The Spatial Diffusion of Linguistic Features in Oklahoma

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Although past research suggests that the spatial diffusion of linguistic features across a landscape is a simple and clear-cut process, our research in Oklahoma suggests otherwise. We collected data for this study in a statewide, multifaceted investigation of grammatical, lexical, and phonological variation in Oklahoma and analyzed it using several cartographic and statistical procedures. Our purpose was to uncover some of the diffusion processes tied to language that are at work in Oklahoma. We used the General Linear Model (GLM), a multivariate statistical procedure, to identify barriers and amplifiers that influence the geographic distributions of linguistic features. The results suggest that linguistic diffusion in Oklahoma happens in a hierarchical pattern in some cases; in others, the spread is contra-hierarchical with innovations expanding up, rather than down, the urban hierarchy. A correlation of diffusion patterns with social factors that serve as barriers to, or amplifiers of, the diffusional process suggests that different patterns of diffusion may be tied to the different social meanings that linguistic features carry. In the data examined, those innovations that diffuse hierarchically represent the encroachment of external norms into an area, while those features that diffuse in a contra- hierarchical fashion represent the revitalization of traditional norms.

INTRODUCTION

This paper addresses some fundamental questions about one of the most important and least understood issues in cultural and linguistic geography: the spatial diffusion of linguistic innovations. In the context of cultural and linguistic geography, an innovation is defined as either a new linguistic feature or the expansion of a rarely used one. Linguistic features can be phonological (i.e. sound changes represented by a vowel merger in the pronunciation of words, such as *cot* and *caught*), grammatical (as in the use of *fixin' to*), or lexical (as represented by variations in the use of words having the same meaning such as *snap bean* for *green bean).* This investigation of linguistic diffusion may be best understood within the larger context of research on spatial diffusion, on linguistic geography, and on language change in a social context. The results help to identify some of the mechanisms that influence the patterns and diffusion of language features in Oklahoma.

Research that has examined diffusion outcomes and patterns has most often emphasized the differential movement of information or disease, or the nature of the phenomenon that is diffusing (*1-11*). Diffusion research carried out both within the U.S. and abroad has also examined the linkages between diffusion and the environment in which adoption of innovations takes place (*12-15*). Cultural geographers have generally studied diffusion as one element of the cultural landscape, focusing on cultural origins, on the spatial configuration and expansion of cultural areas, and on culture-related or culture-influenced features on the earth's surface (*5,16-21*).

Although questions about the diffusion of linguistic innovations have guided research in linguistic geography for more than a century, linguistic geographers have been slow

to apply insights from diffusion research to their work. But despite a limited number of linguistic studies that have addressed diffusion, linguists and dialect geographers have reached some agreement on the principles that govern the spread of linguistic innovations. As early as 1933, Bloomfield (*22*) noted that isoglosses (lines drawn on maps to delineate the spatial extent of a linguistic feature) converge at, and follow weaknesses in, lines of communication. He proposed the concept of local density (that the diffusion of linguistic changes is a direct consequence of face-to-face interactions among speakers) to explain this phenomenon. More recently, Trudgill (*23-24*) applied Hagerstrand's gravity model to provide an explicit formulation of the principle of local density in accounting for the diffusion of changes in East Anglica. In their work on diffusion, geographers have developed a number of explanatory models, but Hagerstrand's gravity model is the one that has been used most often in linguistic geography: $M_{ij} = P_iP_j/D_{ij}$. The model works in the following manner: the interaction (*M*) between two centers (i and j) is a function of their populations (P_i and P_j) divided by their multiplied distance (D_{ij}). Based on a concept borrowed from the physical sciences, the gravity model makes use of the observation that interaction is likely to be greater among places with larger populations and that interaction diminishes as a function of distance (*25-28*).

The gravity model is also used by geographers and linguists as a method of illustrating the concept of hierarchical diffusion. According to the concept, innovations begin in central places, which serve as the focal points for diffusion across the landscape. Rather than spreading evenly across a landscape, the innovations begin in large cities and diffuse to smaller cities and so on down the hierarchy. An example of this can be seen in the diffusion of radio stations that were first found in large metropolitan areas and later diffused to smaller cities and towns. Most of the linguistic changes observed by Trudgill (*23-24*) in East Anglica follow such a hierarchical pattern. Kurath (*28*) also noted the role of cities in spreading innovations along the east coast of the United States. The general consensus among the small numbers of researchers who have studied the phenomena is that linguistic diffusion is hierarchical.

Like diffusion through the social spectrum, spatial diffusion takes place in a three-part, temporal process that simulates an S-curve, with a period of infancy or slow expansion during which the trait is relatively uncommon; a middle period of rapid expansion; and a later period of saturation and filling in as potential adopters become scarce. Just as innovations do not diffuse evenly over time, neither do they diffuse evenly over space. This unevenness is due to the presence of amplifiers and barriers, which can boost or impede the diffusion process. Although physical features rarely affect the progress of linguistic diffusion, social and demographic characteristics serve as barriers and amplifiers. Brown (*5*) notes that a diffusing feature can be a stimulus to innovation and can itself be subject to modification as it spreads from its point of origin.

Although it would appear that linguistic diffusion is simple and clear-cut, our research suggests otherwise. Trudgill (*23*) notes that at least one of the features that he examined in East Anglica did not follow the hierarchical pattern. Our work in Texas (*29*) suggests that some linguistic innovations may begin not in large cities, but in smaller ones, from which they are then taken to large metropolitan areas. Such a finding demonstrates that the emergence of focal areas for linguistic diffusion is not solely a consequence of an area's size. The sociodemographic composition of metropolises, their location in particular dialect areas, and their proximity to innovations that are spreading from other areas all contribute to the emergence of cities as focal areas. In Texas, these factors explain why Dallas-Fort Worth, rather than Houston, has emerged as the focal area of linguistic change.

Finally, our research shows that spatial diffusion interacts, intricately, with social factors to create complex spatial configurations (*29-30*). In Texas for example, unconstricted, post-vocalic /r/ (where the r in *forty*

is not pronounced) is a feature of both East Texas and African-American speech. The higher concentrations of r-lessness in East Texas are partly a consequence of early migration from the Lower South into this subregion, but are also partly a consequence of the large numbers of African-Americans there. Additionally, the presence of African-Americans in other parts of Texas makes it impossible to argue that r-lessness is an East Texas feature. Therefore, the effects of region and ethnicity are closely related, making it difficult to examine one without considering the other. In accounting for these issues, it appears that the question of how linguistic features diffuse in space is far from resolved. This paper attempts to begin resolving this issue by exploring the spatial diffusion of linguistic innovations in Oklahoma.

TABLE 1. Features Elicited in SOD.

Phonological Features
Fronting of /au/ in *thousand*
Intrusive /r/ in *wash*
Loss of /j/ after alveolars in *Tuesday*
Loss of constriction in post-vocalic and syllabic /r/ in *forty* and *Thursday*
Merger of /I/ and /E/ before nasals in *pen* and *Wednesday*
Merger of /ɔ/ and /*a*/ in *hawk*
Merger of tense and lax vowels before /l/ in *field, bale, pool*
Monophthongization of /ai/ in *time, Friday, night*
Grammatical Features
Fixin' to
Go to or *went to* inceptive
Might could
Positive *anymore*
Yall
Lexical Features
Burlap bag, tow sack, gunny sack, croaker sack
Chigger, redbug
Cup towel, tea towel
Dragon fly, snake doctor, snake feeder, mosquito hawk
Light bread, white bread
Lightening bug, firefly
Snap beans, green beans
Stock pond, tank

METHODOLOGY

A Survey of Oklahoma Dialects (SOD) was initiated in the Spring of 1991 as a multifaceted, statewide investigation of grammatical, lexical, and phonological variation in Oklahoma. SOD was built from methods developed during an earlier survey, the Phonological Survey of Texas (PST), and includes both a statewide, tape-recorded, random-sample survey and a statewide field survey (*31-32*). The central component, and the principal source of data used for this study, however, is the telephone survey. Although similar in design to PST, the SOD telephone survey included methodological improvements, such as using a proportionate, stratified, random sample instead of a simple random sample. The county was used as the stratification variable, with the number of respondents in each county corresponding to that county's total population. Each county in the state included a minimum of one respondent, while Oklahoma County, with the largest population in the state, had 151. Respondents within each county were randomly selected using a computer-generated list of all possible telephone numbers (to access unlisted numbers). Within each household we interviewed the person over 18 years of age who had the most recent birthday (in order to insure an adequate number of male respondents since in many households men are not as likely to answer the telephone as women). Proportionate, random sampling, therefore, helped us to preserve many of the benefits of a simple, random sample while insuring that all areas of the state received adequate spatial coverage. A total of 632 respondents were interviewed.

The telephone survey included questions designed to elicit 11 phonological features, five grammatical features, and eight lexical features (Table 1). In addition, standard demographic data, such as ethnicity and gender, and information about the respondents' perceptions of Oklahoma as a place to live was collected.

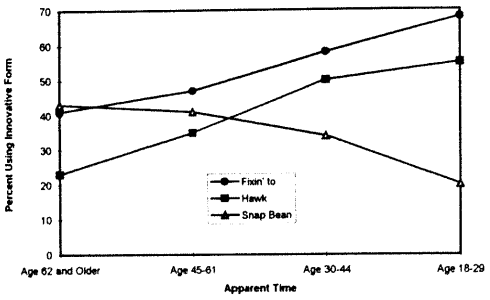

Figure 1. Apparent time distribution of *hawk, fixin' to*, and *snap bean.*

The field portion of the survey, conducted in the summer and fall of 1993, was designed to explore generational differences across a grid that reflected major cultural areas of the state. Because cultural areas in large part reflect settlement history, we devised a grid for fieldwork based on the original 36 square mile township and range divisions that were used in the settlement of Oklahoma. Tile divisions provided 33 grid units as primary targets for the field survey. By interviewing one representative for each of four generations (someone about 80 years old, about 60, about 40, and about 20) who were life-long residents of each grid, we obtained data in a framework that reflects the history of the state and facilitates an investigation of apparent time differences between generations. The basic assumption of apparent time is that differences among generations of adults mirror diachronic developments in a language when other factors, such as social class, are held constant (*33*). In our analysis of spatial diffusion we examined only those linguistic features that apparent time distributions suggest are changes currently taking place.

To select communities within each grid for interviewing without spatial bias, we used a computer mapping program that randomly placed a dot within each grid and we then selected the community closest to the dot. But because we interviewed only native Oklahomans and needed to fill an age quota in each grid, random sampling for informants was not feasible. However, to provide consistency and to minimize our own biases in selecting informants, we had the postmaster in each of the target communities provide us with the names of 4 people who met our criteria. The total sample included 144 informants.

The features examined in the telephone survey included one grammatical feature, one lexical feature, and three phonological features. In addition, one grammatical form *(yall)* was selected from the field survey. In examining each feature, age differences were significant at the 0.05 level or better. The apparent time differences shown in Fig. 1 were used in lieu of time series data to explore the diffusion of these forms. Our earlier test of the apparent time construct, which is widely used in linguistics to study language change in progress, demonstrates its usefulness as a substitute for time series data (*33*). Fig. 2 presents the data for *hawk* and *fixin' to* in showing the relationship between the percentage of respondents using a feature and the size of their city of residence.

Several techniques of computer cartography are useful for exploring quantitative differences in the spatial distribution of Oklahoma dialect forms. It is important to explore quantitative distributions because in recently-settled areas like Oklahoma, diffusion means not so much the spreading of new forms, but rather the increasing use of relatively uncommon ones. This expansion diffusion, however, often includes a spatial dimension.

Among the most useful aspects of our mapping programs is that they allow us to convert data automatically from the five-digit zip code level to the county and three-digit levels. These cartographic programs also allow us to do several different kinds of mapping including dot density, choroplethic, and isoplethic mapping. Dot density maps (with one dot equivalent to one respondent) are useful for showing the distribution of raw numbers. Such maps are particularly well adapted for showing how distributions of linguistic features are associated with urban centers. However, they are less useful in showing where the occurrence of a form is most or least intense. Choroplethic maps may help to resolve this problem. Using pre-

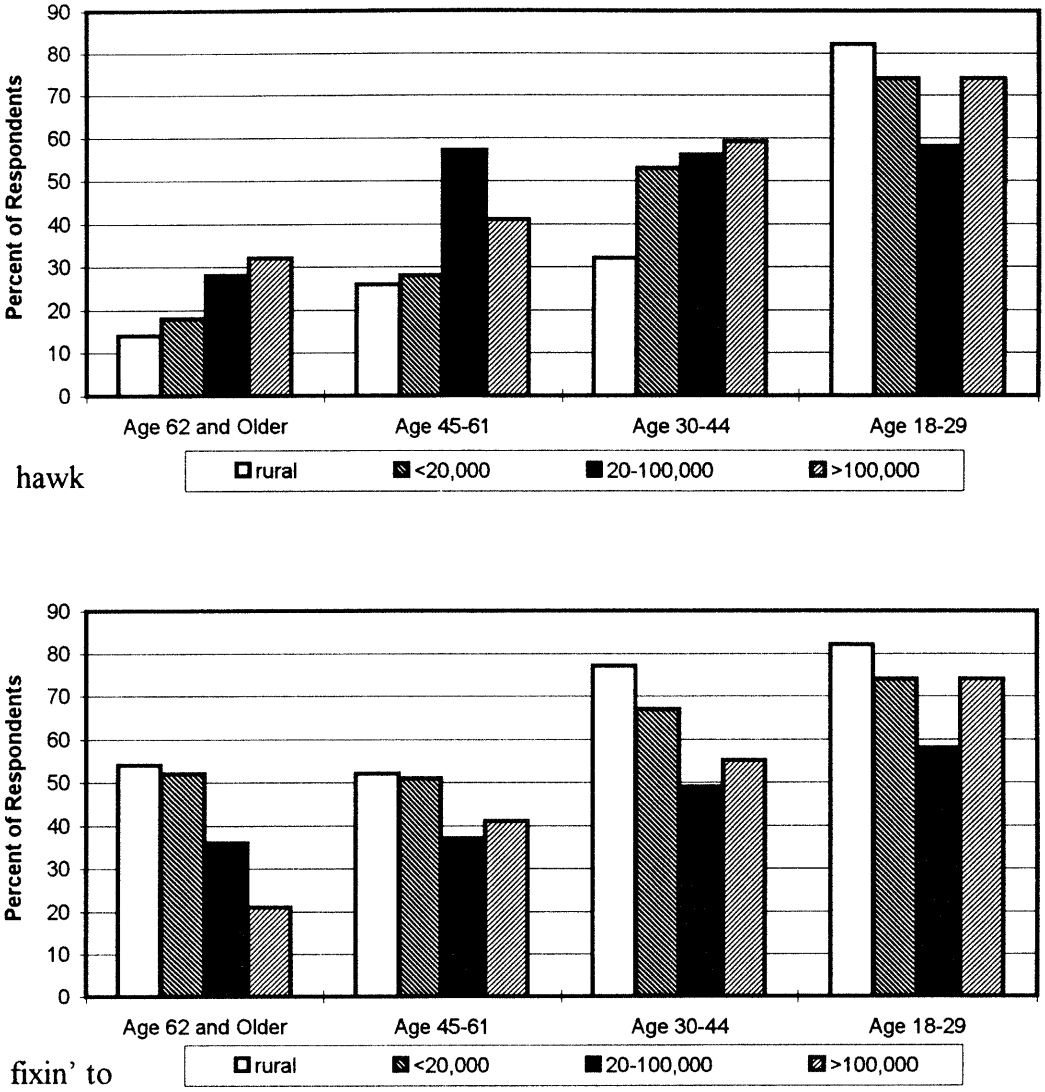

Figure 2. Innovative form of *hawk* and *fixin' to*: percent of users by age and city size (CSIZE).

existing statistical areas such as counties or zip codes, choroplethic maps display areal distributions with percentages rather than absolute numbers. In doing so, they enable us to look at spatial distributions quantitatively, and thus assist in locating areas where a form occurs most intensely. Finally, isoplethic maps can display the continuous nature of linguistic phenomena without the limitations of preexisting statistical areas. Linguistic data can be well suited to this map type because language features occur over the earth's surface in continuous, yet undulating, frequencies.

DIFFUSIONAL PROCESSES

Diffusion may be either hierarchical, as discussed above, or contagious. Contagious diffusion, a term borrowed from epidemiology, is best illustrated by the transmission of a disease: direct contact with someone possessing the trait is the primary requisite for its

spread. In the same way innovations do not diffuse evenly over time, neither do they diffuse evenly over space. Much of this unevenness may be due to the presence of barriers or amplifiers that can impede or boost the diffusion. Although Physical features rarely impede the progress of linguistic diffusion, social and demographic characteristics, such as, class, gender, ethnicity, and subregional residence, all may serve as barriers or amplifiers. As an example, in Texas both ethnicity and subregion affect the spread of constricted allophones of post-vocalic /r/, with both East Texans and African-Americans resisting the constricted allophones. However, ethnicity is both an amplifier of and a barrier to the diffusion of the merger of /ɔ/ and /*a*/ in Texas, with Hispanics ahead of other groups on the merger, and African-Americans rarely adopting it. Ethnicity is also an amplifier of and a barrier to the glide-shortening of /*ai*/ before voiceless obstruents, with Anglos well in the lead on this feature, and Hispanics and African-Americans rarely having it. These barriers may vary widely in their permeability, ranging from 0% (an absolute barrier) to 100% (no barrier).

Rogers (*34*) argues that, at least five factors influence diffusion: the phenomenon itself, communication networks, distance, time, and social structure. Our account of the spatial diffusion of linguistic features in Oklahoma looks at all of these factors to explain the patterns that emerge. While in some cases patterns support the hierarchical view of diffusion that has become the consensus in linguistic geography, in other cases the patterns suggest a remarkably different process at work.

PATTERNS of DIFFUSION in OKLAHOMA

Among robust linguistic changes in progress in the United States is the merger of /ɔ/and /*a*/ in words such as *hawk* and *hock*s so that both words sound like the latter. The telephone survey elicited the pronunciation of *hawk* to examine this merger in Oklahoma by asking respondents to identify the name of a large bird that sits on telephone poles and swoops down to kill mice and other small animals. Fig. 3, which shows the spatial distribution of /*a*/ in *hawk,* provides data that clearly demonstrate that the merger is diffusing in a hierarchical pattern. Figure 3(a), which includes only those respondents born in or before 1929, shows a significant presence of the innovative */a/* in only two northern Oklahoma areas. These areas also include three cities that have populations of more than 30,000 people and that have institutions attracting many non-native Oklahomans: Enid, with Vance Air Force Base; Stillwater, with Oklahoma State University; and Bartlesville, with Phillips Petroleum Company. Figure 3(b), which provides data on respondents born between 1930 and 1945, shows the expansion of the innovative form south-eastward along the Arkansas border and into Oklahoma City. The area along the Arkansas border with a high percentage of innovative forms includes suburbs of Fort Smith, Arkansas, a city of over 70,000 people. The bottom two maps of Fig. 3 (c and d), which include respondents born after World War II, show the continued expansion of */a/* in *hawk* into small towns and rural areas. Fig. 4 shows the data at the five-digit zip code level, with county boundaries superimposed, in a dot density map format. The figure suggests that */a/* in *hawk* is primarily spreading into small cities along the major arteries that connect them. Thus, it appears as though the diffusion of */a/* in *hawk* is hierarchical, which supports the consensus view of diffusion that has emerged among linguists and dialect geographers. However, the pattern of diffusion for other innovations in Oklahoma call that consensus into question.

The diffusion of *fixin' to,* a Southern American English quasi-modal that is spreading rapidly throughout the state, provides the most striking contrast to the hierarchical pattern. Fig. 5 shows the spatial distribution of *fixin' to* in apparent time. Although *fixin' to* is scattered throughout the state among the oldest generation, the only three areas with a significant presence of this form are along the Arkansas border in eastern Oklahoma, and along the Texas border

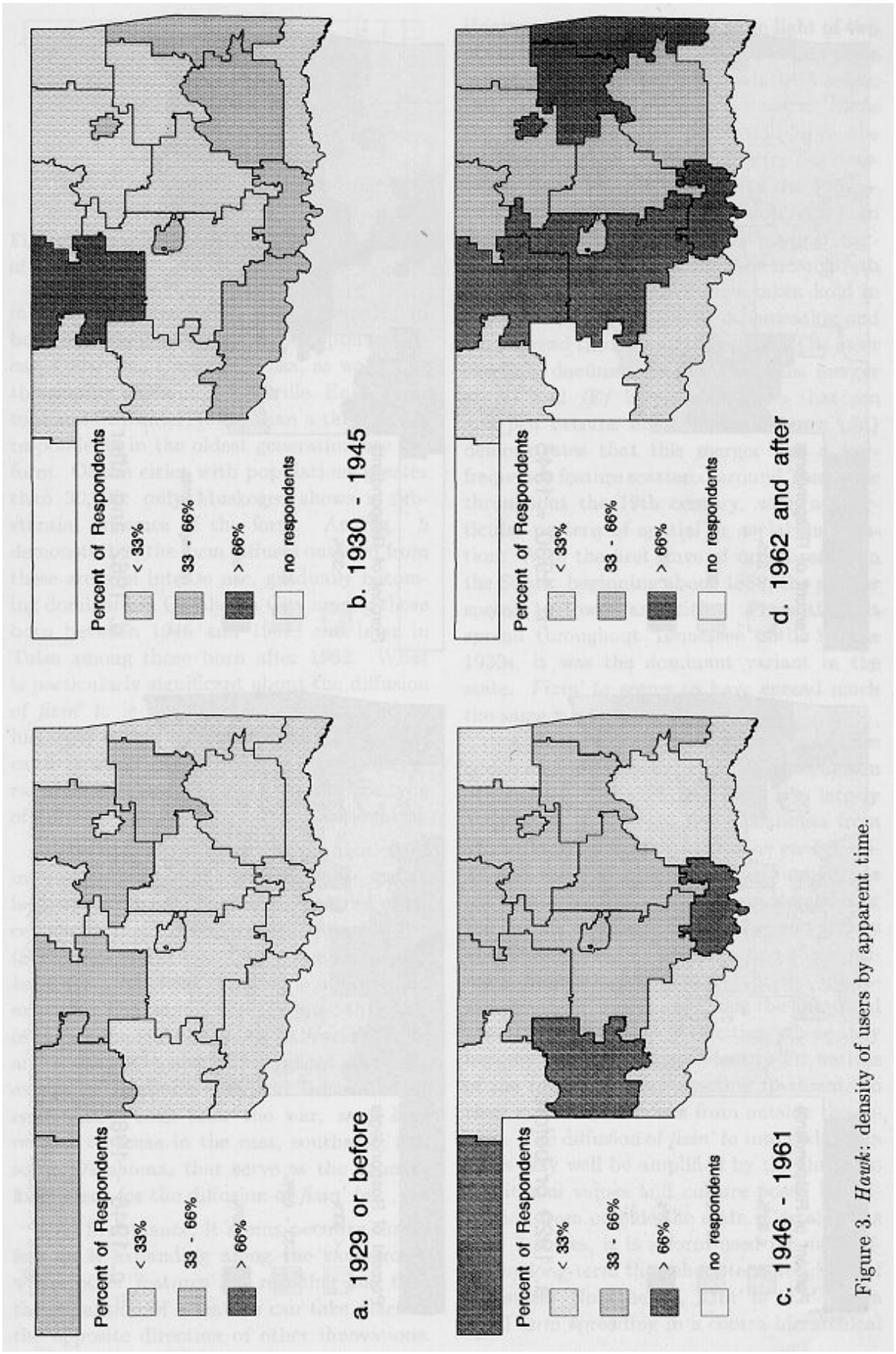

Figure 3. *Hawk*: density of users by apparent time.

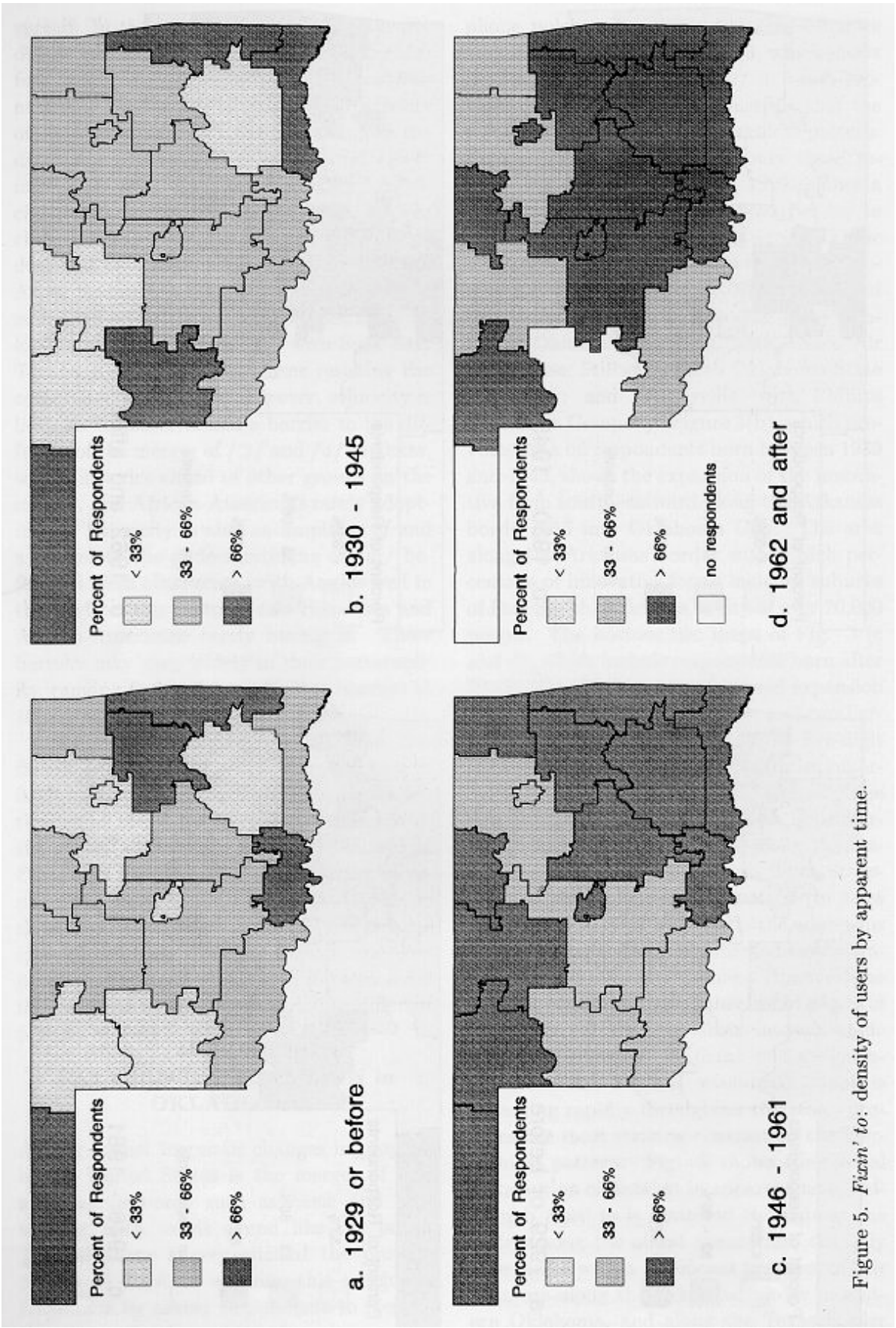

Figure 5. *Fixin' to*: density of users by apparent time.

in south Oklahoma, and the Panhandle. In both of Oklahoma's major metropolitan areas, Oklahoma City and Tulsa, as well as in the smaller cities of Bartlesville, Enid, Lawton, and Stillwater, fewer than a third of the respondents in the oldest generation use the form. Of the cities with populations greater than 30,000, only Muskogee shows a substantial presence of the form. As Fig. 5 demonstrates, the form diffuses outward from these areas of intense use, gradually becoming dominant in Oklahoma City among those born between 1946 and 1961, and later in Tulsa among those born after 1962. What is particularly significant about the diffusion of *fixin' to* is that it spreads up the urban hierarchy rather than down it (Fig. 2). Because it works in reverse, spreading from rural areas and small towns to cities, this type of diffusion can be called contra-hierarchical.

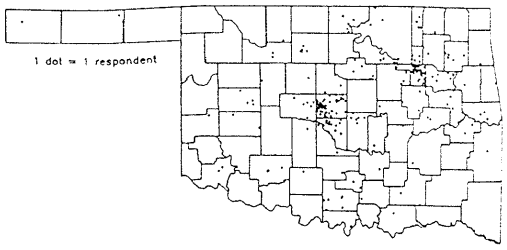

Figure 4. Location of users of the innovative form of *hawk*

The pattern of diffusion for *fixin' to* is interesting in one other way, too. Its spread is almost a mirror image of the pattern of recession for many Standard American English (SAE) lexical features. The recession of *snap bean,* for *green bean* (Fig. 6) is a very good example. The term is used by more than half of the respondents born before World War II, and is used extensively throughout the state, except in Oklahoma City and Tulsa. Among respondents born after the war, *snap bean* recedes to areas in the east, southeast, and south Oklahoma, that serve as the primary focal areas for the diffusion of *fixin' to.*

At first glance, it seems peculiar that a feature is expanding along the same route where other features are receding and that the expansion of a feature can take place in the opposite direction of other innovations. However, when considered in the light of two of the major demographic trends taking place in the United States over the last 75 years, this pattern of diffusion makes sense. Since the First World War, migration from the country to nearby towns and cities has drastically altered the distribution of the population throughout most of the country (*21*). In many instances, rural forms disappear during urbanization, but in the American South a number of rural forms have taken hold in cities during the process of urbanization and have spread throughout the region. The most carefully documented of these is the merger of /I/ and /E/ before nasals, so that *pin* and *pen* become homophones. Brown (*35*) demonstrates that this merger was a lowfrequency feature scattered around Tennessee throughout the 19th century, with no particular pattern of spatial or social distribution. With the first wave of urbanization in the South, beginning about 1880, the merger spread to towns and cities. From there it spread throughout Tennessee until, by the 1930s, it was the dominant variant in the state. *Fixin' to* seems to have spread much the same way.

A second demographic process may have added an additional impetus to the expansion of *fixin' to.* Although migration was largely away from the South, and Oklahoma from World War I until the 1970s, the energy crisis and the development of the Sunbelt has led to a large-scale migration southward over the last 20 years. As Tillery (*36*) and Tillery and Bailey (*37*) demonstrate, one of the primary linguistic consequences of the migration to the Sunbelt has been the increased use of rural SAE forms in cities, where they become markers of local identity for natives of the region who are reacting to threats to their culture and values from outside the region. The diffusion of *fixin' to* into Oklahoma cities may well be amplified by the threat to traditional values and culture posed by migration from outside the state. Certainly, as Fig. 7 shows, it is a form used far more often by long-term than short-term residents of the state. Nonetheless, *fixin' to* is clearly a rural form spreading in a contra-hierarchical

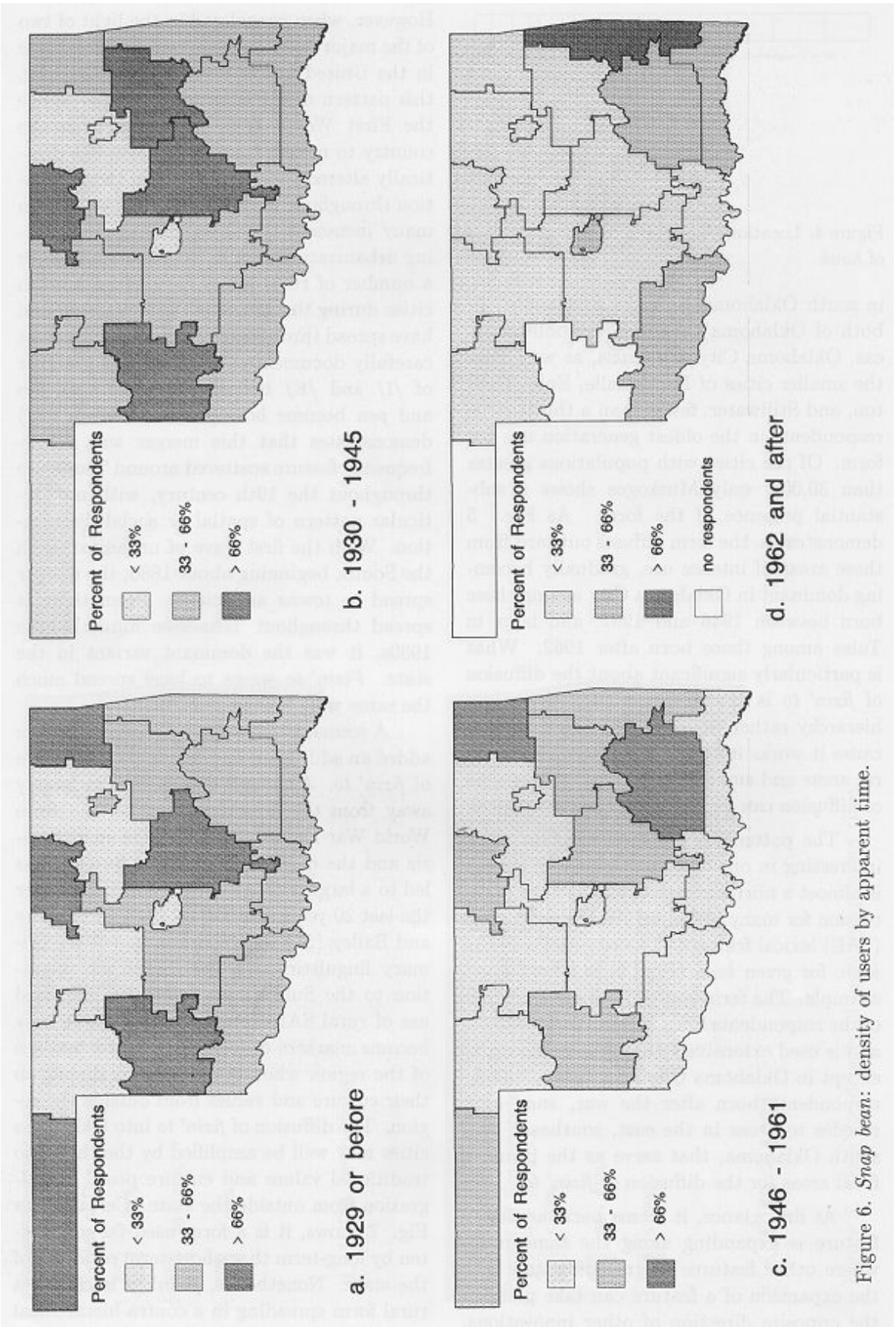

Figure 6. *Snap bean*: density of users by apparent time.

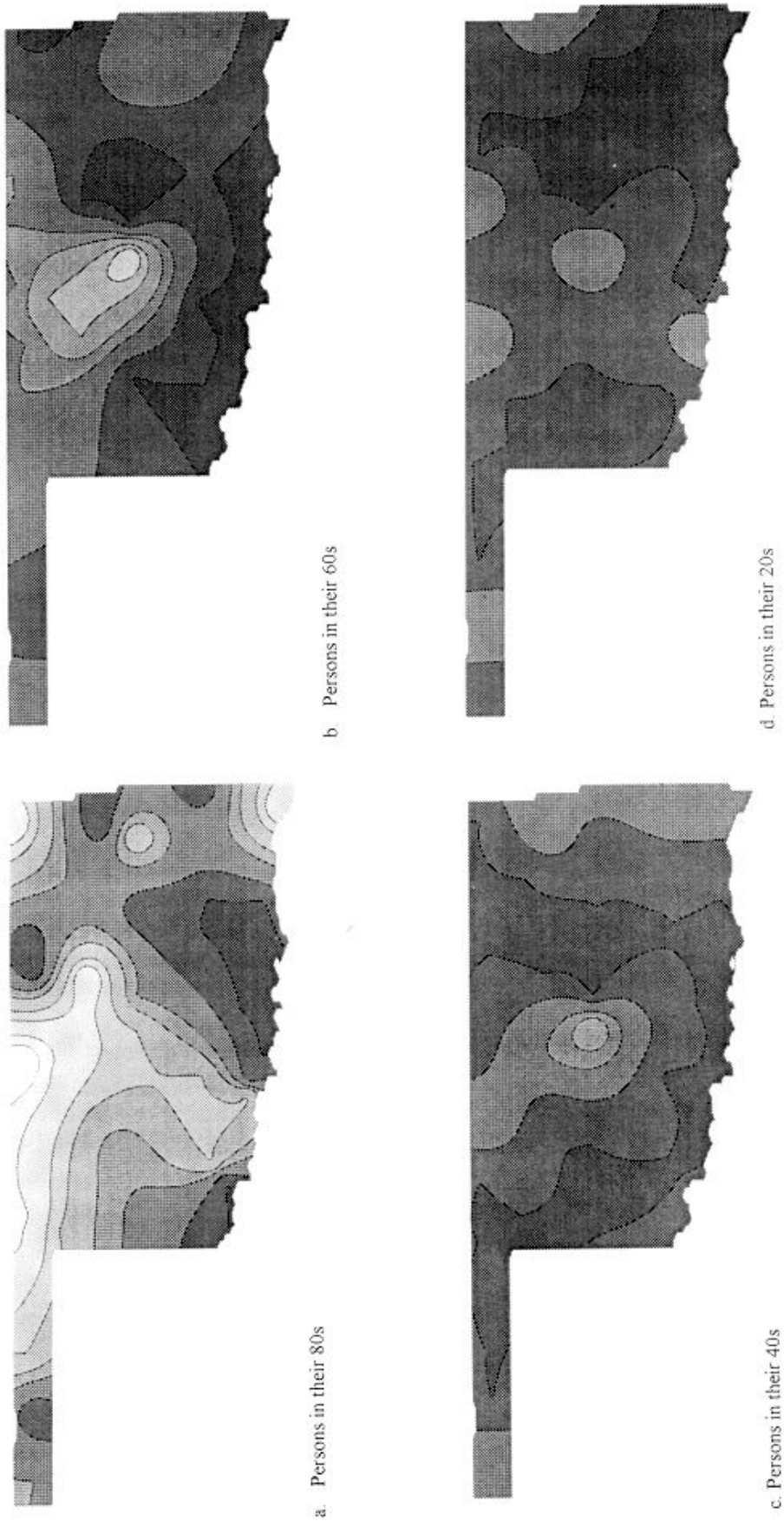

Figure 8. *Yall*: density of users by apparent time (from the Field Survey).

fashion from the country to small towns and then to cities.

BARRIERS and AMPLIFIERS to DIFFUSION

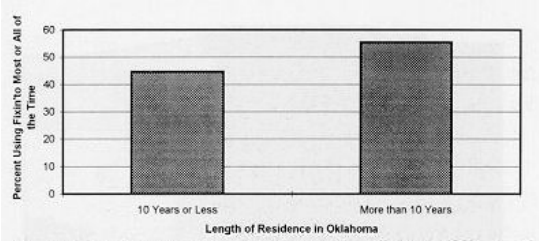

Figure 7. Respondents using *fixin' to* and length of residence in Oklahoma.

A complete understanding of why innovations diffuse as they do requires some understanding of barriers and amplifiers. Social variables, such as nativity, ethnicity, income, education, occupation, and urban/rural distribution affect spatial diffusion because they influence the composition of a population differently in different areas. For example, the suburbs of Oklahoma City and south Tulsa have populations that are largely white, have incomes above average, and include a relatively large proportion of people who have been in the state fewer than ten years. East Oklahoma has a population with a relatively high proportion of Native Americans and African-Americans. In each case, the social composition of the population affects the spread of linguistic features into the area. However, the barriers formed by social groups are generally permeable, to greater or lesser degrees, rather than absolute. The permeability of these social barriers is best understood through an analysis of the degree to which they account for variance in the sample.

TABLE 2. GLM Analysis of SOD Variables.

Variable[a]	F Value	Pr > F	Partial R^2
Dependent Variable: *hawk*			
YEARSOK	10.11	0.0016	0.00470
CSIZE	4.25	0.0056	0.00441
NYEARS	8.52	0.0037	0.00104
BORN	9.09	0.0001	0.02998
GRADE	2.10	0.0797	0.00825
SEX	10.98	0.0010	0.01757
OCC	1.16	0.3234	0.00517
INCOME	0.31	0.8205	0.00163
RACE	0.29	0.5885	0.00043
CITYC	0.41	0.7468	0.00193
Dependent Variable: *fixin' to*			
YEARSOK	5.16	0.0236	0.00788
CSIZE	1.28	0.2800	0.00587
NYEARS	0.25	0.6173	0.00038
BORN	8.74	0.0001	0.04005
GRADE	2.79	0.0257	0.01707
SEX	1.00	0.3175	0.00153
OCC	0.06	0.9792	0.00028
INCOME	2.90	0.0345	0.01330
RACE	4.93	0.0267	0.00754
CITYC	1.03	0.3789	0.00472

a YEARSOK Years respondent has lived in Oklahoma
CSIZE Population: 'city' of residence
NYEARS Number of years in current neighborhood
BORN Year of birth
GRADE Highest level of education completed
SEX Gender
OCC Occupation
INCOME Family income last year
RACE Racial or ethnic group
CITYC Population of place of respondent's longest residence

In an attempt to determine the strengths of barriers and amplifiers for the two features discussed above, we have used the General Linear Models (GLM) procedure in SAS statistical analysis software. GLM is a type of multivariate analysis that assesses both the total amount of variance explained by independent variables on the dependent variable and the amount of variance in the dependent variable explained by each independent variable. Thus, this procedure provides us with a model allowing us to 1) infer the permeability of various barriers, 2) assess the strength of amplifiers that enhance the spread of a feature, and 3) examine the permeability of the combined barriers or the strength of the combined amplifiers.

The GLM results shown in Table 2 demonstrates that five social variables may influence the spread of unrounded vowels in *hawk,* with gender and age the two most

important. Age differences, of course, simply indicate that the feature is a change in progress. Moreover, while age is a crucial factor in diffusion, it should have few spatial consequences, unlike many other social variables. The same is true for gender. As an example, women are significantly ahead of men in their use of unrounded vowels in *hawk;* however, because different areas of Oklahoma do not differ greatly in the ratio of men to women, we would not expect gender to affect the spatial diffusion of unrounded vowels. Three factors identified as significant by the GLM procedure do have spatial consequences because they affect the composition of the population differently in different areas of the state. Both long-term residence in Oklahoma (YEARSOK) and in the local neighborhood (NYEARS) are barriers to the diffusion of unrounded vowels in *hawk,* as is residence in cities with fewer than 20,000 people and in rural areas (CSIZE). As Fig. 3 shows, the diffusion of unrounded vowels occurs first and most intensely in those large urban communities whose geographically mobile populations are likely to have moved to the state and neighborhood within the last ten years; the feature spreads last to those rural areas with geographically stable populations.

The barriers that constrain *fixin' to* are in some ways mirror images of those affecting the spread of the innovative form of *hawk.* As Table 2 shows, short-term residence seems to be a barrier to the spread of *fixin' to* (e.g., a larger number of long-term residents use the feature). In fact, residing in the state fewer than 10 years is the strongest barrier to its diffusion. An income above $60,000 is a stronger barrier than education to the diffusion of *fixin' to,* while ethnicity (i.e., being Anglo) is an even stronger barrier. As Fig. 5 shows, *fixin' to* diffuses last in just those wealthy suburban communities, populated largely by well-educated, non-natives, that serve as the focus for the spread of unrounded vowels in *hawk.* Using data from the field portion of the survey, Fig. 8 provides an additional example of how these barriers appear spatially. Using the darkest patterns to display the highest level of use, this series of maps reveals how a region extending from Oklahoma City, which has experienced rapid suburban growth, to Lawton, with many newcomers associated with the Ft. Sill military base, acts as a barrier to the contra-hierarchical spread of *yall.*

The coexistence of different patterns of diffusion, hierarchical and contagious, with different social barriers and amplifiers allows us to develop some hypotheses about why linguistic features diffuse the way they do, although we need a great deal more data before we can know the motivations for different types of diffusion with any certainty. Instances of hierarchical diffusion in our data, such as the spread of unrounded vowels in *hawk,* involve the spread of features that represent the encroachment of external norms in Oklahoma. They involve innovations that begin near the top of the social hierarchy. The focal points for the diffusion of these features are the wealthy Anglo suburbs of metropolitan areas and the mostly Anglo, medium-sized cities that include significant numbers of people who are not native to the state. The features in SOD that are diffusing hierarchically all carry overt prestige, as the discussion of amplifiers and barriers suggests.

The instances of contra-hierarchical diffusion in our data involve the spread of features that reassert traditional speech norms. These features usually carry overt stigma, but as Tillery and Bailey (*37*) show, they often carry covert prestige: they serve to demarcate natives from newcomers to an area and are badges of identity with the local culture. These features help to maintain the distinctiveness of the dialect of an area. Labov (*38*), interestingly, echos Wyld (*39*) in suggesting that rural dialects that are brought to cities by in-migration often develop into urban lower class vernaculars. Our data suggest a second possibility for rural features that are brought to the city: they may become generalized as part of the regional vernacular and serve as markers of regional identity. Contra-hierarchical diffusion, then, is crucial in maintaining the distinctiveness of dialects in the face of standardizing forces.

The GLM procedure allows us to make

one other generalization about barriers and amplifiers to the spatial diffusion of linguistic innovations in Oklahoma: the barriers are for the most part quite permeable and the amplifiers quite weak. The results of the GLM procedure show that the social variables examined in SOD explain a relatively small portion of variation in the data. Given the small amount of variance explained by these social factors, we must conclude that barriers to the spatial diffusion of innovative forms of linguistic variables in this study are permeable and that amplifiers are weak.

CONCLUSIONS

The data from SOD clearly indicate that linguistic diffusion is far more complex than the consensus view suggests. Linguistic diffusion is sometimes hierarchical, as the spread of */a/* in *hawk* demonstrates; in other instances, such as the spread of *fixin' to* and *yall,* it is clearly contra- hierarchical, expanding up rather than down the urban hierarchy. In the case of *fixin' to,* cities actually follow the lead of rural areas. The patterns outlined here probably do not exhaust the possible patterns of linguistic diffusion, but they do suggest some of the motivations that give rise to different patterns. A correlation of diffusion patterns with the social factors that serve as barriers to and amplifiers of diffusion suggests that different patterns of diffusion are tied to the different social meanings that linguistic features carry. In the data here, innovations that diffuse hierarchically represent encroaching external norms into an area, while features that diffuse in contra-hierarchical fashion represent revitalizing traditional norms. Although the existence of these apparently contradictory patterns may seem surprising they reflect the variety of demographic processes at work in a complex society.

ACKNOWLEDGMENTS

The research for this project was supported by a series of grants from the National Science Foundation (BNS-8812552, BNS-9009232, and BNS-9109695) and the National Geographic Society.

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Received: 1997 Apr 01. Accepted: 1997 Sep 17.