

**Social network integration and language change
in progress in a rural alpine village***

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ABSTRACT

The quantification of communication network integration can provide information valuable to the study of language change in very small rural communities. The adaptation of urban and communication network methodology for rural alpine social structures establishes a framework for the study of variation leading to change based on individual usage for the dialect of Grossdorf in Vorarlberg, Austria's western-most province. This approach is particularly relevant when study of aggregate group behavior has failed to yield results due to small sample size or group internal inconsistency. (Field methods, language networks, variation and change)

BACKGROUND

Traditionally, small German-speaking communities have served as a laboratory in which to test the postulates of traditional and structural dialectology. From Gauchet to Moulton, rural German dialects have provided valuable information on the nature of language change over time and space and on the importance of language-internal contributory factors. The study at hand attempts to build on this tradition while adding a dimension which had previously been excluded. It is possible to account for variation in rural, conservative dialects on the basis of social and cultural factors once the relevant community structures have been identified. The existence of such variation and the relevance of many of the factors such as gender and exposure to multiple language registers have been noted in the past, but the means and methods necessary to exploit the cache of information hidden in such variation have remained elusive. Unfortunately, anecdotal reference has often been the only way to access such information. This study seeks a better position and method of access, a quantitative paradigm.

Because language is embedded unevenly in the social matrix of this community and of all communities regardless of their size and composition, the effectiveness of this tool will depend on its design and will vary from case

to case. In addition, neither stratificational analysis nor network analysis *alone* is capable of answering all questions; they must be considered as two approaches to quantifying certain aspects of a complex picture which includes subjective evaluation and other (perhaps as yet unidentified) sociocultural factors.

It will become evident in the course of this article that classical quantitative methods which focus on group language behavior and the study of interaction between these groups and identified social structures have limited applicability to small rural communities. That is not to say that they are never the right choice. Holmquist's study of rural Uceda in Spain employed a classical stratificational approach to examine the relationship between change in progress and gender, economic, and social factors, demonstrating "that technical procedures of quantitative analysis are fruitfully applied even in an investigation of a very small population in a rural setting" (1985:202). I will attempt to demonstrate that for some communities, this type of classical statistical analysis of variation based on group behavior *alone* may provide little or vague information about the nature of language use. Of course, it is not my intention to demonstrate that Holmquist's more classical approach is inadequate; the attempt to refine and develop methodology needs no such justification. Indeed, the fact that Holmquist's study of a Spanish village and my own of an Austrian one disclose some similar trends while using divergent methodologies is evidence that these observations are in fact valid.

There are three issues which must be addressed. First, what is the nature of the social structures and how are they best quantified in this and similar communities? Second, will this vary for each case of change in progress (stratificational vs. network analysis)? Third, once this has been determined, does the individual or the group better serve as a departure point?

This article includes, first, a brief discussion of the community in question; second, a more detailed consideration of the social structure of the community and the quantification of structures which correlate to language behavior; and third, a case study of this quantitative methodology to one case of variation leading to change.

THE LANGUAGE COMMUNITY AND DATA BASE

Grossdorf is a small alpine community in the Bregenz Forest of Vorarlberg, Austria's western-most province. At the turn of the century, dairy farming predominated in the economic structure of the community; however, with increasing viability of daily transportation to the Rhine Valley, a greater range of possible occupations has diversified the economic and social structure of the community.

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In 1983 there were approximately 760 inhabitants in the village of Grossdorf. Of these 760 natives, 458 were over age 15 and were native speakers of the village's high Alemannic dialect. An additional 118 persons above age 15 were native speakers of a dialect other than that of Grossdorf, most of which are Alemannic. The study uses 42 informants, 21 of each gender, between the ages of 15 and 85, or approximately 9 percent of the population of adult native dialect speakers.

The large-scale study involves four cases of lexically diffusing change and two cases of analogical change. The data base is composed of recordings of self-recruited group sessions and individual interviews with the 42 informants. The individual interviews included a range of styles, from casual conversation based on subject modules identified for the whole community to direct targeting of linguistic variables by means of picture description and memory games.

All fieldwork and data originate from almost three years in the Middle Bregenz Forest (1983 through 1985). My history of contact with the community is much longer, beginning in June 1973 and continuing to the present. I learned the dialect in the community at age 17 in 1973 and learned the standard language only subsequently. Because I speak the dialect fluently and had been active as a member of the community, both socially and as a teacher at different stages, many doors were open to me as a linguistic field worker in a clannish community otherwise very distrustful of strangers.¹

THE SOCIAL MATRIX

In any attempt to demonstrate a reliable correlation between social and linguistic behavior, the interpretation and manner of quantification of the social structure will determine the degree of success attainable (Weinreich, Labov, & Herzog 1968). Early sociolinguistics was constrained by its own (admittedly successful) concentration on socioeconomic measurement of status. Initial attempts to transfer this methodology to smaller communities in German-speaking Europe usually failed, primarily because of what seems to be a lack of familiarity with methodology for nonurban communities.² Subsequently, little or no attempt has been made from within the tradition of German dialectology to develop an appropriate sociolinguistic methodology. The developments in post-Labovian theory and methods which have proved so fruitful for the quantitative study of a wide range of small communities by addressing approaches outside stratificational analysis (e.g., Gal's (1979) study of Oberwart in Austria) have been overlooked, for the most part, by the German academic community. Instead, the latter group has attempted to study the relationship of nonstandard language varieties (e.g., the individual's command of the dialect) to social structures (subjective evaluation of

the dialect, village loyalty) from within a non- or minimally quantitative paradigm, as in the work of Mattheier (1979, 1985) (see also Ruoff (1972) and Besch (1981)). It seems then that German dialectologists tend to fall into two schools. The older approach is to assume a high degree of social and linguistic homogeneity in small rural communities, whereas the more recent approach endeavors to find in these villages complex social stratification, a methodology as fundamentally misconceived as the earlier option.

It has been established elsewhere that the social structure of a new community must be approached with an open mind:

It seems reasonable to suppose, however, that in different speech communities social and linguistic factors are linked not only in different ways, but to different degrees, so that the imbrication of social and linguistic structure in a given speech community is a matter for investigation and cannot be taken as given. (Romaine 1982:13)

Although outsiders may be told that the natives of such small villages do not make social distinctions, one may not infer that there are no social contrasts. In this village, it is not occupation that determines one's place in the hierarchy, but rather the degree of integration into the established structures. A successful farmer from a well-established clan may not make as much money or build as nice a home as someone well placed in the province government, but it is the farmer who is more likely to be elected to the Council. It is not so much a matter of class or status, but who you know, and who knows you.³

One way to quantify social structure from this angle is by means of communication network analysis, which focuses on interaction patterns to provide insight into the degree of the individual's integration into the system and hence into the community's power structure. This methodology complements stratificational analysis

by considering not the identity of the speaker, but the statuses of those people with whom the speaker most often interacts. . . . This view argues that speakers' linguistic behaviors are constrained and shaped by the sorts of social contacts they maintain and suggests that their speech influences other people's perception of their status. (Gal 1979:131-32)

It has been successfully used in the study of urban language use (Milroy (1987) provides the best example) and provides a model which can accommodate the social factors less crucial to communication patterns in urban settings, factors such as kinship. It does not exclude consideration of economic factors but opens up analysis to other influences and in this manner allows a better understanding of the "emblematic function of phonetic differenti-

ation: the identification of a particular way of speaking with the norms of a local community" (Labov 1980:262).

A communication network is a three-dimensional reflection of an individual's or group's interaction patterns. Linguistic studies employ the analysis of the personal communication network, using the informant as the axis and plotting all possible channels of communication or "links" to others both inside and outside the community. The quality and quantity of the individual's links are believed to be one indication of the individual's degree of integration into the language community. As with other social factors such as age and gender, degree of interaction does not determine how individuals speak; rather, interaction groups are able to exert a great deal of pressure on the individuals within them, working within a system of norms which define and constrain social (and hence language) behavior.

In the measurement of personal communication networks three basic criteria apply. First, it must be determined if the individual's network is *closed* or *open*. This is not a spatial allusion and does not take as a reference territory in the physical sense, but refers instead to the scope of an individual's communication networks; that is, do they extend outside the community and the established networks within the community? Second, the *density* of the network is relevant. If within a given personal network all stated contacts know each other, the network is 100 percent dense; on the other extreme, a network in which none of the contacts know each other lacks all density. The third criterion, *multiplexity*, refers to the nature of the link between individuals; for example, a link which is based on more than one level of interaction (individuals linked by a common workplace, as blood relations and friends, simultaneously) is said to be multiplex. In the idealized small, bound community with high degrees of multiplexity and high density ratios, everyone has a conception of everyone else's social network, there is a homogeneity of values, and degree of consensus on norms is high, all resulting in a very high level of social control (Boissevain 1974:72).⁴

In order to quantify the network patterns of her informants, Milroy constructed a measure labeled *network strength scale*, which assigned a score to the informant based on indicators of the basic structural characteristics of networks, density and multiplexity. The inability of the field worker to deal with whole networks for mechanical reasons does not impair the calculation of such strength scales; on the contrary, it brings into focus the distinctions between whole network density and "key *sectors* or *clusters* of the network – that is, compartments associated with specific fields of activity" (Milroy 1987:137; see also Cubitt 1973).

It has been argued that kinship, neighborhood, employment situation, and voluntary association clusters show the highest density and, in turn, that it is these sectors "in which ego interacts most or which is most important to

ego, rather than the whole extended network, that will be responsible for norm enforcement” (Cubitt 1973:82). Thus, while the indicators chosen in constructing the network strength scale must be easily collected and verifiable from field data, there is another, equally important criterion: It must be evident from other studies that these social indicators have consistently proven their ability to predict the degree of normative pressure *potentially* exerted on the individual. Kinship and voluntary association have been found to be relevant, for example, while drinking habits have not and would constitute an ad hoc scale indicator.

While Milroy’s work in the urban neighborhoods of Belfast provides a departure point, there is still a practical and methodological gap between a study of this type and one of an isolated mountain village of 800 persons. Whereas the basic concern with critical structural and content features of communication network strength is maintained, the sector analysis must be tailored differently. Concern with neighborhood, for example, is less relevant in the geographically limited space of the sample. In Grossdorf, such a division would be strongly aligned with kinship, as certain clans tend to predominate in certain parts of the village.

Kinship is particularly important to the question of integration into the Grossdorf community and to the corresponding degree of normative pressures exerted on the individual. It seems that structural power in Grossdorf is largely a matter of clan: its size, its economic position (due primarily to agricultural success), and the personality of the patriarch. The heads of the strongest clans – those with the most land and livestock – are often those with prescribed power: They hold the elected offices. While there are no women in elected office or on major advisory boards, there is a separate power structure for women: the *Frauenbund*, an association which has much to say in the community and which until recently was traditionally led by the female heads of major clans. Because of long isolation and restriction of courting privileges to the immediate environment, intermarriage has resulted in a clan structure which has always been an important facet of the social structure. In the last 50 years, increased mobility and the influx of spouses from other villages have changed the situation: In 1985, of 316 women aged 15 or older, 90 (28.5%) were not natives. For the same age group, there are 260 males, only 28 (10.8%) of which were not natives of the village. From this it is reasonable to conclude that more families are less clan-bound. Therefore, although clan has traditionally established much of the structure of the community, other factors may now be gaining in importance.

A primary indicator of density is the degree to which the individual is related actively and passively to the core families. The indicator was broken down into possible points, as follows:

1. Is/was the informant’s father a member of a core clan?⁵ (1 point)
2. Is/was informant’s mother a member of a core clan? (1 point)

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3. Is/was informant's father an active town dweller for the majority of his life?⁶ (1 point)
4. Is/was informant's mother an active town dweller for the majority of her life? (1 point)
5. For each grandparent who was a core member of Grossdorf and whom the informant (a) knew and (b) interacted with, .5 point. (2 points possible)
6. Is the informant's spouse or intended spouse of an established Grossdorf family? (1 point)

The second area of density measurement is that of workplace network. Here, the distinction was made between local, traditional employment environments and outside, nontraditional employment.

7. Does informant work in Grossdorf (1 point) or in Egg, the neighboring village? (.5 point)⁷
8. Has informant always worked there? (1 point)
9. Is informant a farmer or core member of a farming family? (1 point)⁸

The multiplexity (quality or nature of the ties between the informant and co-workers) was calculated regardless of the place of employment. This includes housewives.

10. Are informant's co-workers primarily Grossdorf (1 point) or primarily Bregenz Forest? (.5 point)
11. Are the co-workers (some or all) related to the informant? (1 point)
12. Is there voluntary association with local co-workers outside the work environment? (1 point)
13. Is informant's employment free of contact with tourism? (1 point)

The third and final area of measurement is that of voluntary association. A number of social aspects are subsumed under this sector.

14. Is informant socially active in Grossdorf? (1 point)
15. Is informant socially active in Egg? (.5 point)
16. For each organized club or group to which the informant belongs, .5 point. (maximum 1.5)

The highest possible score is 17 points for a married informant or 16 for a single informant. An idealized informant with a score of 17 would be characterized as someone

1. involved in two strong and active clans (maternally and paternally) who interacted with parents and grandparents; that is, someone who has learned the rules and responsibilities of clan membership directly and is subject to the corresponding norms;
2. who has remained within the Grossdorf clan structure and strengthened his or her involvement by marrying into it;
3. who pursues traditional employment as a small dairy farmer in Grossdorf and has never pursued any other employment. Here, the infor-

mant's ties to co-workers (family members) are extremely multiplex and contact to nonlocal persons is at a minimum;

4. who is socially active in the community.

In fact, there is a flaw in this scoring system as it was initially devised to determine kinship subsector scores. Because the intention was to quantify commitment to the clan, a point was lost for those who married nonlocals. This may be applicable for males, but a woman who marries a nonlocal and then *stays in the community* is showing a very unusual and very strong commitment both to clan and to community. In general, this inaccuracy in the design of the scaling system has little effect on the quantitative analysis, because it is only 1 point on a 17-point scale. If the original calculations were adjusted for the three female informants who married nonlocals and stayed in the community, the correlation figures would change minimally.

This is certainly not the only possible approach to quantification of network structures. Gal dealt with the choice of German or Hungarian in bilingual Oberwart by focusing on one kind of network which best suited that community, relative "peasantness" of the individual and the peasantness of others in the individual's daily networks. In Grossdorf there is no truly parallel concept. To restrict the quantification of communication networks here to intensity of and commitment to farming, for example, would overlook the range of other occupations which are equally strong indicators of community membership. A dairy worker is too busy with turning the daily milk production of the village into cheese to keep his own milk cows, so that a scale indicator based on number of animals owned (a diagnostic used both for Oberwart by Gal (1979) and for Uceda by Holmquist (1985)) would be too restrictive. It is true, however, that occupation and workplace network are crucial to language use, as will be seen.

Whereas network analysis allows quantification of a number of aspects of local life potentially relevant to language variation, the informants were also coded in the traditional manner for degree of education, not to exclude the possibility that this indicator might account for some linguistic variation. In addition, each informant was given a score based on the individual's daily and consistent exposure to language varieties. Aspects of education and language exposure (to the standard and neighboring dialects) are, of course, reflected as parts of the various network subsectors. However, the possibility that the observed variation would correlate quite simply to a more stratificational methodology could not be ignored.

CHANGE IN PROGRESS

Language-internal constraints

We are concerned with a case of lexical diffusion involving a subset of the reflexes of Middle High German (MHG) short a. The earlier undocumented

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TABLE 1. *Variation by phonetic environment*

	Total tokens	Conservative value [ɔ]	Innovative value [a]	% [a]
/__ nasal cluster	1,331	1,110	221	17
/__ liquid cluster	347	326	21	6
Total	1,678	1,436	242	14

change (/a/ > [ɔ]) was most probably a case of gradual, phonetically conditioned change, and has been reconstructed:

a > ɔ /__ld, ls, nd, td, ts; nk, mpf (Lipburger 1927:17)

I add to this list the environments [ntl] and [ndl] (*Mantel, Handel, Wandel*).

This change was included in the full-scale study because the dialect value [ɔ] is tightly bound to the community's identity – it is a marker not just for membership in the mountain valley but for allegiance to Grossdorf and Egg in particular. The original change (raising and backing) is presently being reversed; the dialect norm is being relaxed to [a].

Although there is no further information available for the original change, it is clear that the case of the reversal was active 60 years ago. From the evidence provided by dialect poetry, we know it has been a recognized geographical marker for much longer.

The change displays established characteristics of lexical diffusion (Labov 1981:296): It is discrete, shows exceptions to the lexical category involved, and is neither predictable or learnable, and it shows some rough phonetic conditioning. Following consonant clusters were coded and showed no significance until they were conflated into two factors: nasal or liquid consonant cluster (see Table 1).

A null hypothesis which assumes that the nature of the consonant cluster has no relevance to the innovation of [a] must be rejected. The chi-square test shows with high probability ($p < .01$) of a discrepancy between the nasal and liquid clusters. Given the overall N of 1,678 and a primary interest in sociolinguistic variation outside internal or linguistic contribution, the second environment (/__liquid cluster) was excluded from the remainder of the analysis.

In addition, the data set was examined for the relevance of frequency and/or style in the abrupt substitution of [a] for the conservative [ɔ]. A strong correlation was found between lexical items marked as stylistically very formal and lexical items found to have low overall frequencies in Alemannic dialects.⁹ The latter figures were taken from Ruoff (1981) and were based on a recorded corpus of spoken dialects of southwestern Ger-

many (i.e., neighboring low Alemannic dialects in a range of communities, many of which are similar to Grossdorf). All stylistically marked lexical items showed a greater degree of [a] innovation whether or not they were in the lowest frequency ranking. A small number of such items (6 words representing 63 tokens) were removed from the data base if they (1) represented recently introduced alternates to conservative values, or (2) were identified as stylistically marked.¹⁰

This step was taken to narrow the data base to a set of variable items independent of language-internal constraints on their variation. If it is true that all sources of language-internal influence have been identified and removed, one would expect that the remaining variation should show correlation to language-external factors without clouding the picture of sociolinguistic variation.

The decision to remove from the data base all identifiable sources of language-internal contribution to the change in progress is an unusual but not unprecedented one: In a study of a rural Swedish dialect, Thelander (1982) took the same step. To avoid microvariation (input from language-internal factors), he narrowed his tokens down to groups small enough to be free of language-internal constraints.

We want variables to be independent of variation in linguistic environment, since that influence is likely to be specific to each single variable, making a possible similarity in their co-variation with extralinguistic factors less obvious. All variables must be made to oscillate in one dimension only if we wish to interpret the fact that any or all of them move in phase as an indication of macro-variation. (Thelander 1982:67)

Although this method does have the disadvantage of reducing the data set, the alternative (adding a range of language-internal variables) would bring with it different statistical complications – by increasing cell numbers dramatically.

The original data base of 1,678 tokens has been reduced by removal of stylistically marked tokens and tokens which have a liquid consonant cluster following the vowel, so that the following discussion is based on a data base of 1,273 tokens. About three-quarters of the data originated from the self-recruited group sessions and another quarter from the more formal interview. In this second interview, approximately 20 lexical items which are participating in the change in progress were targeted.

Language-external constraints

Initially, the relationship of innovation of [a] to gender and age was explored on the basis of group scores (see Table 2).¹¹

We may observe some trends in these data: There is a moderate rank correlation¹² (.494) of great statistical reliability, χ^2 ($p < .001$), between a

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TABLE 2. *Data distribution by gender and age*

Year of birth	Females' tokens				Males' tokens				Total	% Inn.
	Inn. ^a	Con.	Total	% Inn.	Inn.	Con.	Total	% Inn.		
1965-1968	42	115	157	26.8	25	166	191	13.1	348	19.5
1955-1962	28	210	238	11.8	24	162	186	12.9	424	12.0
1939-1950	18	113	131	13.7	27	100	127	21.3	258	17.4
1906-1934	16	141	157	10.2	8	78	86	9.3	243	9.9
Total	104	579	683	15.2	84	506	590	14.2	1,273	14.8

^aInn. = innovative; Con. = conservative.

woman's age and her innovation of [q], and it is clear to see that this correlation stems from the upswing in innovation in the youngest generation. Conversely, a look at the figures for males indicates that those born between 1939 and 1950 are the innovators for the males. We must also observe, however, that a chi-square test takes into account the number of tokens for each age group; on this basis, a very weak correlation (.154) between a man's age and innovative behavior can be established on the edge of reliability, χ^2 ($p < .073$). In general, age and gender give us a departure point for considering which social factors may best reveal the structure of this variation.

NETWORKS AND AGGREGATE GROUP BEHAVIOR

While age and gender are indicators of group alliance about which the individual has no choice, and within which he or she must function, the three network subsectors identified represent a different aspect of the individual as a community member: that of a free agent. It must be pointed out that this property is not equally distributed among the kinship, workplace, and voluntary association subsectors. At one extreme, voluntary association is exactly that: We assume that the individual participates in the social life of the community exactly to the extent he or she wishes to. This is solely a matter of personal choice. At the other extreme, kinship is perhaps only half a matter of individual choice. One certainly cannot control which clan he or she is born into, but one does make decisions about staying in the community and about strengthening ties to it, for example, by marrying into a powerful clan or by choosing not to marry, if this would mean having to leave the community. Between these two extremes is the workplace network. For the oldest generations, an individual had little choice about the work he or she wished to pursue. If the family farm needed a head, the oldest son became that head. However, in light of recent changes in the economic struc-

TABLE 3. *Correlation of group language behavior and network subsector scores*

	Chi-square probability	Logistic probability	Regression coefficient
<i>Females (683 tokens)</i>			
Kinship	.000	.071	.322 ^a
Workplace	.000	.000	.598 ^b
Voluntary association	.000	.001	.336 ^b
<i>Males (590 tokens)</i>			
Kinship	.522	.720	.322 ^b
Workplace	.012	.000	.416 ^b
Voluntary association	.076	.072	.292 ^a

^aTrend values of .06-.10.

^bSignificant at .05 or better.

ture of the village, many of which have made farming impractical or even impossible, such individuals had to make choices about remaining within the established workplace network, either by giving it up to pursue some other line of work or by compromising and farming part-time. Moreover, although the individual may have had some outside guidance in the choice of workplace and hence in the network integration, there is still a great deal of choice involved in how one approaches that network. For example, one may choose to interact with others in the group on more than one level. The raw figures are provided in Table 3.¹³

Workplace network shows highly reliable, statistically significant correlation to innovation for both men and women. Correlation to kinship is not as strong or as statistically reliable for women's behavior as it is statistically unreliable for men. Voluntary association is moderate for women's usage and lower for men's. As was the case when we considered this variation on the basis of gender and age, a comparison of subsector integration scores by group does not provide us with a great deal of information. There is indication, however, that people who have in common high levels of integration into conservative employment networks also have in common a preference for the conservative linguistic variable.

Why is workplace network so significant to aggregate group behavior? Why should integration into local workplace communication patterns be more relevant than the relative strength of kinship structure or voluntary association? Network integration can be similar to any "involuntary" group such as age or gender: The individual is subject to the *responsibilities* as well as the rights of membership, one of those responsibilities being that a member mark his or her speech as such. But workplace networks seem to be stronger norm enforcement mechanisms than clans; perhaps this is because

they are a better and more refined indicator of *voluntary* community integration.

If it were possible to trace the development of the three targeted network types through time from their pre-war status, we would most probably observe the least social change in the voluntary association sector for men (but more for women), more change in the area of kinship (due to changing restrictions on courting and marriage), and the greatest degree of change in the nature of the workplace network, and this for both genders. The technological advances which have made daily travel to the Rhine Valley a possibility were unheard of even in 1945, so that the range of possible occupations has increased tremendously. Today, people who live in this village are employed in the provincial government and media, direct college-level schools, work for large banks, and attend specialized schools. In 1945, had they had the decision to make, all of these individuals would have been forced to choose between these occupations and living in Grossdorf, although some of them may have chosen to commute on weekends. If workplace can be the focus of such rapid social change, it is not surprising that we find a strong relationship between this network and changing language behavior.

There have always been individuals who were less well integrated into the most conservative types of network, farmers or manual laborers who had a small business on the side, such as the shopkeeper, the wagonmaker or the shoemaker. Gal observed a similar change in the range and nature of workplace network in Oberwart.

A person's commitment to peasant agriculture can range from tending a kitchen garden and raising a few chickens to a full-scale farm run for subsistence and occasional profit. . . . For at least a century there have been some Oberwarters who were partially peasant and partially wage earners, and since World War II, there have been many bilinguals who do no peasant work at all. (1979:136)

Therefore, we are not surprised to find that integration into workplace networks does not account for all the variation we observe.

Interaction of network integration with other identified social variables was examined in logistic regression models (Harrell 1983).¹⁴ The following generalizations can be drawn from the results of these statistical tests:

1. Age, education, and network integration interact to play a statistically significant role in a woman's choice of innovative or conservative usage for this case of language change. In general, fairly good models could be constructed providing insight into the social structure of women's speech.
2. Variation in men's speech was much more difficult to quantify. In general, the interactive models showed statistically significant correlation only to education and voluntary association networks. The reasons for

this stem partially from the nature of the statistical test; the number of observations may have been too few to provide the contrasts needed to examine a wide range of social factors. In addition, there is internal inconsistency in these groups, which explains some of the trouble encountered in developing models for group behavior. This condition adds to the overall error of the model and decreases the reliability of the results. It is precisely in a case such as this that information about the way individual usage differs from aggregate scores is of interest, as we will see later.

3. Within the youngest generation, women innovate to a greater degree than men. This may be due to the fact that the younger men resist, to some degree, a change associated with women. This would mean that women and men of this age group use different linguistic variables to mark their speech as locals.

It is possible to apply classical sociolinguistic quantitative methodology to a change in progress in a small community and gain some information about that change. This has been demonstrated elsewhere, for example, in Holmquist's study of Ucieda (1985), and it can be seen here as well, to a limited degree. However, there are methodological complications which interfere when the numbers are small, and some of these have contributed to less satisfactory, even confusing results for Grossdorf. As a result, tendencies observed in the field cannot be accessed or verified. If we adopt an alternate methodology which is not as dependent on sample size or group behavior, we may hope for additional information on the nature of this case of change in progress.

NETWORKS AND INDIVIDUAL LANGUAGE BEHAVIOR

We turn now to a comparison of individual innovative language behavior with level of integration into the community (Table 4).¹⁵ We are especially interested in male behavior, because the investigation of group scores provided so little clear information.

If we compare this quantification of individual scores to the results of the correlation of group scores to network integration (Table 3), the improvement is not overwhelming. For females, the picture seemed clearer when group behavior was the focus. Although it was only possible to establish moderate degrees of correlation between network integration and group scores, the results were statistically reliable. For females, the individual scores show correlation only to workplace network, and this correlation is not statistically reliable. For males, the picture of the short [ɔ] change is slightly clearer. Again, we have the impression that there is some relationship between a male's degree of integration into local network structures and innovation for this variable, but no explicit or very reliable results. It must be

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TABLE 4. *Spearman's Rank Correlation of variable scores to network integration for 42 informants^a*

	Age	Kinship	Workplace	Voluntary association	Combined
Female (<i>N</i> = 21)	.048	-.126	-.604	-.206	-.523
Male (<i>N</i> = 21)	.042	-.253	-.516 ^b	-.365	-.546 ^b
Both (<i>N</i> = 42)	.033	.366	-.521 ^b	-.251	-.528 ^b

^aA negative figure indicates correlation to conservation; positive, to innovation.

^bSignificant at .05 or better.

TABLE 5. *Oldest generation males; network and innovation*

Informant code	% innovation	Kinship	Workplace	Voluntary association	Total
<i>Average all males</i>	14.2	3.8	5.1	1.8	10.7
<i>95% Range</i>		3/5	4/7	1/2	9/13
<i>Males born 1906-1934</i>					
Kaspar	0	4	7	3	14
Jokel	0	5	7	2	14
Michel	0	2	7	2	11
Sefftone	12.2	1	5	2	8
Melchior	16.6	5	0	1	6
Kolumbian	26.6	3	4	2	9

pointed out, also, that in the group analysis we were dealing with each occurrence or token of the variable as a distinct entity, and in this analysis we have instead an innovation score for each informant.

The apparent lack of information is due primarily to the interaction between age and network integration. Once the sexes are broken down by age, the relationship of network integration to innovation of this variable becomes more evident. This further substantiates the observation that males and females of the youngest generation treat the variable differently. As already discussed, we may also postulate that the networks themselves are undergoing structural changes, so that degree of integration is qualitatively different and of differing importance at different life stages. Let us consider one age group of one gender, the oldest males (see Table 5). We would guess that the changing nature of workplace networks would affect these men least, so that the relative degree of integration has less to do with changes

in the network structure itself. Further, we are comparing individuals with similar conceptions of what it means to belong to the community.

In Table 5 we can see that there is a relationship between high degree of integration into local networks, particularly workplace network, and conservatism of this linguistic variable. The higher the degree of integration into *all three networks*, the greater the conservatism; the poorer the integration, the higher the degree of innovation. The overall number of tokens is low for this group, but we can attempt to back up this impressionistic data by means of some basic statistical operations.

Correlation figures¹⁶ for the innovation of [a] to network integration scores, year of birth, degree of language exposure, education, and occupation result in the following coefficients between innovation

and workplace network integration	-.714 ($r^2 = .509$)
and overall network integration	-.747 ($r^2 = .558$)
and degree of language exposure	.707 ($r^2 = 1.500$)
and occupation	.695 ($r^2 = .482$)

The coefficients for language exposure and occupation do not reach the probability level of .10.

The correlation coefficients provide a measure of the degree to which innovation of short [a] is related to the independent variables. The square of the correlation coefficient (r^2) tells us the percentage of the short [a] variation which is accounted for by the variation in the various independent variables. For example, kinship integration was excluded for this subgroup because it accounts for none of the short [a] variation, but the individual's integration into all three networks accounts for 55.8 percent of the variation observed. In fact, integration into the three targeted networks has more to tell us about innovation of this variable than the other social factors. In general, it seems that a straightforward quantification of occupation does not account for the data as well as a more detailed quantification of overall network integration. This parallels neatly Gal's findings that a simple scale of peasantness was not as powerful a predictor of language choice as social network (1979:183-84).

This means that with increasing degree of integration into local networks, the men of *this generation* show greater conservatism in their use of this variable.

While kinship network and voluntary association do not provide insight into variation when considered independently, the scores for overall network integration, which take the sum of the three subsectors, are the most significant of the social factors identified. Overall network integration scores are more powerful and more statistically reliable (for males of this generation) in the prediction of variant choice than are degree of language exposure or occupation.

Note also that there are high degrees of correlation *among the factor*

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TABLE 6. *Young adult males; network and innovation*

Informant code	% innovation	Kinship	Workplace	Voluntary association	Total
<i>Average all males</i>	14.2	3.8	5.1	1.8	10.7
<i>95% Range</i>		3/5	4/7	1/2	9/13
<i>Males born 1955-1962</i>					
Jodok	5.0	5	7	3	15
Ignaz	20.4	5	7	1	13
Klemens	20.8	4	4	1	9
Leo	21.2	2	1	1	4

groups themselves. Indeed, it seems logical to assume that the greater the degree of language exposure, for example, the greater the likelihood of certain occupations and/or degree of education. This problem is referred to as *multicollinearity*: By including aliased factors in the analysis, we are measuring different aspects of the same effect. This will distort the assessment of the contribution of each to the overall pattern of variation.¹⁷ One solution is to remove one of the factors from the analysis, but first we must determine which of them better accounts for the data in this case. Both of these factors may be instructive, although they are slightly different in their focus. Language exposure is a statement of fact (this person uses and/or hears x number of language varieties on a regular basis and is therefore exposed to other language norms). Education, on the other hand, is a less direct measurement of factors such as long-term exposure to the standard, subjective evaluation of nonstandard language norms, prestige, authority, and social standing. All of these factors relate indirectly to the degree to which an individual is subject to language norms which contrast with the conservative basilect.¹⁸

Finally, we consider the variation observed for young adult males (see Table 6). In contrast to the oldest generation males, the relationship between network integration and innovation for the young adult males is not as clear. We can see this, and it is confirmed by statistical examination. We can establish a good degree of correlation (.683) between overall network integration and choice of linguistic variant, although the degree of faith in this figure is less than $p = .10$.

Of more potential interest for this group is voluntary association network integration, which seems to be relevant for this age group, whereas it was only a secondary sphere of influence for the oldest generation. In fact, to argue that different generations are susceptible to different sources of normative influence is quite reasonable. The young adult males have access to

a wider range of workplace networks than their oldest counterparts, while certain choices (particularly in the range of farming opportunities) are now less viable for them. If we posit that individuals in this situation must develop other ties to the community, then the apparent increase in the importance of voluntary association to language choice is not surprising.

The scores for voluntary association were constructed on the basis of actual social activities pursued within the village. Each club or organized group with a specific purpose (the volunteer fire brigade, a singing group, the church choir, the local chapter of the association of dairy farmers or pig breeders) presents another opportunity for the individual to associate with fellow villagers. The number and range of these organizations has increased drastically since the pre-war period, so that while a 30-year-old male may wish to farm but not have the land or the means to do so, there are now other ways for him to solidify his ties to the community.¹⁹

The contrast between Jodok and Ignaz underscores the contrast between the relative effects of workplace and voluntary association networks. Jodok uses the innovative variant only 5 percent of the time, whereas Ignaz uses it 20.4 percent of the time. These men have very much in common: One is a full-time farmer, the other is a part-time farmer and part-time *Senn*, or dairy worker. These professions are two of the most conservative and well established in the community. Their family backgrounds are very similar, in that both have had access to maternal and paternal village clans, and they are both married with children. However, whereas Jodok is extremely active in the community and belongs to a number of organizations and clubs which involve him in almost daily interaction with other villagers, Ignaz is less involved. He is not a recluse, but he also does not join organizations which require a time commitment.

Leo and Klemens, on the other hand, both have jobs which take them out of the village and which require an unusual degree of education. Leo works for the province's insurance system and Klemens is in education. In their innovation of the [a] variable, however, they are not much ahead of Ignaz. What they have in common with Ignaz is a disinterest or even apathy about the social life of the village. Klemens has most of his social ties in the Rhine Valley, and Leo stays close to home. We would like to have an informant in this group with low integration into workplace networks, similar to Leo and Klemens, but a high degree of voluntary association, similar to Jodok. The closest we come to this is with Hansaseff, of the youngest generation (born 1966), who, as a student in Bregenz in the Rhine Valley, is outside local workplace network structures, but who spends every possible minute of his free time involved in some village activity, resulting in the highest possible voluntary association integration score. Hansaseff innovates [a] for [ɔ] only 12 percent of the time, which puts him closer to Jodok (5%) than it

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does to Ignaz (20.4%), Leo (21.2%), or Klemens (20.8%), although his workplace networks most closely resemble these last two.

The framework of network subsector scores has provided a means to quantify the differences and similarities in the sociocultural profiles of these two individuals. Previously, quantification has been restricted to classification of factors such as occupation and income, which often establish technicalities peripheral to linguistic choice in communities such as Grossdorf. In this case, profession, age, income, and education would have provided no clue about the discrepancy in norm adherence for this variable.

SUMMARY

Without quantification of integration into the social networks of the village, the variation observed in male usage for this change in progress would remain nebulous. When focusing on group behavior, there is no correlation to age, unless we consider the interaction of age with network integration. Consideration of such interaction provides proof of what we have known intuitively to be true: Those men who are best integrated into the community are most loyal to its conservative language norms. It also indicates that neither integration alone nor interaction of integration with age and gender will satisfactorily explain or predict behavior for this variable to the degree we would like to understand it. It is most likely that subjective evaluation of this variable plays an important, and as yet, inestimable role. However, by approaching the change from the perspective of the individual, many of the cloudy images obtained in the quantitative analysis of group behavior can be clarified.

There is some indication that a high degree of integration does not automatically ensure conservation. In a concurrent case of change in progress whereby /ɔ:/ is diphthongizing, the most highly integrated men are the most innovative. However, more data need to be collected for this variable before this impression can be confirmed quantitatively.

Documentation of a case of variation leading to change in a rural dialect spoken by less than a thousand people is not particularly rare; conservative dialects change, and in the process they exhibit variation. It has never been maintained that such dialects are an exception to the concept of orderly heterogeneity. Rather, theoretical and methodological issues have hindered the study of the relationship between language change and social change where insight into the social matrix was constrained by the urban model.

More recent work (Gal 1979; Milroy 1987; and Romaine 1982; among others) underscoring the crucial question of choice of appropriate social theory and a corresponding revision in methodology has provided the means to go beyond documentation to the quantitative study of small communities.

Analysis of behavior in communities with social matrices more subtly structured than those of urban centers need not be limited to data of an impressionistic nature, and can make a real contribution to understanding the scope and nature of language change.

NOTES

- * The fieldwork for this project was funded by the Austrian Ministry of Science and Research and by Princeton University. I am indebted to Robert Peter Ebert of Princeton for his comments and guidance regarding both the long-range project and this article.
1. For further details regarding theory, field methodology, and recordings, see Lippi (1987).
 2. See, for example, Bigler's short chapter on sociolinguistic variation in the dialect of the middle Aargau in Switzerland, which he begins with a self-fulfilling prophecy: "Wer die Untersuchungsdaten mit den entsprechenden Gewährsleuten vergleicht, erhält wenig Erklärungen für die Verteilung der sprachlichen Merkmale" [Comparison of the data to the corresponding informants provides one with little explanation for the distribution of the variables] (1979:209).
 3. Some clarification of the distinctions between the terms *class* and *status* is in order. It seems that they are often confused, even by sociologists. Briefly, class is a reference usually to economic factors, whereas status is determined by what is achieved with those resources (Bell & Newby 1971:218ff).
 4. The paradigm outlined by Boissevain requires full-scale, system-wide analysis, an approach which cannot be realized even in the smallest of communities. Milroy points out that the formulae for computation of density and multiplexity require this full-scale approach, which is impossible even for a single informant; thus, in the Belfast study "multiplexity and density are expressed indirectly only by indicators which are readily verifiable from field data, while at the same time reflecting a number of observations recurrent in a wide range of relevant network studies" (1987:141).
 5. Any clan which has been in existence for over a hundred years would be considered "core"; this is verifiable from church records and would exclude, for example, families which immigrated from the Italian Tirol after World War II.
 6. It is possible to belong to a core clan but to have been raised elsewhere; there are a few occurrences of this among the sample.
 7. An informant who works in Egg, the next village, is in contact with outside norms but is in very close proximity to his or her home base and will return home for lunch, etc.; hence the reduced score for Egg.
 8. Farmers are considered here to form a "cluster" of their own, and hence membership in this high-density sector is calculated separately from other professions. There is a parallel here to Gal's measurement of relative "peasantness" in Oberwart (Gal 1979).
 9. A given lexical item was considered stylistically formal on the basis of informant evaluation. This was carried out by questionnaire and direct elicitation with 10 of the 42 informants after all recordings had been made.
 10. The items removed were *Tankwagen*, *Strand*, *bedanken*, *verwalten*, *danken*, *Bank* ('financial institution' as opposed to *Bank* 'bench'). Four of these are recent acquisitions replacing the more conservative *Milchwagen*, *vergelt's Gott* (for both *bedanken* and *danken*), and *Kasse*. *Verwalten* occurs only in formal styles, whereas *Strand* is a very recent acquisition from the standard variety and has no parallel in the conservative dialect.
 11. In Table 2, age groups were not determined by division at an arbitrary number of years, a practice which may result in the artificial distinction between individuals born less than one year apart (e.g., an individual born in 1929 may end up in a different group than an individual born in 1930). The groups were determined by letting the 42 informants fall into natural groups by virtue of gaps in the distribution of years of birth. As a result, there are different numbers of informants in each group.
 12. Spearman's Rank Correlation (*r* or *s*) gives each token a value based on its position in the spread of data rather than on a straight score, so that extremes which might skew the results are neutralized.

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If the data in the original units are irregular (several extreme values), rank correlation might be preferred over the parametric approach. The reason being that under the conditions of [linear regression] an extreme item in each variable will be given an extraordinary weight. Each extreme observation will appear as a square and there will be one cross product. Rank correlation removes this emphasis on absolute values much the same as in the calculation of the median or quartiles. (Leabo 1976:614)

The scores for both the dependent and the independent variable are measured in an ordinal scale and then the normal correlation procedure is carried out. Like r , r ranges from +1 to -1. The only drawback of rank correlation is the difficulty in interpreting percentage of variation accounted for: unlike the square of r , the square of rr is not a reliable indication of relative effect.

The following rule of thumb guidelines are used for the social sciences in the interpretation of the scale (Champion 1981:302):

- ± 0.00-.25 = no association or low/weak association
- ± .26-.50 = moderately low/weak association
- ± .51-.75 = moderately high/strong association
- ± .76-1.00 = high/strong association

13. It is important to compare chi-square probability figures to some measure of correlation and to emphasize the distinction between statistical probability and correlation figures. The former serves only to tell us how *reliable* the latter is. In addition to the chi-square test of correlation, logistic regression models based on the individual subsectors were included to offset chi-square's sensitivity to the size of the sample as well as to other factors. Logistic regression was used rather than linear regression because lexical diffusion is a binary process. For further discussion of this procedure and its motivation, see Lippi (1987).

14. The paperwork resulting from the logistic regression analysis and my interpretation of those results can be made available to anyone wishing to consult them. They are contained in part in Lippi (1987).

15. The consideration of correlation between aggregate group behavior and innovation was based on conflated scores for network subsectors. In order to establish contrasts and work within the statistical model, it was necessary to group the informants into degree of integration, that is, high, medium, or low kinship network integration, rather than depend on the score of 0 to 7 (or 0 to 3, for voluntary association). In the examination of individual behavior, the scores are not conflated.

16. Guidelines for interpreting correlation coefficients are outlined in note 12.

17. For this reason, integrative models which use more than one factor, for example, degree of total network integration and language exposure, provide no further information about this variable. One reason for this is that all the targeted social variables outside network integration are somehow, to some extent, included in that score.

18. The initial results of the long-term study held some surprises: If it is true that education *includes* a reference to language exposure, then it should follow that language exposure plus other social aspects subsumed under education (prestige, status) can only add to the understanding of the variation. The more factors encompassed within education, the more variation it should account for. However, rank correlation between predicted probability and response, one of the statistics provided by the logistic regression procedure, indicated that education clearly accounted better for the data in only one of the six cases examined.

19. Again, network integration is certainly not the only indicator of the status of linguistic norms for this or any other age group. Conspicuous by its absence to this point is subjective evaluation, the role which attitude toward this particular variable, the dialect, and the community plays in the individual's choice to conserve or innovate. Quantification of subjective evaluation is certainly within the realm of current field methods for linguistics in urban areas; for this community, however, it proved a more difficult if not impossible exercise. More information about the methodology designed and used in the community for subjective evaluation quantification is outlined in Lippi (1987) and in forthcoming work.

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