The number of types of music to which individuals are exposed is so great that variation in this number has no effect on the numbers of strong musical preferences individuals maintain. The importance of time constraints is far superior to that of exposure in determining the number of strong musical preferences people maintain.

Discussion

The theory and analysis presented in this article have two major advantages over previous work. First, the article adopts a multidimensional conceptualization of social structure and provides empirical tests of theoretically derived hypotheses that incorporate that multidimensional notion of social structure.[30] Second, the article shows that a theory that builds on the principle of homophily offers a parsimonious explanation for findings that different cultural tastes are concentrated within different segments of a wide variety of sociodemographic dimensions (Bryson 1996; DiMaggio & Ostrower 1990; Marsden et al. 1982; Peterson & Kern 1996; Reed 1982; Smith 1994).

At the heart of the ecological theory is the relationship between social structure and culture. Here, I discuss implications of this relationship for the diversity of musical types, the size of musical niches, the concept of status groups, and the cultural omnivore/univore distinction.

TABLE 3: Models of Numbers of Musical Preferences

	Dependent Variable		
	Number Likes	Number Likes Very Much	
Independent Variable	Model 1	Model 2	Difference Model 1 - Model 2
Number niches	.0308**	.0071	.0237*
	(.0102)[a]	(.0083)	{2.819}[b]
Intercept	5.0948	2.1658	
	(.1347)	(.0979)	
System weighted R^2	.0040	.0040	
N	1,378	1,378	

Note. Models are estimated using seemingly unrelated regression (Kmenta 1986).
[a] Standard errors are in parentheses.
[b] F-statistic (Judge et al. 1988) is in braces (df = 1,2752).

*p < .05 (one-tailed test) **p < .01 (one-tailed test)

DIVERSITY OF CULTURAL FORMS

An important idea from bioecology is that the diversity of species reflects the diversity of resources in the environment (MacArthur 1972). This idea is adopted by organizational ecologists, who argue that diversity of environments is responsible for the diversity of organizational forms (Hannan & Freeman 1977). McPherson and Ranger-Moore (1991) explain that the diversity of organizations in a society is a function of the structural differentiation of that society.

The relationship between differentiation of the social structure and diversity of cultural forms is also recognized in the study of culture. DiMaggio (1987) states that "the greater the degree of social heterogeneity and status diversity in a social system, the more differentiated its [culture]" (447). Peterson and DiMaggio (1975) also note that the assimilation of various immigrant groups in the U.S. has been accompanied by a loss of the cultural diversity associated with ethnic differences. The finding that metropolitan areas with greater income inequality have more artists per capita suggests that social differentiation creates demand for diverse art forms that can be met only by a large number of artists (Blau, Blau & Golden 1985). In this article, I have presented an ecological mechanism that explains this relationship. The ecological approach enhances previous theoretical developments

by recognizing the role of people as a resource for cultural forms and by conceptualizing a society's social structure as a resource space.

SIZE OF MUSICAL NICHES

Like differentiation, integration is a characteristic of social structures that affects cultural patterns. According to P. Blau (1977a), "integration is . . . the . . . prevalence of social associations among different positions" (33) in social space. This means that the more integrated a social system, such as a city or a society, the less localized in sociodemographic space interactions tend to be. In such systems, social ties tend to be weak and intransitive (Granovetter 1973; Popielarz 1994). Because social contacts tend to span greater social distance in integrated societies, musical preferences, which spread through network ties, can more easily travel greater distances in social space. Individuals are exposed to a wide variety of musical forms through their intransitive ties to distant positions in social space. Social position becomes a weaker predictor of musical preference. The result of the cosmopolitan, weak, intransitive nature of social ties in integrated systems is that musical niches will tend to be larger in more integrated cities and societies.

P. Blau (1980) discusses two general structural variables that are related to the level of integration of a society. They are the salience of sociodemographic dimensions and the degree to which sociodemographic dimensions are intersecting or correlated.

According to P. Blau (1977b), the salience of a sociodemographic dimension is the degree to which social interaction tends to occur between individuals occupying similar positions on that dimension. Given two distant positions on a sociodemographic dimension, the less frequent social interaction is between individuals in those positions, the more salient is that dimension. Thus, the less salient a dimension is, the more integrated the society is on that dimension. For example, age integration occurs when the sociodemographic dimension age has low salience. If the set of sociodemographic dimensions that most affect patterns of interaction have low salience (relative to the most influential sociodemographic dimensions in other societies), then the society will have a high level of integration. This relationship between the salience of dimensions and the integration of the society implies that the less salient the dimensions that structure interaction patterns in a society, the larger will be the niches of musical types in that society.

The strength of the correlations among parameters also affects the level of integration of a society. Two sociodemographic dimensions are correlated when individuals' positions on one dimension are closely related to their positions on the other. The more weakly two dimensions are correlated, the more they are said to intersect each other. When dimensions are intersecting, any two individuals who are similar on one dimension are likely to be different on another. As dimensions become more intersecting, people become more spread out in sociodemographic

space. Consequently, network ties between people span greater social distances, and weak, intransitive ties become more prevalent. Thus, the intersection of dimensions positively affects integration. This relationship between integration and the intersection of dimensions implies that across cities or societies, the size of musical niches will be positively related to the intersection of dimensions.

STATUS GROUPS

Sociologists have long noted the relationship between economic class and cultural participation (Lynd & Lynd 1929; Veblen [1899] 1934; Warner & Lunt 1941), but they have also grappled with the imperfection of this relationship. Weber's ([1922] 1978) notion of status groups and the concept of culture class (Peterson & DiMaggio 1975) refer to segments of the population that have similar cultural practices. Theorists have seen these concepts as necessary because of the lack of correspondence between culture and economic class.

From the ecological perspective, the weakness of the correspondence between culture and economic class is not an anomaly. In fact, given the multidimensional nature of social structure, it is to be expected. As I mentioned above, when social dimensions are intersecting, it is possible for two individuals similar on one dimension (e.g., income) to be very different on another dimension (e.g., education). Thus, similarity on one dimension does not necessarily imply proximity in social space. Individuals with the same position on the dimension income can be in the niches of very different cultural forms. If this is the case, we would expect them to listen to different types of music, read different books, play different games, and decorate their homes differently.

CULTURAL OMNIVORES AND UNIVORES

Peterson (1992) finds an omnivore/univore pattern of cultural consumption. High-status people participate more heavily in elite and nonelite cultural forms than do low-status people. Peterson calls these people with a wide variety of cultural tastes cultural omnivores. He contrasts this finding with the traditional view that high-status people participate heavily in elite cultural activities while avoiding nonelite cultural forms and that low-status people heavily consume mass culture but not elite culture (Gans 1974; Goffman 1951).

The ecological approach helps illuminate the omnivore/univore finding. The theory predicts that the individuals most likely to be omnivores are those who are in regions where many niches overlap. People in regions of high niche overlap learn about a wide variety of cultural forms through social contact with others. Such people are more likely than others to develop many preferences (i.e., become omnivores). This seeming contradiction to the idea of competition is reconciled with the theory when we recognize the theory's implication that most preferences of cultural omnivores are weak.

The ecological approach predicts that the preferences of cultural omnivores will be weaker on average than those of cultural univores. The preference strength hypotheses tell us that niche overlap has a stronger positive effect on the number of weak preferences maintained than on the number of strong preferences. Omnivores and univores may be similar in maintaining a small number of strong preferences. The ecological theory suggests that the difference between omnivores and univores is in the number of weak preferences they maintain.[31]

DiMaggio (1987) also considers differences between omnivores and univores. He argues that high-status people are frequently cultural omnivores because their ego networks tend to be larger and less dense than the ego networks of low-status people. I suggest that niche overlap plays an important role in the process DiMaggio describes. A person with a large ego network of low density might be exposed to few types of music if she or he is not in a region of niche overlap. This person may have many friends who do not know each other, but if they all like the same type of music, this person is likely to be a cultural univore. However, a large, sparse ego network is especially likely to produce a variety of musical preferences in a person who is located in a region of niche overlap because such a person's friends will like different types of music.

Directions for Future Research and Conclusion

Because social networks are homophilous, consideration of the applicability of the ecological theory to other cultural forms focuses on two questions: (1) is participation in the cultural form transmitted through network ties? (2) does participation in the cultural form consume time and energy that could be spent in other ways? In short, are the network transmission and time constraints assumptions reasonable?

I suggest that the network transmission and time constraints assumptions are reasonable when applied to participation in leisure activities. Network ties are likely conduits for participation in various leisure activities because people talk to their friends about the fun things they do. Also, because many leisure activities involve multiple people, people participate in these activities with their friends. The time constraints assumption is also applicable to leisure activities. It is hard to imagine a world where time constraints would not limit people's participation in leisure activities. Thus we would expect leisure activities, like musical preferences, to show a niche pattern in social space. Evidence that participation in leisure activities varies with sociodemographic variables such as education (DiMaggio & Useem 1978), occupation (Peterson 1992), race (DiMaggio & Ostrower 1990), and region (Marsden et al. 1982) provides additional reason to believe that the ecological theory would be useful in this area.

The theory can also be applied to attitudes, beliefs, and values. It is reasonable to assume that a person's exposure to various attitudes, beliefs, and values through his or her network ties to friends and other individuals influences the person's own attitudes, beliefs, and values (Carley 1986a,b; Erickson 1988; Friedkin 1986). I also claim that the time constraints assumption is valid as it applies to attitudes, beliefs, and values. The development and maintenance of a deeply held attitude, belief, or value requires that a person take time to express or think about that attitude, belief, or value.

Religious participation is another form of cultural participation to which the ecological theory applies. Research indicates that religions recruit participants through network ties (Snow, Zurcher & Ekland-Olson 1980; Stark & Bainbridge 1980). The time constraints assumption is also applicable to religion. Participation in religious activities consumes large amounts of time. For these reasons, conceptualizing religions as competitors for people in social space is a promising approach to the topic of religious participation.

The findings I have presented in this article demonstrate the generality of the ecological approach originally presented by McPherson (1983) as a theory of voluntary association. Thus, the examination of even wider applicability that I suggest in this section is well founded. Because simple facts about information flow, interaction patterns, and time constraints underlie almost all aspects of social life, a theory based on these facts is a powerful and general tool.

Notes

1. In addition to time and energy, money is a limited resource that people devote to activities associated with musical preferences. However, participation in some musical activities requires little or no money, and participation in these activities alone can provide the basis for musical preferences. Therefore, while economic constraints can prevent participation in certain musical activities, these constraints cannot prevent the formation and maintenance of musical tastes. For this reason, I emphasize time and energy constraints rather than economic constraints.

2. Whether the time constraints assumption is a necessary component of the theory's explanation for heterogeneity of musical tastes in a connected network depends on our specification of the network transmission assumption. One specification assumes that liking is transmitted through network ties, but non-liking is not transmitted through network ties. (For simplicity, I combine disliking and absence of opinion into a single category, non-liking. See Bryson (1996) for an explicit treatment of music disliking.) This specification parallels the communication process in Carley's (1991) nonstructural model. If we adopt this specification, the time constraints assumption is necessary to explaining the heterogeneity of taste in a connected network. However, as one anonymous reader points out, if we assume that musical liking and non-liking are transmitted through network ties in the same fashion, with transmission of liking and non-liking pushing a person's taste in opposite directions, then the time constraints assumption is not necessary

(see Friedkin 1991). Since the time constraints assumption is necessary under one specification of the theory, I present this assumption in this paper and leave formalization of the theory for future work.

3. In this section, I have presented a cohesion model of musical preferences (Marsden & Friedkin 1993). According to the theory, musical tastes are transmitted directly through network ties. Burt (1978,1987) argues for the adoption of structural equivalence models as an alternative to cohesion models. According to the structural equivalence argument, individuals with similar sets of network alters are likely to be similar in many respects, including musical preferences, regardless of whether these individuals are directly connected to each other. Individuals who are structurally equivalent are said to jointly occupy the same position. Burt explains that one type of jointly occupied position is one defined by membership within a clique. The theory I develop in this article does not make specific assumptions about the effects of structural equivalence that operate independently of cohesion because in a large network (e.g. the United States), the only jointly occupied positions identified by analysis of structural equivalence are positions defined by membership in cliques. In other words, in a large network, structural equivalence and cohesion are the same thing.

4. Sociodemographic space, or social space, is referred to as Blau space by McPherson (1990) and McPherson and Ranger-Moore (1991).

5. According to the ecological theory, this variation in rates represents neither an age nor a cohort effect (Blau 1989), but a "social proximity effect. The theory does not argue that people tend to develop particular musical tastes when they reach particular ages regardless of when they were born. Nor does the theory argue that people born at particular times develop certain musical tastes which they hold through life. Instead the theory argues that people of similar age are socially proximate relative to people of dissimilar age. Because musical tastes are transmitted through network ties, people of similar age will have more similar musical tastes than will people of dissimilar age.

6. All respondents to the General Social Survey are 18 years of age or older. Therefore, the youngest age category is an eight-year bracket (18 years through 25 years).

7. Respondents were asked to report their feelings toward each of 18 types of music. "Like it very much" was one of six possible responses. Data are described in further detail below.

8. Niche centers and breadths on four dimensions for the 18 types of music considered in the analysis are presented in Table 1 below.

9. Of course, these musical forms occupy different niches on other sociodemographic dimensions as well. Reed (1982) points to the importance of region, arguing that despite increasing popularity throughout the United States, country music is "still basically the music of the white Southern working class" (50).

10. The complementary process to fan recruitment is fan loss. To the extent that people can lose tastes for a types of music that they previously liked, the theory argues that fan loss is also selective. Anomalous fans, people who are outside the niche of a type of music they like, are more likely to lose their musical preference than are typical fans. The

reason for this difference is that anomalous fans receive relatively little reinforcement for their anomalous tastes from their friends and receive much encouragement to like other types of music. (However, see Smith (1994) for the argument that musical tastes are relatively permanent.)

11. As one anonymous reader points out, the niche may influence the themes of a musical form. According to the ecological theory, overlap between the niches of two types of music provides a pathway of communication between those musical forms. Thus, musical forms, especially new ones, will resemble forms occupying the same niche. I leave further exploration of this hypothesisfor future work.

12. DiMaggio (1987) and Smith (1994) use the term niche to describe a segment of the population that participates in a particular cultural form. However, neither researcher goes further in developing this theoretical concept.

13. This hypothesis is analogous to the niche overlap hypothesis tested by Popielarz and McPherson (1995) in their analysis of membership duration in voluntary organizations. They find that the number of organizational niches that intersect at a person's location in social space is negatively related to the duration(s) of that person's membership(s).

14. Of course, slave owners did not rely solely on competition between musical forms to prevent their slaves from practicing their traditional musical forms. Slave owners also used more direct and punitive measures.

15. Although the above example involves groups with conflicting interests, the competition implied by the theory is between two musical forms, not between slaves and their owners.

16. My choice of sociodemographic dimensions may raise concern for some readers for two reasons: (1) some of these dimensions are correlated with each other; (2)I have not included some dimensions known to be related to musical preferences, such as race (DiMaggio & Ostrower 1990) or location in a large city (Blau 1989). Consideration of the role of sociodemographic dimensions in the ecological theory of musical preference indicates that while correlated dimensions and excluded dimensions pose certain problems in testing the theory, they in no way invalidate the tests presented below. The less correlated two dimensions are, the more new information the second dimension adds about patterns of social interaction. If two dimensions are perfectly correlated, using both dimensions in defining a social space provides no more of an accurate summary of interaction patterns than does using just one. As long as dimensions are not perfectly correlated, inclusion of each dimension provides a more accurate summary of interaction patterns. The magnitude of the improvement associated with the addition of one dimension is negatively related to the strength of the correlations of that dimension with the previously included dimensions. Therefore, while the dimensions education, income, and occupational prestige are correlated and while each of these dimensions provides less non-redundant information than would be the case if these dimensions were not correlated, each provides at least a small amount of new information, thereby improving the accuracy with which the definition of social space summarizes patterns of social interaction. I exclude race and other nominal characteristics from the analysis because the method I use to define niches is not suitable for application to nominal characteristics. The exclusion of race from the analysis is unfortunate because race strongly influences social interaction patterns. Thus, the exclusion of race and other

nominal dimensions, which reduces the accuracy with which the defined social space summarizes patterns of social interaction, makes it particularly difficult to detect support for the hypotheses presented above. In other words, the exclusion of nominal dimensions makes the following tests of the theory quite strong.

17. For respondents not employed at the time of the survey but who had been employed for as long as one year previously, occupational prestige was determined by past employment. In cases where the respondent was not employed at the time of the survey and had not been employed for as long as one year previously, the respondent's father's occupational prestige was used for the respondent's own.

18. The General Social Survey variable *income* is coded as an ordinal variable, and all respondents with family income greater than or equal to $25,000 are coded in the top income category. I treat *income* as an interval variable for determining niche locations. I do not consider this inconsistency to be a substantial problem. If income had been coded differently, it might have been a better indicator of social interaction patterns. However, my goal in using four sociodemographic dimensions to define a social space is to approximate interaction patterns. I do not claim that the social space I have defined perfectly summarizes interaction patterns.

19. To calculate the mean and standard deviation for each type of music on each dimension, I include observations that have missing values for other dimensions. For example, if a respondent who likes big band music very much reports his or her age and education, but not his or her occupation and income, I include that respondent in calculating the mean age and education for big band music. However, such a respondent would be excluded from the regression analyses described below because it is impossible to determine where such a respondent is located in sociodemographic space. Eliminating respondents with missing values for any of the 18 music items or of the four sociodemographic dimensions I consider reduces the sample size from 1606 to 1 378.

20. I follow McPherson and colleagues (McPherson 1983, McPherson & Ranger-Moore 1991; McPherson & Rotolo 1996) in adopting this operational definition of the niche. I have conducted the analyses presented below with a variety of niche widths ranging from one to five. For most niche widths examined, significant results substantively similar to those present below were obtained. Results of these analyses are available from the author upon request.

21. Generating 18 observations for each respondent increases apparent degrees of freedom. Dependency among observations clustered in one respondent could bias standard errors Forcoefficients downward. For each coefficient estimated with this expanded set of observations, I provide an additional test (described below) which lends additional support to my results.

22. Unlike the variable *like very much*, which has 18 observations per respondent, *number likes very much* has only one observed value per respondent. The same is true for the variables *number likes*, *number don't knows*, and *number niches* described below.

23. The variable *number likes* does not include responses of "like very much." For example, if there are two types of music that a person reports liking very much and five types that the person reports liking, the respondent's value for *number likes* is 5, not 7.

24. Some readers may be concerned that this test and those described below are biased because the niche centers and bounds are estimated with the same observations that are used to estimate the regression models. To ensure that the findings reported in this section are not the result of this potential bias, I also conduct these tests using a split sample. I randomly assign each person to one of two subsamples with equal probability. I use one subsample to estimate the niche centers and bounds and use the other subsample to estimate the regression models. The results of this analysis, which are substantively the same as those reported here, are available from the author upon request.

25. As mentioned above (note 21), creating 18 observations per respondent results in dependency among observations clustered in one respondent. To ensure that the statistical significance of my results could not be attributed to chance and downward biased standard errors, I estimate the model separately for each of the 18 types of music. This method eliminates dependency among observations because each respondent corresponds to only one observation for each estimation of the model. I conduct a sign test (Siegel 1956) on the 18 estimated coefficients. The null hypothesis is that each estimate has a 50% chance of being negative and a 50% chance of being positive. The alternative hypothesis is that the coefficients have a greater than 50% chance of being negative. The estimated coefficient is negative, the predicted direction, for each of the 18 types of music ($p < .001$). This result supports the niche hypothesis.

26. To lend further support to the familiarity hypothesis, I conduct a sign test as described above (note 25). The estimated coefficient is in the predicted direction for each of the 18 types of music ($p < .001$).

27. To lend further support to the niche overlap hypothesis, I conduct a sign test as described above (note 25). The estimated coefficient is in the predicted direction for 15 types of music and in the opposite direction for 3 types ($p < .01$).

28. In this model, where the dependent variable is *number likes*, values for the variable *number niches* are calculated differently from the method described in the methods section. Values for this model are based on niches calculated from the sociodemographic characteristics of respondents reporting liking, rather than liking very much, various types of music. For example, the niche center of jazz on the age dimension is the mean age of all respondents reporting liking (not liking very much) jazz.

29. Estimating these models using ordinary least squares gives results substantively the same as those obtained by seemingly unrelated regression.

30. While social scientists recognize the multidimensional nature of social structure, they have yet to fully integrate this idea into sociological research. While Bourdieu ([1973] 1977; [1979] 1984) recognizes the multidimensional nature of social structure, empirical work on cultural capital adopts a unidmensional notion of social structure (DiMaggio 1982; DiMaggio & Mohr 1985). Empirical research demonstrates multidimensional

patterns of cultural taste (Hughes & Peterson 1983; Marsden et al. 1982; Peterson 1992), yet falls short of incorporating this multidimensional structure into a predictive theory.

31. Here, I have presented an interpretation of the omnivore thesis to which the ecological theory adds precision. One anonymous reader informs us that an alternative interpretation of the omnivore argument allows us to pose competing hypotheses. The ecological theory implies that the number of niches in which a person is located is the best predictor of the number of musical forms a person likes. However, Peterson's omnivore thesis holds that some measure of status, such as education, occupational prestige, or highbrow taste (Peterson & Kern 1996), is the crucial predictor of the number of musical forms a person likes.

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