

Sociolinguistic Variation in American Sign Language

Ceil Lucas, Robert Bayley, and Clayton Valli
in collaboration with Mary Rose, Alyssa Wulf,
Paul Didis, Susan Schatz, and Laura Sanheim

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*This book is dedicated to the memory of
William C. Stokoe and to Roger Shuy
and William Labov.*

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Foreword

Sociolinguistics emerged prominently in the 1960s, celebrating the heterogeneity of language based not only on linguistic constraints but also on variation occasioned by the race, ethnicity, age, gender, and social status of its speakers. Before that, the task of the linguist was a whole lot simpler. Most language teachers needed to pretend that there was such a thing as “a language” that was unified enough to be taught and learned despite the way speakers tended to wander off from the textbook norms.

Overlooking variation may make linguistics simpler, but sooner or later, somebody is going to notice that people don’t use language the way the grammars prescribe it. My own first experience with this phenomenon, as a seventh-grade language arts teacher in 1957, is a case in point. My textbook insisted that “which” should be pronounced with “a puff of air preceding the w.” I had never myself distinguished phonologically between the noun “witch” and a relative pronoun. Nor did anyone else in my part of the country, including our mayor and his entire city council. A quick look at the title page of the text showed me that the book was published in Boston, where “hw,” the Northern variant, is considered the standard way to begin words like “which.” My students and I shrugged our shoulders and went on pronouncing it the way standard English was pronounced in our own area. Acceptable variation always trumps stereotyped standards. Sociolinguistics was a new concept at that time, a few years earlier than the blossoming studies of social variation in the sixties.

Sociolinguistics has come a long way in the past forty years, beginning with phonological and morphological variation, then followed by analyses of syntactic variation and discourse interaction features. In the early years of sociolinguistics, primary attention was given to English variability, but this soon expanded to other languages and other parts of the world.

About the same time that sociolinguistics was emerging, a small cadre of linguists, led by William Stokoe, faced an infinitely larger task, that of proving to a skeptical world that American Sign Language (ASL) was indeed a full-fledged language. In retrospect, it appears that early accurate descriptions of variation in ASL actually worked against the primary goal of getting it accepted as a real language. Pretty much the same thing

happened with the early descriptions of English vernaculars, which were often misunderstood to be proof of cognitive deficits of their speakers. But such is the folly of assuming that variation, even ASL variation, is not patterned and systematic. It seems that linguists perpetually need to remind (or inform) the general public that variation is not only healthy for keeping a language vital and changing, as the authors point out, but that it is also an important factor in our humanity, opening the door to the creativity that permits such things as poetry. Equally important is the message to linguistic laypersons that language variations are structured, systematic, and living proof that those who use one variety have just as much cognitive ability as those who use another one.

With the advent of an increasing number of sociolinguists who specialize in ASL, it is only natural that this now accepted real language would get the deserved attention that this book provides. Its uniqueness comes from the fact that a unified exposition of ASL sociolinguistics has hitherto not been put forth. It is natural for developing specializations to begin with scattered articles on parts of the issue. Later, with the maturation and a coming together of like-minded people, the pieces and parts are put together in this way.

The standard methodology of sociolinguistics is to gather as much data as possible and let the data drive the analysis. This contrasts with approaches used in some other fields, which often begin with a hypothesis and then find data to either prove or disprove it. There may always be questions about whether sociolinguistic samples are representative, adequate, or unusual in other ways. But, whatever qualms an experimental researcher might have had about this type of research, there can be no question but that we learn very important things in the process. This project is to be congratulated for videotaping representatives from different areas of the United States, different ethnicities, different ASL backgrounds, different ages, different socioeconomic statuses, and different genders. That data of such excellent quality were produced is a tribute to the sensitive and creative approach taken by the authors.

It should also be pointed out that the product of this research is not a dictionary or an encyclopedia of all types of extant ASL variation. To do so would be a lifetime work, similar to the *Dictionary of American Regional English* or the *Oxford English Dictionary*. Instead, the researchers focus on targets, in this case targets of phonological and morphosyntactic variables that have been studied earlier in smaller studies. These target

variables are representative of other features in their categories, ones that future researchers might wish to study further. Proceeding in this way is reminiscent of the early work in Vernacular Black English by Labov (1966) and by Wolfram (1969), in which a small number of target features were studied in a large sample of speakers in New York and Detroit, respectively.

Language attitudes and policies are also an important aspect of sociolinguistic research. The authors of this study provide a brief and poignant description of the subjective reactions and policies of various schools for deaf people, information crucial to the actual production of ASL by the representatives of those schools. As the authors point out, policies are often a product of the influence of individuals. This too is not unusual. Perhaps it is not surprising that the first known policy for accepting ASL to meet a graduate school language requirement was created in the early 1970s at Georgetown University, a direct result of the persuasiveness of individuals on the sociolinguistic faculty at that university.

Some of the findings of this book are not surprising. For example, sociolinguists will not be shocked to learn that the variation found here is systematic and regular, just as we found it to be in Vernacular Black English in the 1960s. It is also not too surprising that internal linguistic constraints and external social constraints on variation, such as those found in spoken languages, are also present in a manually signed language. Those who knew all along that ASL was a real language are not at all shocked to learn that ASL behaves much like a spoken language, but it is very nice to have empirical proof of this. To be sure, there are important differences in the details of the variations and the social and interactive factors that cause them, one of the most interesting aspects of this book.

On the other hand, it is somewhat surprising that the distribution of such regularity does not always follow the predictable regional lines found in dialects of spoken American English. It is surprising that some phonological variables in Virginia and Washington are more like each other than they are to more neighboring signers. As usual, however, the authors explain the reason for this. And even the veteran sociolinguist might be surprised at the authors' discovery of the strong role of grammatical function in ASL phonological variation.

This book is a fitting tribute to the work of the late William Stokoe of Gallaudet University who, despite his brilliance and his clarity, had ideas

that were apparently too revolutionary to be fully appreciated during his lifetime. He would be proud that the work evidenced by this volume is made available, for he is the one who paved the way and on whose shoulders we all try to stand. Although the last word on ASL sociolinguistics has not been said here, this book sends us on our way with a flourish.

Roger W. Shuy
Georgetown University

Introduction

This book is the seventh volume in the *Sociolinguistics in Deaf Communities* series. It represents the culmination of a seven-year project on sociolinguistic variation in American Sign Language (ASL) funded by the National Science Foundation (SBR # 9310116 and SBR # 9709522). The idea for the project grew directly out of my training and research experience in spoken language variation. The original idea was to provide a comprehensive description of the variables and constraints at work in sign language variation, with the four decades of research on spoken language variation as the foundation. This kind of research requires large amounts of videotaped data, so the project was therefore, by definition, a huge team effort. Its success was made possible by the willing participation and support of many individuals.

Data were collected in seven sites around the United States, and this data collection simply would not have been possible without the contact people in each area: in Virginia, Mike Marzolf, Frances Marzolf, and Charity Reedy; in Maryland, Anne Marie Baer, Paula Ammons-Woodall, Arlene Blumenthal Kelly, and Malcolm Peters; in Boston, Yvonne Dunkle, Nancy Becker, and Lynn Marshall of The Learning Center for Deaf Children in Framingham; in Olathe and Kansas City, Missouri, Nancy Eades, Arden McDowell, and Irvine Stewart; in Fremont and San Jose, California, Sue Saline and Anita VanderCourt; in Washington, Glen and Betty Bocock and Larry Petersen; and in New Orleans, Anthony Aramburo, Ester McAllister, and Liz Heurtin. These people recruited participants for the study and made all of the practical arrangements for data collection in each site. Also central to the data collection process was Ruth Reed, who conducted all of the interviews with the African American signers and has presented project findings many times at the annual meeting of National Black Deaf Advocates and other venues.

The project also benefited from valuable institutional support. At Gallaudet, this support was provided by a variety of individuals: Mike Karchmer and Tom Allen, deans of the Graduate School and Research during the period of the project; Bill Moses and Pat Cox, deans of the School of Communication also during the project; Stan Matelski, Judy Newhouser, and Christine Katsapis of the Office of Sponsored Programs; Mike Lockhart in Contracts and Purchasing; Michel Nau and Deborah

DaSilva in Accounting; and Ulf Hedberg, Mike Olson, and the staff of the Gallaudet University Archives, and Patrick Harris of Television and Media Production Services. Institutional support also came from James Tucker at the Maryland School for the Deaf, from Kim Brown and Kim Beardslee at Johnson County Community College in Overland Park, Kansas, and from the California School for the Deaf in Fremont. Many technical problems were handled by Eugene Lewis of the Technical Support Office at Gallaudet University, while Chip Reilly of the Gallaudet Research Institute provided the benefit of his experience during the crucial early equipment-purchasing stages of the project. Further institutional support came in the form of the Schaefer Fellowship given to me for the 1999–2000 academic year with the benefit of release time and the University of Texas-San Antonio faculty research grant given to Robert Bayley.

A number of graduate students in the linguistics program in the Department of ASL, Linguistics, and Interpretation at Gallaudet University did crucial work as data coders: Leslie Saline (who was also involved in data collection), Jim Van Manen, Noni Warner, Rob Hoopes, Alison Jacoby, Raychelle Harris, and Tashi Bradford. Keiji Goto and Myisha Blackman worked on digitizing the data. Ethylyn DeStefano, administrative secretary in the same department, cheerfully handled all of the paperwork involved in the purchase of equipment, travel for five researchers to seven sites and to conferences and workshops, and the payment of salaries and honoraria.

Colleagues who provided essential feedback on the work at various stages include Walt Wolfram, Greg Guy, Peter Patrick, Claire Ramsey, and Ben Bahan. Dennis Preston, Ron Butters, Alan Metcalf, and the American Dialect Society twice provided a forum for the presentation of the findings. At the National Science Foundation, Paul Chapin, Fernanda Ferreira, and Cathy Ball gave steadfast encouragement and support.

Tom Witte, our computer consultant, has earned special recognition. We met in December 1994 and began a year-long dialogue that resulted in the development of the database for the project, which involved getting the videoplayer and the computer to talk to each other, developing a database that could be learned and used efficiently by a number of people, and developing techniques for then extracting the data in a useable way. Tom spent countless hours developing and testing all aspects of the system central to the success of the project and pretty much maintained his sense of humor throughout.

The writing of the volume also represents a team effort. Clayton Valli and I served as principal investigators for the project, and Susan Schatz, Mary Rose, Alyssa Wulf, Paul Dudis, and Laura Sanheim worked as research assistants. Robert Bayley joined the project in January 1997 as a VARBRUL consultant and quickly became centrally involved in the analysis and writing. Chapters 1 and 2 are written by Robert Bayley, Clayton Valli, Susan Schatz, and myself. Laura Sanheim did the research for chapter 3 and was joined by Robert Bayley and myself in the writing. Mary Rose focused on the analysis of 1 handshape variation and wrote chapter 4 with Robert Bayley and myself, and the three of us also collaborated on the analysis of DEAF and location signs and the writing of chapters 5 and 6. Alyssa Wulf and Paul Dudis were responsible for the analysis in chapter 7 and co-wrote it with Robert Bayley and myself, while Susan Schatz and I collaborated on chapter 8. Finally, I wrote chapter 9.

We are deeply grateful to those individuals responsible for the production of this book: Jayne McKenzie, the secretary in the Department of ASL, Linguistics, and Interpretation, typed the entire manuscript of the volume; Robert Walker did the drawings of signs for which MJ Bienvenu served as a model; Ivey Wallace, Deirdre Mullervy, and Carol Hoke of Gallaudet University Press edited and produced the volume, and John Van Cleve and Dan Wallace, also of the Press, have shown consistent support for the series as a whole.

Finally, we acknowledge our significant others: wives, husbands, partners, and friends who followed our progress with interest and supported us all the way through.

Ceil Lucas

Sociolinguistic Variation and

Sign Languages: A Framework for Research

The 1960s witnessed the development of two subfields in linguistics, the systematic study of language variation, pioneered by William Labov (1963, 1966), and the scientific study of sign languages, developed initially by William Stokoe (1960). The theoretical framework and rigorous methodology of Labov's early studies on Martha's Vineyard and in New York City were soon extended to numerous other sites around the world. Research in many communities has shown that all human languages are characterized by what Weinreich, Labov, and Herzog termed *orderly heterogeneity* (1968, 100). That is, although variation is characteristic of all languages, it is not random. Rather, language users' choices between variable linguistic forms are systematically constrained by multiple linguistic and social factors that reflect underlying grammatical systems. Moreover, speakers' and signers' choices between variable linguistic forms both reflect and partially constitute the social organization of the communities to which users of the language belong.

Like Labov's work on linguistic variation, Stokoe's initial work on the linguistic structure of sign languages was soon taken up by other researchers. His early monograph on sign language structure was followed by the *Dictionary of American Sign Language* (DASL) (Stokoe, Casterline, and Croneberg 1965). Other researchers examined the structure of American Sign Language (ASL) (e.g., Klima and Bellugi 1979; Liddell 1980), the acquisition of ASL by Deaf children (e.g., Meier and Newport 1985), as well as sociolinguistic aspects of ASL such as the differences between African American and Caucasian signing (Woodward 1976) and the effects of language contact on the production of Deaf signers (Lucas and Valli 1992). Taken together, these studies, as well as many others that we might name, established the status of ASL—and by extension other sign languages—as a fully developed language, equal to spoken languages in grammatical complexity and expressive power.

However, sign language researchers have not previously availed themselves of the insights to be gained by adapting the framework and methodology of quantitative sociolinguistics to the study of ASL or any other sign language.

This book describes a large project designed to examine whether variation in ASL is subject to the same types of constraints that operate in spoken languages. In this first chapter we describe the variationist framework within which the project was conducted. To establish that framework, we first discuss general concepts in the study of variation. We then explain the overall goals of the project and provide a review of studies of variation in ASL. Finally, we discuss what we expected to discover about sociolinguistic variation in ASL at the outset of the project, based on what we already knew about variation in both spoken and sign languages.

LINGUISTIC AND SOCIOLINGUISTIC VARIATION

Even casual observation reveals that language users sometimes have different ways of saying or signing the same thing. Variation may be realized at all different levels of a language. English, for example, contains numerous examples of variation in the lexicon. Some speakers use the word *couch*, whereas others say *sofa* or *davenport*. ASL also exhibits numerous examples of lexical variation. For example, a number of signs exist for the concepts BIRTHDAY, PICNIC, or HALLOWEEN.

At the phonological level, variation exists in the individual segments that make up words or signs or in parts of those segments. For example, speakers of a wide range of English dialects sometimes delete the final consonant of words that end in consonant clusters such as *test*, *round*, or *past*, the result being *tes'*, *roun'*, and *pas'* (Labov et al. 1968; Guy 1980). In ASL, phonological variation can be seen in signs such as BORED or DEAF, usually signed with a 1 handshape (index finger extended, all other fingers closed) but sometimes produced with both the index finger and the pinky finger extended (Hoopes 1998).

Variation may also occur in the morphological and syntactic components of language. For example, in African American Vernacular English (AAVE), the copula *be* is variably deleted, and the sentences *He is my brother* and *He Ø my brother* both occur. The example of consonant cluster reduction given earlier also concerns morphological variation because the final consonant deleted is often a past-tense morpheme (i.e., a meaningful unit). For example, the phonetic realization of the English

word *passed* is [pæst], and the /t/ is the past-tense morpheme that may be variably deleted.

Morphological and syntactic variation in ASL has not yet been extensively explored. However, the variable realization of subject pronouns may serve as an illustration of this type of variation. The ASL verb THINK, for example, can be produced with an overt subject pronoun, as in the sentence PRO.1 THINK, ‘I think.’ ASL, however, is what is known as a *pro-drop language*, and verbs that can have overt subject pronouns are sometimes produced without them, so that the preceding sentence can be produced simply as THINK, ‘(I) THINK.’ That is, the production of subject pronouns is variable and is likely to be a fruitful area for research, as it has been in languages such as Portuguese and Spanish (see e.g., Cameron 1996; Naro 1981).

Sociolinguistic variation takes into account the fact that the different linguistic variants may correlate with social factors including age, socio-economic class, gender, ethnic background, region, and sexual orientation. For example, older people may use more of a given variant than younger people; women may use less of a given variant than men; a given variant may occur more in the language used by working-class people than in the language of middle-class users.

Several researchers have offered useful explanations of the concept of a *sociolinguistic variable*. Drawing upon the work of Labov (1966), Fasold characterized the sociolinguistic variable as “a set of alternative ways of saying the same thing, although the alternatives will have social significance” (1990, 223–24). Milroy referred to the “bits of language” that “are associated with sex, area and age subgroups in an extremely complicated way” (1987, 131), the “bits of language” being sociolinguistic variables. She defined a sociolinguistic variable as “a linguistic element (phonological usually, in practice), which covaries, not only with other linguistic elements, but also with a number of extra-linguistic independent social variables such as social class, age, sex, ethnic group or contextual style” (1987, 10). Wolfram defined a linguistic variable as a “convenient construct employed to unite a class of fluctuating variants within some specified language set” (1991, 23). He distinguished between a linguistic variable, which has to do with the linguistic constraints on variation, and a sociolinguistic variable, a construct that unifies the correlation of internal variables and external constraints. Internal constraints are features of a linguistic nature—a sound, a handshape, a syntactic structure—that favor or disfavor a speaker or signer’s choice of

a particular variant. External constraints are the factors of a social nature that may correlate with the behavior of the linguistic variables. For example, the variable (ING) (in the pronunciation of words such as *working* as *workin'*) has been studied in many dialects of English. Research has shown that (ING) is subject to both internal and external constraints. Thus, the alveolar nasal variant /n/ is associated with verbal categories, and the velar nasal variant /ŋ/ with nominal ones, an internal constraint (Houston 1991). The choice between /n/ and /ŋ/ is also subject to external constraints. Thus, women tend to use the /ŋ/ variant, the standard form, more frequently than men of the same social class (Trudgill 1974).

In spoken languages, other internal constraints on linguistic variation may include the preceding or following segment, the grammatical structure in which the variable item occurs, and syllable stress. In sign languages, internal constraints may include the handshape of the preceding or following sign, for example. We will return to the nature of internal and external constraints in more detail in a later section.

The interaction between linguistic forms and the immediate linguistic environment and between social factors and linguistic forms has been explored extensively in spoken languages for over 40 years, beginning with Fischer's (1958) study of (ING) in the speech of New England school children and further developed by Labov (1966, 1969) in New York City. Other representative studies include Shuy, Wolfram, and Riley's (1968) and Wolfram's (1969) work in Detroit, Sankoff and Cedergren's study of Montreal French (1972), Cedergren's (1973a) dissertation on Panamanian Spanish, and Trudgill's (1974) study of variation in the dialect of Norwich, England. Somewhat later, Rickford (1979, 1987) studied Guyanese Creole, Lesley Milroy (1980) reported on variation in the English of Belfast, Northern Ireland, and James Milroy (1992) proposed a model of language change.

Turning to sign languages, since William C. Stokoe's pioneering work in the 1960s, linguists have recognized that natural sign languages are autonomous linguistic systems, structurally independent of the spoken languages with which they may coexist in any given community. This recognition has brought about extensive research into different aspects of ASL structure and resulted in the recognition that, because natural sign languages are full-fledged autonomous linguistic systems shared by communities of users, the sociolinguistics of sign languages can be described in ways that parallel the description of spoken languages. It

follows that sign languages must exhibit sociolinguistic variation similar to that seen in spoken languages.

Indeed, there have been some investigations of sociolinguistic variation in ASL, but these have generally focused on only small numbers of signers, have used a wide variety of methods to collect data, and have looked at a disparate collection of linguistic features. Patrick and Metzger (1996), for example, reviewed 50 sociolinguistic studies of sign languages conducted between 1971 and 1994. They found that more than half of the studies involved 10 or fewer signers and that one-third included only one or two signers. Only nine studies involved 50 or more signers, and a number of these drew on the same data set. Patrick and Metzger found that although the number of sociolinguistic studies increased during the period they surveyed, the proportion of quantitative studies declined from approximately half during the period from 1972 to 1982 to between one-third and one-quarter during the period from 1983 to 1993. The percentage of studies involving large samples (50+ signers) also declined from 33 percent during the first period to a mere 6 percent during the latter period. The result is that we do not yet have a complete picture of what kinds of units may be variable in ASL and of what kinds of internal and external constraints might be operating on these variable units. However, as Padden and Humphries (1988) observed, Deaf people in the United States are aware of variation in ASL even though no one has fully described it from a linguistic perspective.

Padden and Humphries describe “a particular group of deaf people who share a language—American Sign Language (ASL)—and a culture. The members of this group reside in the United States and Canada, have inherited their sign language, use it as a primary means of communication among themselves, and hold a set of beliefs about themselves and their connection to the larger society.” They continue, “this . . . is not simply a camaraderie with others who have a similar physical condition, but is, like many other cultures in the traditional sense of the term, historically created and actively transmitted across generations” (1988, 2). Certainly, then, there is an ever-growing awareness among its users of the existence and use of a language that is independent and different from the majority language, English. ASL users are also aware of sociolinguistic variation in ASL. However, many aspects of that variation have yet to be explored. In terms of linguistic structure, most of the studies to date focus on lexical variation, with some studies of phonological variation,

and very few of morphological or syntactic variation. In terms of social factors, the major focus has been on regional variation, with some attention paid to ethnicity, age, gender, and factors that may play a particular role in the deaf community, such as audiological status of parents, age at which ASL was acquired, and educational background (e.g., residential schooling as opposed to mainstreaming).

No one has yet examined the interaction of socioeconomic status and variation in a systematic way. So, for example, widespread perception exists among ASL users that there are “grassroots” Deaf people (Jacobs 1980) whose educational backgrounds, employment patterns, and life experiences differ from those of middle-class Deaf professionals and that both groups use ASL. Accompanying this perception is the belief that each group exhibits differences in their signing. However, the sociolinguistic reality of these perceptions has yet to be explored. In this regard Padden and Humphries state that “even within the population of Deaf people in Boston, Chicago, Los Angeles, and Edmonton, Alberta, [smaller groups] have their own distinct identities. Within these local communities, there are smaller groups organized by class, profession, ethnicity, or race, each of which has yet another set of distinct characteristics” (1988, 4).

SOCIOLINGUISTIC VARIATION IN ASL: PROJECT GOALS

The project this book describes aimed to provide a general overview of variation in ASL at the phonological, lexical, morphological, and syntactic levels and to understand which social groups were more likely to use particular variants and which groups were likely to use other variants. That is, we sought to provide for ASL the kind of overview of variation that exists for many spoken languages. Two basic theoretical questions guided our work:

1. Can internal constraints on variation such as those defined and described in spoken languages be identified and described for variation in ASL?
2. Can the external social constraints on variation such as those defined and described in spoken languages be identified and described in ASL?

The answers to these questions are important for two reasons. First, to understand ASL and other sign languages, we need to understand how

variation functions in those languages at all linguistic levels. Second, a comparison of variation in ASL with variation in spoken languages has the potential to contribute to what is known about variation in human languages in general. We want to know whether a comparison of variation in sign languages and spoken languages will enable us to define overall characteristics of linguistic variation regardless of modality. We also want to know whether variation in sign languages is characterized by unique features not found in spoken language variation. These are the fundamental issues that underlie the work described in this book. In the remainder of this chapter, we review the work that has already been accomplished on variation in ASL and provide a basic framework within which to consider variation in sign languages. We then define what we expected to find in our data, based on what we already knew about variation in general and variation in sign languages in particular.

PREVIOUS RESEARCH ON VARIATION IN ASL

Users and observers of ASL have clearly been aware of the existence of variation in the language for a long time, and evidence of this awareness can be seen in writings about deaf people's language use. For example, in the proceedings of the fourth Convention of American Instructors of the Deaf held at the Staunton, Virginia, school in 1856, J. R. Keep describes how "teachers of the Deaf and Dumb" should acquire knowledge of signing:

It is answered in this inquiry that there is *a language of signs; a language having its own peculiar laws, and, like other languages, natural and native to those who know no other.* . . . There may be different signs or motions for the same objects, yet all are intelligible and legitimate, provided they serve to recall those objects to the mind of the person with whom we are communicating. As a matter of fact, however, although the Deaf and Dumb, when they come to our public Institutions, use signs differing in many respects from those in use in the Institutions, yet they soon drop their peculiarities, and we have the spectacle of an entire community recalling objects by the same motions (emphasis added) (1857, 133)

In a response to Keep's remarks, Dunlap (in Keep) compares the signs used at the Indiana School for the Deaf with those used at the Ohio and

Virginia schools and states that there is a need for uniformity “not only in Institutions widely separated but among teachers in the same Institution” (1857, 138). In another response to Keep’s remarks, Peet (in Keep) refers to Deaf signers as “those to whom the language is *vernacular*” (emphasis added) and in a discussion of a class of signs described in current theory as classifier predicates states “Here is room for difference of dialects. One Deaf Mute may fall upon one sign and another upon another sign, for the same object, both natural” (1857, 144–146).

In 1875 Warring Wilkinson, principal of the California School for the Deaf in Berkeley, wrote about how “the sign language” comes about:

The deaf mute child has mental pictures. He wants to convey similar pictures to his friends. Has speech a genesis in any other fact or need? In the natural order of thought the concrete always precedes the abstract, the subject its attribute, the actor the act. So the deaf mute, like the primitive man, deals primarily with things. He points to an object, and seizing upon some characteristic or dominant feature makes a sign for it. When he has occasion to refer to that object in its absence, he will reproduce the gesture, which will be readily understood, because the symbol has been tacitly agreed upon. Another deaf mute, seeing the same thing, is struck by another peculiarity, and makes another and different sign. Thus half a dozen or more symbols may be devised to represent one and the same thing, and then the principle of the ‘survival of the fittest’ comes in, and the best sign becomes established in usage. (CSD 1875, 37)

These writings provide an indication of early awareness of sign structure and variation, although formal research on the topic did not begin until the 1960s.

Early Research on Variation in ASL

THE DICTIONARY OF AMERICAN SIGN LANGUAGE

Any review of systematic research in variation must take its departure from Carl Croneberg’s two appendices to the 1965 *Dictionary of American Sign Language (DASL)* by William Stokoe, Dorothy Casterline, and Croneberg. “The Linguistic Community” (Appendix C) describes the cultural and social aspects of the Deaf community and discusses the is-

sues of economic status, patterns of social contact, and the factors that contribute to group cohesion. These factors include the extensive networks of both a personal and organizational nature that ensure frequent contact even among people who live on opposite sides of the country. Croneberg noted that “there are close ties also between deaf individuals or groups of individuals as far apart as California and New York. Deaf people from New York on vacation in California stop and visit deaf friends there or at least make it a practice to visit the club for the deaf in San Francisco or Los Angeles. . . . The deaf as a group have social ties with each other that extend farther across the nation than similar ties of perhaps any other American minority group” (1965, 310). Croneberg pointed out that these personal ties are reinforced by membership in national organizations such as the National Association of the Deaf (NAD), the National Fraternal Society of the Deaf (NFSD), and the National Congress of Jewish Deaf (NCJD). These personal and organizational patterns of interaction, of course, are central to understanding patterns of language use and variation in ASL. Specifically, as we will discuss in more detail in chapter 3, while ASL is definitely variable at a number of different linguistic levels, there is at the same time the reality and the recognition of a cohesive community of ASL users that extends across the United States.

In “Sign Language Dialects” (Appendix D) Croneberg dealt with sociolinguistic variation, specifically as it pertains to the preparation of a dictionary. He observed, “One of the problems that early confronts the lexicographers of a language is dialect, and this problem is particularly acute when the language has never before been written. They must try to determine whether an item in the language is *standard*, that is, used by the majority of a given population, or *dialect*, that is, used by a particular section of the population” (1965, 313). He outlined the difference between what he termed *horizontal* variation (regional variation) and *vertical* variation (variation that occurs in the language of groups separated by social stratification) and stated that ASL exhibits both. He then described the results of a study of lexical variation undertaken in North Carolina, Virginia, Maine, New Hampshire, and Vermont using a 134-item sign vocabulary list. He found that for ASL, the state boundaries between North Carolina and Virginia also constituted dialect boundaries. North Carolina signs were not found in Virginia and vice versa. He found the three New England states to be less internally standardized (i.e., people within each of the three states exhibited a wide range of

variants for each item) and the state boundaries in New England to be much less important, with considerable overlap in lexical choice observed among the three states. Pointing out the key role of the residential schools in the dissemination of dialects, he stated, “At such a school, the young deaf learn ASL in the particular variety characteristic of the local region. The school is also a source of local innovations, for each school generation comes up with some new signs or modifications of old ones” (1965, 314).

In his discussion of vertical variation, Croneberg mentioned the influence of age, ethnicity, gender, religion, and status. His definition of status encompassed economic level, occupation, relative leadership within the Deaf community, and educational background. He further noted that professionally employed individuals who were financially prosperous graduates of Gallaudet College “tend to seek each other out and form a group. Frequently they use certain signs that are considered superior to the signs used locally for the same thing. Examples of such signs are Gallaudet signs, transmitted by one or more graduates of Gallaudet who are now teaching at a school for the deaf, and who are members of the local elite. The sign may or may not later be incorporated in the sign language of the local or regional community” (1965, 318).

Finally, Croneberg commented on what a *standard* sign language might be and stated that “few have paid any attention to the term *standard* in the sense of ‘statistically most frequent.’ The tendency has been to divide sign language into good and bad” (1965, 318), with older signers and educators of the deaf maintaining the superiority of their respective signs for various reasons. He neatly captured the essence of the difference between prescriptive and descriptive perspectives on language when he wrote, “What signs the deaf population actually uses and what certain individuals consider good signs are thus very often two completely different things” (1965, 319).

LEXICAL VARIATION

The years following the publication of the *DASL* witnessed a number of studies of variation in ASL. At the lexical level, for example, Woodward (1976) examined differences between African American and Caucasian signing. His data, based on a small number of signers, included both direct elicitation and spontaneous language production. He suggested that African Americans tended to use the older forms of signs (i.e., the signs that do not show evidence of phonological processes such as assimilation).

In 1984 Shroyer and Shroyer published their influential work on lexical variation, which drew on signers across the United States. They collected data on 130 words (the criterion for inclusion of a word was the existence of three signs for the same word) from thirty-eight Caucasian signers in twenty-five states. Their findings also included instances of phonological variation, but they did not discuss them as such. They collected a total of 1,200 sign forms for the 130 words, which included nouns, verbs, and some adverbs. Because this study was the point of departure for one portion of our data collection, we will review it in more detail in the chapter on lexical variation.

Other early studies of variation focused on the phonological, morphological, and syntactic levels.

PHONOLOGICAL VARIATION

In the mid-1970s Battison, Markowicz, and Woodward (1975) examined variation in thumb extension in signs such as FUNNY, BLACK, BORING, and CUTE. All of these signs may be produced with the thumb either closed or extended to the side. Thirty-nine deaf signers participated in the study. The social factors determining participant selection were gender, parental audiological status, and the age at which the signer learned to sign (before or after age six). Signers provided intuitive responses about whether they would extend their thumb in certain signs. They were also asked to sign ten sentences under three conditions: as if to a deaf friend, as if to a hearing teacher, and as if in a practice situation. In the third condition, signers were asked to practice the sentences and were videotaped doing so without their knowledge. Six internal constraints on thumb extension were reported to distinguish the signs being investigated: (1) indexicality (i.e., is the sign produced contiguous to its referent, as in a pronoun or determiner?); (2) bending of fingers (i.e., do the other fingers involved in the sign bend, as in FUNNY?); (3) middle finger extension (i.e., is the middle finger extended as part of the sign?); (4) twisting movement (i.e., does the hand twist during the production of the sign, as in BORING?); (5) whether the sign is produced on the face, as in BLACK or FUNNY; and (6) whether the sign is made in the center of one of four major areas of the body.

All of these features are what Wolfram (personal communication, 1993) would call *compositional*, that is, features of the signs themselves that may be playing a role in the variation. The analysis found that signs that were indexic, such as the second-person pronoun PRO.2 ('you'), had the most thumb extension, followed by signs with bending, such as

FUNNY. Signs produced in the center of the signing space, such as PRO.1 ('I'), had less thumb extension. The analysis found no correlation between the linguistic variation and the social factors used to select participants.

Another study of phonological variation, conducted by Woodward, Erting, and Oliver (1976), focused on face-to-hand variation—that is, certain signs that are produced on the face in some regions are produced on the hands in other regions. Such signs include MOVIE, RABBIT, LEMON, COLOR, SILLY, PEACH, and PEANUT. Deaf signers from New Orleans were compared with signers from Atlanta, and data were collected by means of a questionnaire. Results from forty-five respondents suggested that New Orleans signers produced signs on the face that Atlanta signers produced on the hands.

Phonological variation is also evident in the one-handed and two-handed form of the same sign. Woodward and DeSantis (1977b), for example, examined a subset of such signs produced on the face, including CAT, CHINESE, COW, and FAMOUS. They proposed that the features conditioning the variation included outward movement of the sign, high facial location as opposed to low facial location, and complex movement—again all compositional features. On the basis of questionnaire data, they claimed that the signs that tended to become one-handed were those with no outward movement, made in a salient facial area, produced lower on the face, and characterized by complex movement. They also reported that Southerners used two-handed forms more than non-Southerners, that older signers used two-handed signs more than younger signers, and that African American signers tended to use the older two-handed signs more often than Caucasian signers of the same age.

Finally, DeSantis (1977) examined variation in signs that can be produced on the hands or at the elbow, such as HELP or PUNISH. The analysis was based on videotapes of free conversation and on responses to a questionnaire. Data for the study were collected in France in the summer of 1975 and in the United States in the spring of 1976. Ninety-nine deaf signers participated, including 60 from France and 39 from Atlanta. The results were similar for both French and American signers. Men used the hand versions of the signs; women used the elbow versions more frequently.

MORPHOLOGICAL AND SYNTACTIC VARIATION

At the levels of syntax and morphology, Woodward (1973b, 1973c, 1974) and Woodward and DeSantis (1977a) explored the variable use of

three morphosyntactic rules: negative incorporation, agent-beneficiary directionality, and verb reduplication. *Negative incorporation* is a rule in ASL whereby negation is indicated in a verb by outward movement, as in DON'T-KNOW, DON'T-WANT, and DON'T-LIKE, as opposed to KNOW, WANT, and LIKE. *Agent-beneficiary directionality* is the term Woodward and DeSantis used for verb agreement. For example, in the verb “1st-person-GIVE-to-2nd-person,” the hand moves from the signer to a space in front of the signer; in “2nd-person-GIVE-to-1st-person,” the hand moves from a space in front of the signer to the signer. What Woodward and DeSantis refer to as *verb reduplication* entails the repetition of the movement of the verb as a function of aspect, as in STUDY-CONTINUALLY or STUDY-REGULARLY. For the study of these three rules, data were gathered from 141 signers (132 Caucasian and nine African American signers). Other social variables included whether the signer was deaf (i.e., some signers were hearing, non-native signers), whether the signer's parents were deaf, the age at which sign language was learned, whether the signer attended college, and gender. Signers were shown examples of the linguistic variables in question and asked to indicate on a questionnaire whether they use the forms presented. The overall results showed that deaf signers who had learned to sign before age six and who had deaf parents used the form of the rules being investigated that more closely reflected ASL structure. Internal linguistic constraints are reported only for agent-beneficiary directionality: Woodward proposed a continuum of semantic features ranging from “extremely beneficial” to “extremely harmful” to account for the variation. His continuum predicts that signs such as GIVE (beneficial) will tend to show directionality, whereas signs such as HATE (harmful) will not.

D I A C H R O N I C V A R I A T I O N

Any review of research on variation in ASL must also include Frishberg's 1976 study of historical development in ASL signs. Frishberg compared signs from earlier stages of ASL and from French Sign Language with present-day usage in ASL to demonstrate that changes have occurred in sign formation. Although Frishberg's study is usually viewed as a historical study, it pertains directly to the study of variation in ASL for two related reasons, one general and one specific. The general reason is that historical change manifests itself first in the form of variation. That is, historical change does not occur from one day to the next. Rather, it normally begins as variation, that is, with “different ways of saying the

same thing,” and those ways may involve sounds, parts of signs, or grammatical structures coexisting within the language of an individual or community. As mentioned earlier, the focus of variation studies is what Weinreich et al. called “orderly heterogeneity” (i.e., a heterogeneity that is not random but rather is governed by internal and external constraints). Moreover, as James Milroy remarked, “In the study of linguistic change, this heterogeneity of language is of crucial importance, as change in progress can be detected in the study of variation” (1992, 1). In some cases, the variation may become stabilized and continue indefinitely, while in other cases it eventually gives way to the use of one form to the exclusion of the other (or others) in question. Viewed across the broad landscape of history, it may be difficult to see the variation that gives rise to large-scale historical changes, such as the change from Old English to Middle English to Modern English or the changes in Romance languages as they developed from Latin. However, a closer look reveals that change does not happen suddenly and that the transition from one period to the next is characterized by considerable synchronic variation. We expect this to be the case for sign languages as well. In addition, we suspect that the historical changes that Frishberg described first manifested themselves as synchronic variation.

The second reason for the pertinence of Frishberg’s study to the study of variation is that the processes resulting in the historical change that Frishberg described are still operative in the language today. Therefore, an understanding of the processes involved in language change will help us predict what kind of variation we can expect to find in our data:

Signs which were previously made in contact with the face using two hands now use one, whereas those which have changed from one-handed articulation to two-handed are made without contact on the face or head. Signs which use two hands tend to become symmetrical with respect to the shape and movement of the two hands. . . . As part of a general trend away from more “gross” movement and hand-shapes toward finer articulation, we find the introduction of new movement distinctions in particular signs, the reduction of compound forms to single sign units, a decreased reliance on the face, eyes, mouth, and body as articulators, and a new context-dependent definition of “neutral” orientation. (1976, xvii)

Frishberg also found that (1) the signs that change from two hands to one are also typically displaced (i.e., change their location from the center

of the face and/or from contact with the sense organs to the periphery of the face); and (2) signs that change from one hand to two hands tend to centralize by moving toward what Frishberg called the *line of bilateral symmetry* (an imaginary line that runs vertically down the center of the signer's head and torso) and up toward the hollow of the neck. These findings help direct our analysis and determine what to look for. They are also important because they are described as examples of historical change in ASL. The examples of historical change are particularly relevant to the research described in this volume because our data reveal variation between two-handed and one-handed versions of signs, between centralized and noncentralized versions, and between displaced and nondisplaced versions. It appears that some aspects of what Frishberg characterized as historical change, implying perhaps that the change was complete, may be better characterized as change in progress.

Recent Research on Variation in ASL

In recent years the amount of research on variation in ASL and other sign languages has increased substantially. This body of work includes studies of variation at all linguistic levels, from features of individual segments to discourse units. Here we discuss representative studies of variation focusing on different linguistic levels.

LEXICAL VARIATION

The work on lexical variation in ASL is quite extensive. In addition to general studies of lexical variation such as that by Shroyer and Shroyer discussed in the previous section, the literature contains small-scale studies of various social and occupational categories, most of which were undertaken in the 1990s. Researchers have looked at gender differences (Mansfield 1993), differences in the use of signs for sexual behavior and drug use (Woodward 1979, 1980; Bridges 1993), variation related to socioeconomic status (Shapiro 1993), and lexical variation in the signing produced by interpreters for deaf-blind people (Collins and Petronio 1998). (Readers should note that lexical variation has been explored in sign languages other than ASL—see for example Deuchar 1984, Woll 1981, and Kyle and Woll 1985 on British Sign Language; Collins-Ahlgren 1991 on New Zealand Sign Language; Schermer 1990 on Dutch Sign Language; Boyes-Braem 1985 on Swiss German Sign Language and

Swiss French Sign Language; Radutzky 1992 on Italian Sign Language; LeMaster 1990 on Irish Sign Language; Yau and He 1990 on Chinese Sign Language; and Campos 1994 on Brazilian Sign Language).

PHONOLOGICAL VARIATION

Variation at the phonological level has received considerable attention in recent years. Metzger (1993), for example, looked at variation in the handshape of second- and third-person pronouns, which can be produced either with the index finger or with an S handshape with the thumb extended. Metzger's data yielded one example of the thumb variant and one unexpected variant—the fingerspelled pronoun *s-h-e*. There is some indication that the sign that precedes the thumb variant, *AGO*, with its extended thumb, may play a role in the occurrence of the thumb variant.

Lucas (1995) studied variation in location in *DEAF*. In its citation form (that is, the form of the sign that appears in sign language dictionaries and is most commonly taught to second-language learners), the 1 handshape moves from a location just below the ear to a location on the lower cheek near the mouth. However, this sign is commonly produced with movement from the chin location to the ear location or simply with one contact on the lower cheek. Observation might suggest that the final location of the sign (chin or ear) would be governed by the location of the preceding or following sign, so that *DEAF* in the phrase *DEAF FATHER* might be signed from chin to ear because the location of the following sign is the forehead, higher than the ear. Similarly, in *DEAF PRIDE*, one might expect that *DEAF* would be signed from ear to chin because the sign that follows *DEAF* begins below the chin.

Contrary to what we might expect, Lucas's analysis (based on 486 examples produced by native signers in both formal and informal settings) using the VARBRUL statistical program (described in chapter 2) indicated that the location of the following and preceding signs did not have a significant effect on the choice of a variant of *DEAF*. Rather, the key factor is the syntactic function of the sign itself, with adjectives being most commonly signed from chin to ear or as a simple contact on the cheek, and predicates and nouns being signed from ear to chin. Lucas's 1995 study is the foundation for the analysis of *DEAF* in chapter 4.

Pinky extension formed the subject of a recent investigation by Hoopes (1998), who studied in detail the signing of one native signer.

Some signs that in citation form have a handshape in which the pinky is closed and not extended variably allow the extension of the pinky. Examples include *THINK*, *LAZY*, and *CONTINUE*. Hoopes found that pinky extension seems to cooccur with the prosodic features of ASL that indicate stress. Specifically, in Hoopes's study, pinky extension tended to occur with signs often repeated throughout a topic, before pauses, and with signs lengthened to almost twice their usual duration. Neither topic nor the handshape of the preceding or following sign seemed to have a bearing on the occurrence of pinky extension. This finding parallels Lucas's conclusion about the relative lack of importance of the location of the preceding or following sign. In both cases the phonological factors that one might assume are playing a role—location in the case of *DEAF* and handshape in the case of pinky extension—in fact do not seem to be conditioning the variation. This is an observation that bears reexamination.

The final recent study of phonological variation we discuss here is Kleinfeld and Warner's (1996) examination of ASL signs used to denote gay, lesbian, and bisexual persons. Thirteen hearing interpreters and 12 deaf ASL users participated in the study. Kleinfeld and Warner focused on 11 lexical items and provided detailed analysis of phonological variation in two signs, *LESBIAN* and *GAY*. The analysis showed that the variation can be correlated to some extent with external constraints such as the signer's sexual identity (straight or gay/lesbian).

THE ALTERNATION OF FINGERSPELLING AND LEXICAL SIGNS

Blattberg et al. (1995) examined a subset of the data from the project described in this book. Specifically, they compared middle-class groups aged 15–25 and 55 and up from Frederick, Maryland, and Boston (see data from the project described in this book). They found that both groups of adolescents used fingerspelling in either full or lexicalized forms and that fingerspelling was produced in the area below the shoulder generally used for fingerspelling. The adolescents used fingerspelling primarily for proper nouns and for English terms that do not have ASL equivalents. The adults also used fingerspelling for these purposes, but their use of it also resembled the use of locative signs. In addition, Maryland adults and adolescents used finger-spelling much more frequently than their counterparts in Massachusetts.

D I S C O U R S E

Recently scholars have begun to investigate variation in ASL discourse. Haas, Fleetwood, and Ernest (1995) examined back channeling, turn-taking strategies, and question forms in conversations between Deaf-Blind individuals, comparing them to the same features in sighted ASL signing. They found that “in the tactile mode, Deaf-Blind signers use remarkably similar turn-taking and turn-yielding shift regulators as Deaf-sighted signers” (130). Touch is often substituted for eye-gaze, and “turn-yielding often uses a combination of dominant and nondominant hands in yielding to the addressee. The dominant hand rests and the non-dominant hand moves to ‘read’ the signer’s dominant hand. Turn-claiming occurs with the dominant hand of the addressee repeatedly touching or tapping the nondominant hand of the signer until the signer yields and moves their nondominant hand to the ‘reading’ position.” In this particular study, none of the question forms found seemed unique to tactile ASL. Collins and Petromio (1998) found that for yes/no questions, non-manual signals that in sighted ASL include the raising of the eyebrows in Deaf-Blind signing are conveyed manually as either an outward movement of the signs or a drawn question mark.

Malloy and Doner (1995) examined variation in cohesive devices in ASL discourse and explored gender differences in the use of these devices. Specifically, they looked at reiteration and expectancy chains. *Reiteration* is one type of lexical cohesion that “involves the repetition of a lexical item, at one end of the scale; and a number of things in between—the use of a synonym, near-synonym, or superordinate” (Halliday and Hasan 1976, 278). *Expectancy chains* have to do with the fact that, in discourse, certain words or phrases are expected to follow certain others. The predictability of their order creates cohesion. In their analysis of the use of reiteration and expectancy chains in the retelling of a story by two native signers (one male and one female), Malloy and Doner found that the male signer used reiteration more frequently than the female signer but that the signers were similar in their use of expectancy chains.

R E S E A R C H O N A F R I C A N A M E R I C A N S I G N I N G

African American signing has been the object of several recent investigations. Studies include Aramburo (1989), Guggenheim (1993), Lewis, Palmer, and Williams (1995), and Lewis (1996). Aramburo and Guggenheim observed lexical variation during the course of structured but informal interviews. Lewis et al. (1995) studied the existence of and

attitudes toward African American varieties. Specifically, they described the differences in body movement, mouth movement, and the use of space in the signing of one African American signer who codeswitched during the course of a monologue. In addition, they explored how interpreters handled the codeswitching in spoken language from Standard English to African American Vernacular English (AAVE). Lewis (1996) continued the examination of African American signing styles in his paper on the parallels between communication styles of hearing and deaf African Americans. His investigation took its departure from two observations: first, ASL users recognize the existence of what is often referred to as “Black signing” but have difficulty in explaining what makes it Black; second, uniquely Black or “ebonic” (Asante 1990) kinesic and nonverbal features exist, and these features occur in the communication of both hearing and Deaf African Americans. His investigation described some of these kinesic and nonverbal features—specifically, body postures and rhythmic patterns accompanying the production of signs—in the language that a deaf adult African American woman used. The frequently articulated perspective that African American signing differs markedly from Caucasian signing in all areas of structure—and not just lexically—is thus beginning to be explored.

Perspectives on the Structure of Sign Languages

To understand variation in ASL, we also need to consider the changing perspectives on the basic structure of ASL and of sign languages in general. Current thinking about the linguistic structure of sign languages sheds new light on some of the earlier studies. At the same time, advances in our understanding of sign languages raise important issues for the analysis of the data we describe in this book. For example, the perspective on the fundamental structure of signs has changed dramatically since the earliest studies of variation. Stokoe’s perspective, which shaped sign language studies from 1960 until fairly recently, held that signs are composed of three basic parts or *parameters* (the location at which the sign is produced, the handshape, and the movement of the sign) and that, unlike the sequentially produced segments of spoken languages, these parts are produced simultaneously. In a more recent perspective developed by Liddell (1984) and Liddell and Johnson (1989), signs are viewed as composed of movement and hold segments, sequentially produced, somewhat analogous to the consonants and vowels of spoken languages.

In this model, the handshape, location, orientation, and nonmanual signals constitute a bundle of articulatory features that are a part of each movement or hold segment. Currently there is considerable debate about the nature of the segments in question (see e.g., Coulter 1992, Sandler 1992, and Perlmutter 1992). We have chosen to work within the Liddell-Johnson framework because, as Liddell (1992) amply demonstrates, it allows not only for an accurate account of the description of any individual sign but also for an accurate account of phonological processes such as assimilation, metathesis, epenthesis, and segment deletion, processes that play central roles in variation.

Naturally, a central concern of any variation study is to define clearly the linguistic variables under examination and to ensure that they are indeed variable. Current thinking about the linguistic structure of sign languages and about data collection methodology (we address the latter in chapter 2) has implications for the identification of variables in the earlier studies of sign language variation. It is not clear, for example, that the rules of negative incorporation, agent-beneficiary directionality, and verb reduplication in Woodward's (1973b, 1973c, 1974) studies are actually variable in native signer ASL. The apparent variability of these rules merits reexamination because the variability observed may simply have been an artifact of combining data from native and non-native signers. For example, in terms of the semantic continuum proposed for agent-beneficiary directionality (from signs that have "beneficial" connotations to those that have "harmful" connotations), directionality may be obligatory in most of the verbs in question and unrelated to semantic considerations. It is basically the way in which agreement is shown with the subject and the object of the verb and is not optional. Failure to use space properly in these verbs would seem to result not in a variable form but in an ungrammatical one. Although the semantic categorization does seem to work for some verbs (e.g., "beneficial" for GIVE and "harmful" for HATE), it does not work at all for others. For example, it is not clear at all why FINGERSPELL would be labeled as "harmful." It may be that at the time of the study, FINGERSPELL as an agreement verb was an innovation and hence not widely attested, placing it at the "less frequent use of directionality" end of the continuum. But FINGERSPELL cannot therefore be said to have a semantic characteristic of "harmful," the researchers' account of this end of the continuum that they set up.

In summary, research undertaken since the 1960s has provided us

with a great deal of information about variable phenomena in ASL and other sign languages, and advances in our understanding of sign language structure have enabled us to define variable forms in a more precise manner. We have gained some idea of the geographic distribution of lexical items and the ways in which social factors such as ethnicity and sexual orientation are likely to influence a signer's choice of a lexical variant. The literature also contains a number of detailed studies of variation at different linguistic levels. As we have noted, however, most of the studies undertaken to date have been rather small-scale, and, aside from Lucas (1995), not many have taken full advantage of the methods and theoretical insights that quantitative sociolinguistics offers, in some cases simply because these methods and insights were not available for earlier studies. The result is that, although we have sufficient evidence to suggest that variation in ASL and other sign languages is systematic and subject to multiple internal and external constraints, we lack a sufficient basis for comparing variation in spoken and sign languages or for comparing variation in ASL as used by signers of diverse social categories in different regions. This study draws upon previous work on the sociolinguistics of sign languages as well as recent theoretical proposals about the nature of sign language structure that have a direct bearing on the identification and description of variables and constraints. These two strands of research, combined with the extensive body of work on variation in spoken languages, inform the current study, which systematically examines variation in ASL as used in representative Deaf communities in seven regions of the United States.

In the following section we consider in more detail the nature of linguistic variables and constraints in both spoken and sign languages.

VARIABLES AND CONSTRAINTS

In this section we first summarize current knowledge about variables and constraints in spoken languages. We begin by describing the kinds of units that can vary in spoken languages.

Linguists generally accept that spoken languages are composed of segments of sound produced by the vocal apparatus and that these segments are themselves composed of a variety of features. In spoken languages whole segments or features of segments may be variable. For example, a

final voiced consonant in a word may be devoiced, a non-nasal vowel may acquire the feature of nasalization, and vowels may vary from their canonical position and be raised or lowered within the vowel space.

A new segment may also be created from the features of other segments, as often happens in palatalization. Individual segments may be variably added or deleted, and syllables (i.e., groups of segments) can be added or deleted. Parts of segments, whole segments, or groups of segments can also be variably rearranged, as we see with metathesis in English. It is also important to note that variable whole segments may be bound morphemes. For example, the sound [t] that can be variably deleted when it occurs in word-final consonant clusters, as in the word “missed” [mist], is also a past-tense morpheme. What is variably deleted in this case is not simply a segment, but a morphemic segment.

Word-sized combinations of segments and combinations of words are also variable. With lexical variation we see variation in word-sized segments, where separate morphemes denote the same concept, and use of these separate morphemes correlates with region, ethnicity, gender, and other nonlinguistic categories. But we may also see syntactic variation characterized by the deletion of whole morphemes or by the variable position of whole morphemes.

We also see variation in units of discourse (i.e., units consisting of many words), as in variation in text type or in lists used in narratives (Schiffrin 1994). We see, then, that what varies in spoken languages may range from the features of a segment to a discourse unit that consists of many segments, from the very smallest unit we can identify to the largest.

We can then talk about the kinds of processes that are involved in spoken language variation. Our discussion here takes its departure from Wolfram’s (1991b) work on variation in spoken languages. One set of processes involved in variation has to do with the phonological component of a language. For example, variation may be the result of the process of assimilation, such as vowel nasalization or consonant gemination. Variation may result from weakening, as in vowel or consonant deletion. We may see variation resulting from the processes of substitution or addition of elements, as with *coalescence* (the creation of a new segment from two other segments), *metathesis* (the rearranging of the order of segments or features of segments), or *epenthesis* (the addition of a segment). Variation may result from analogy, as in the generalization of third-person singular –s to all present-tense forms of an English verb, or

conversely, the deletion of third-person singular -s by analogy with all other verb forms in a given paradigm.

Other processes involved with variation may have to do with the morphosyntactic structure of a language. For example, variation may have to do with the process of the cooccurrence of items in syntactic structure. Negative concord in English is one example, whereby some varieties allow the cooccurrence of more than one negative element while other varieties disallow such cooccurrence. Another process involved in variation at the syntactic level concerns the permutation of items within sentences. The variable placement of English adverbs is a well-known example.

This brings us to a consideration of the internal constraints on spoken-language variation. Recall that internal constraints on variation are features within the immediate linguistic environment that may influence a language user's choice of one or another variable form. Wolfram (1991b) states that the internal constraints on variables may be compositional, sequential, functional, or the result of structural incorporation. *Compositional constraints* have to do with the linguistic nature of the variable itself. For example, Wolfram (1989) studied final nasal absence in the speech of three-year-old African American children. He found that final alveolar nasals were much more likely to be absent than either velar or bilabial nasals. A *sequential constraint* has to do with the role of an element occurring in the same sequence as the variable, either preceding or following it. For example, the final consonant in a word-final consonant cluster is more likely to be deleted if the following segment is another consonant than if it is a vowel. *Functional constraints*, also known as *grammatical category constraints*, relate to the linguistic function of the variable. For example, as explained in the preceding paragraph, the final consonant in a word-final consonant cluster may function as a past-tense morpheme. Finally, the constraint of *structural incorporation* has to do with the syntactic environment in which a variable occurs. For example, copula deletion in AAVE is more likely in a construction with *gonna* (e.g., *He's gonna do it/He Ø gonna do it*) than in one in which the copula is followed by a noun phrase (e.g., *He's my brother/He Ø my brother*.)

External constraints on variation include demographic factors such as region, age, race, gender, and socioeconomic level, all factors that have been shown to covary with linguistic factors. *Covariance* here means that a correlation can be observed between the behavior of a linguistic factor

and social factors. For example, working-class speakers may exhibit a greater incidence of the use of a variable than middle-class speakers. African American speakers may use a particular variable less frequently than Caucasian speakers. These correlations capture the sociolinguistic nature of the variation. Earlier studies of both spoken and sign languages focused on a fairly limited inventory of demographic factors such as those listed earlier. However, as Wolfram points out, more recent studies have focused on the nature of communication networks (L. Milroy 1980), the dynamics of situational context (Biber and Finegan 1993), and the projection of social identity (LePage and Tabouret-Keller 1985) “in an effort to describe more authentically the social reality of dialect in society” (Wolfram 1997, 116). That is, researchers have realized that the external constraints on variation are more complex than they thought. There may be more discrete factors such as region and socioeconomic level, but other factors such as who a person interacts with on a daily basis and a person’s desire to project a particular identity to others may also play a central role in constraining variation.

WHAT WE EXPECTED TO FIND BASED ON WHAT WE KNEW

We can now turn our attention to what we expected to find in our analysis of the data based on what we knew about variation in both spoken and sign languages. First we consider the kinds of linguistic units we expect to be variable in sign languages.

Table 1.1 provides a comparison of variability in spoken and sign languages. We can see that, at this point, we can expect to find the same kinds of variability in sign languages that pertain to spoken languages. Specifically, the features of the individual segments of signs can vary. In spoken languages, a vowel may become nasalized or a consonant may be devoiced, for example. In sign languages, the handshape, the location, and the palm orientation may vary. Pinky extension and thumb extension in 1 handshape signs (PRO.1 ‘I,’ BLACK, FUNNY) are examples of handshape variation, while signs such as KNOW and SUPPOSE provide examples of location variation because they can be produced at points below the forehead. Individual segments may be deleted or added. Spoken languages do this with consonant cluster reduction at the ends of words such as *west* or *find*, pronounced as *wes'* and *fin'*. In sign languages, movement segments may be added between holds (as in the

TABLE 1.1 Variability in Spoken and Sign Languages

Variable Unit	Example	
	Spoken Languages	Sign Languages
Features of individual segments	Final consonant devoicing, vowel nasalization, vowel raising and lowering	Change in location, movement, orientation, handshape in one or more segments of a sign
Individual segments deleted or added	-t,d deletion, -s deletion, epenthetic vowels and consonants	Hold deletion, movement epenthesis, hold epenthesis
Syllables (i.e., groups of segments) added or deleted	Aphesis, apocope, syncope	First or second element of a compound deleted
Part of segment, segments, or syllables rearranged	Metathesis	Metathesis
Variation in word-sized morphemes or combinations of word-sized morphemes (i.e., syntactic variation)	Copula deletion, negative concord, <i>avoir/être</i> alternation, lexical variation	Null pronoun variation, lexical variation
Variation in discourse units	Text types, lists	Repetition, expectancy chains, deaf/blind discourse, turn taking, back channeling, questions

phrase MOTHER STUDY), or hold segments may be deleted between movements (as in the phrase GOOD IDEA). Groups of segments (i.e., syllables) can be deleted. The English words *because* and *supposed (to)* are sometimes pronounced as '*cause*' and '*posed to*'. The first element of a sign compound, such as WHITE in the compound sign WHITE-FALL ('snow') is often deleted. In fact, many signers are not even aware that the first element is part of the standard form.

Other processes are also involved in variation. Parts of segments, segments, or syllables can be rearranged. English speakers sometimes pronounce the word *hundred* as *hunderd*, for example. In sign languages this same process can be seen in the location feature of DEAF. That is, the sign may begin at the ear and end at the chin or vice versa. Everything

else about the sign is the same, but the location feature is rearranged. And there can of course be variation in word-sized morphemes, otherwise known as lexical variation, and in combinations of word-sized morphemes (i.e., syntactic variation). As mentioned, variation has also been described in bigger units, that is, in the units of discourse. The one kind of variation that we have not seen in sign languages yet is coalescence, whereby a new segment is created from the features of other segments. We see this in English, for example, when the sound *sh* is created by the interaction between *s* and *y* in the sentence ‘I miss you.’ Frequently in conversation, *sh* is created and the original segments disappear.

In addition, although we assumed that syntactic variation exists, we were not certain at the beginning of our study what it would look like. Woodward (described earlier) claimed that there was variation in three syntactic rules (what he referred to as agent-beneficiary agreement, verb reduplication, and negative incorporation). However, the data upon which the claim is based combine the signing of native and non-native signers. In our chapter on syntactic variation, we describe the syntactic variation that we see on the data tapes with a particular focus on variable subject presence with plain verbs. Variable subject presence is of particular interest because, in addition to the many verbs in ASL in which the pronominal information is incorporated into the structure of the verb (as in *GIVE* or *FLATTER*), there are many so-called plain verbs (Padden 1988) such as *LIKE* or *KNOW* that would seem to require the production of separate signs for subject and object. However, as mentioned earlier, ASL seems to be a “*pro-drop*” language, that is, the subject and object pronouns that accompany plain verbs seem to be variably deleted. We explore this deletion and try to discover what governs it.

Finally, in considering what kinds of units can be variable, we have noticed two kinds of variability that seem to be artifacts of a language produced with two identical articulators (i.e., two hands as opposed to one tongue). That is, sign languages allow the deletion, addition, or substitution of one of the two articulators. Two-handed signs become one-handed (*CAT*, *COW*), one-handed signs become two-handed (*DIE*), and a table, chair arm, or the signer’s thigh may be substituted for the base hand in a two-handed sign with identical handshapes (*RIGHT*, *SCHOOL*). In addition, one-handed signs that the signer usually produces with the dominant hand (i.e., the right hand, if the signer is right-handed) can be

signed with the nondominant hand. Variation is also allowed in the relationship between articulators, as in HELP, produced with an A handshape placed in the upward-turned palm of the base hand. Both hands can move forward as a unit, or the base hand can lightly tap the bottom of the A handshape hand.

Expectations of Variable Processes

Table 1.2 shows that the same kinds of processes that pertain to spoken language variation also pertain to sign language variation: assimilation, weakening, substitution and addition, and analogy. We see *assimilation*, for example, when a 1 handshape in PRO.1 (first-person pronoun, 'I') becomes an open 8 handshape in the phrase PRO.1 PREFER ('I prefer'). We see *weakening* when holds are deleted or when a two-handed sign becomes one-handed, as in CAT or COW. *Substitution* occurs when a table top or the signer's knee is substituted for the base hand of a two-handed sign or in the version of DEAF that begins at the chin and moves to the ear, as opposed to beginning at the ear and moving to the chin. *Addition* occurs when movements are added between holds. Finally, the process of *analogy* takes place when a one-handed sign becomes two-handed.

In terms of morphosyntactic variation, we expected to find variation in cooccurrence relations, as found in spoken languages. Recall the example of the cooccurrence of negative items for spoken English. In some varieties of American English, a sentence such as *Ain't nobody seen nothing like that before*, with three negative items cooccurring, is acceptable, while the sentence *No one has seen anything like that before*, with only one negative element, is preferable in other varieties. We are not exactly sure what variable cooccurrence relations might look like in ASL, but a possible candidate for investigation is the cooccurrence of nonmanual signals with lexical signs or with morphological or syntactic units. For example, must a given nonmanual signal such as the mouth configuration in NOT-YET cooccur with the manual sign? Is there any variation in the morphological and syntactic nonmanual signals that occur with manual adverbs and sentences? Another kind of morphosyntactic variation concerns the fact that certain items, such as adverbs in English, can occur in different positions in a sentence. The adverb *quickly*, for example, can occur as follows: *Quickly John ran to the door; John quickly ran to the door; John ran quickly to the door;*

TABLE 1.2. *Variable Processes in ASL: Expected Findings*

Process	Examples	
	Spoken	Signed
Assimilation	Vowel harmony, consonant harmony, gemination, nasalization	Assimilation in handshape, location, orientation
Weakening	Deletion: CC reduction, haploglossy, aphesis, syncope, apocope; vowel reduction	Hold deletion; deletion of one articulator; deletion of first or second element of a compound
Substitution, addition	Coalescence, metathesis, epenthesis	Metathesis; epenthetic movement; substitute hand base
Analogy	3rd person sing. -s	Add second hand to one handed sign
Concerning morphosyntactic structures:		
Cooccurrence relations	Negative concord	Possibly nonmanual signals
Item permutation	Adverb placement	Possibly placement of interrogative words

John ran to the door quickly. Again, item permutation in ASL, and specifically the placement in sentences and the repetition of interrogative signs (WHO, WHERE, WHAT, WHEN, WHY, FOR-FOR), is an area that requires exploration.

Table 1.3 summarizes the internal constraints on variable units.

Earlier studies of variation in ASL focused on compositional constraints. That is, the variation was seen to be conditioned by some feature of the variable sign itself, as described earlier in Battison, Markowicz, and Woodward (1975). Sequential constraints are those that have to do with the immediate linguistic environment surrounding the variable, such as the handshape or palm orientation of the sign immediately preceding or following the variable sign, as we see with 1 handshape signs. Grammatical category constraints have to do with the role that the sign's grammatical category plays in the variation, as seen in Lucas (1995). The constraint of structural incorporation has to do with the preceding or following syntactic environment surrounding the variable. We will be considering structural incorporation as a constraint as we try to under-

TABLE 1.3. *Internal Constraints on Variable Units*

Constraint	Example	
	Spoken	Signed
Compositional	Phonetic features in nasal absence in child language	Other parts of sign in question (e.g., handshape, location, orientation)
Sequential	Following consonant, vowel, or feature thereof	Preceding or following sign or feature thereof
Functional	Morphological status of -s in Spanish -s deletion	Function of sign as noun, predicate, or adjective
Structural incorporation	Preceding or following syntactic environment for copula deletion	Syntactic environment for pronoun variation?
Pragmatic	Emphasis	Emphasis (e.g., pinky extension)

stand what conditions the variable subjects in plain verbs (e.g., PRO.1 LIKE vs. [PRO.1] LIKE). Finally, pragmatic features may act as constraints. Hoopes (1998), for example, found that the lengthening of a sign for emphasis played a role in the occurrence of pinky extension. Emphasis is a *pragmatic factor*, a feature chosen by the signer in a particular context to convey a particular meaning. It is not an inherent feature of the sign.

The results of Lucas's (1995) and Hoopes's (1998) studies of DEAF and of pinky extension show us that the analysis of internal constraints on variation in ASL needs to proceed with caution because the identification of such constraints is not always completely straightforward. Although casual observation might suggest the presence of phonological constraints, further examination might well reveal functional constraints (as in the case of DEAF) or pragmatic ones (as in the case of pinky extension). Furthermore, a possible fundamental difference between sign language variation and spoken language variation is emerging from the analysis of internal constraints. This difference relates to the fact that variation in spoken languages is for the most part a *boundary phenomenon*—that is, a phenomenon that affects linguistic segments that occur in sequence, segments occurring at the boundaries of larger units (i.e., words). And as Wolfram (1974) and Guy (1991a) have found, one constraint on -t,d deletion in English, for example, was whether the -t or -d in question was a past-tense morpheme, that is, an affix.

It is now beginning to be clear that sign languages make considerably less use of affixation than do languages such as English, Italian, or Spanish. In sign languages, deletable final segments may not be morphemes in the same way that they are in many spoken languages. The past-tense marking accomplished by the *-t* or *-d* in English is accomplished in different ways in ASL. Similarly, verb agreement is not accomplished by affixation as in many spoken languages. Rather, agreement is accomplished by a change in the location and/or palm orientation feature of one segment of a sign. There are many agreement verbs in ASL, and there are also *plain verbs* (i.e., verbs that do not allow agreement to be incorporated into the location or orientation feature of the verb and that require separate lexical signs for subject and object). There is some anecdotal evidence for plain and agreement variants of the same verb—for example, CALL-ON-TELEPHONE. But because verb agreement is not accomplished by the sequential affixation of morphemes, the internal constraints on such variation will have nothing to do with the sequential occurrence of morphemes, as it does in Caribbean Spanish, for example, with final *-s* aspiration or final *-s* deletion in verbs. Clearly, we will most likely have to search elsewhere in the linguistic environment for some of the internal constraints on variation.

In summary, based on our review of studies of variation in ASL and what we knew about variation in spoken languages, we expected to find variable linguistic units in ASL, parallel to the variable linguistic units in spoken languages. We also anticipated finding variable processes in ASL parallel to the variable processes in spoken languages, and we expected to find internal constraints on the variable units. However, we expected these constraints to reflect the structure of sign languages, different in fundamental ways from the structure of spoken languages, and indeed this turned out to be the case, as we show in chapters 4, 5, and 6. Not all internal constraints on sign language variables parallel the constraints on spoken language variables.

Finally, all aspects of the variation in our data—phonological, morphosyntactic, and lexical—are examined for correlation with external constraints such as region, age, gender, ethnicity, and socioeconomic status. This informs us as to gender, age, and regional differences and allows us to begin to construct the comprehensive picture of sociolinguistic variation in ASL that was the original goal of the project. It allows us to see how variation is distributed in the community and to begin to formulate an empirical response to the perceptions that

“grassroots” Deaf people sign differently from middle-class Deaf people or that “Black ASL” differs from what is produced by White signers. Will noncitation 1 handshape (e.g., all fingers open) prove to be more prevalent among male signers than among female signers? Will the chin-to-ear variant of DEAF be more common among working-class signers than among middle-class signers? Will younger signers produce more pro-drop than older signers? Are these examples of stable variation, or is there change underway toward noncitation 1 handshape, chin-to-ear, and pro-drop? These are the kinds of questions that we hope to answer.

In addition, there may be external constraints unique to the Deaf community to which we need to pay attention. For example, we know that some ASL users are raised in deaf families as native users of the language, whereas many are raised in hearing families in which ASL may not be used. Family background may help us understand the variation we observe. Furthermore, the development of residential schools for deaf people and of policies of language use in those schools have had a direct impact on language use in the Deaf community. The history of these developments needs to be considered in any examination of sociolinguistic variation in ASL. We examine this history in chapter 3, but first we describe the methodology of the project that is the focus of this book.

Collecting and Analyzing an ASL Corpus

The study of language variation requires that we collect and analyze data from a representative sample of the community whose language we are studying. In this chapter we describe how we accomplished these goals. Specifically, we describe the selection of the communities where the research was carried out, participant selection, the role of community-based contact people in data collection, and the procedures we used to gather data on ASL as it is used across the United States. We also discuss the selection of linguistic variables and the statistical procedures we used to analyze the data.

To examine sociolinguistic variation in ASL, we needed to create a large videotaped corpus representative of the language as it is used across the United States. The creation of a videotaped corpus immediately raises the question of what is representative of ASL use. The American Deaf population is linguistically diverse and comprised of numerous Deaf communities. However, as Croneberg pointed out in 1965, despite the diversity, there is definitely a shared sense of ASL as a language used by Deaf people all across the country. Accompanying this shared sense are shared perceptions that signing varies from region to region, that African American signers sign differently from Caucasian signers, and that there exists a “Black ASL” (Aramburo 1989; Lewis 1996). Many in the U.S. Deaf community also believe that younger signers sign differently from older signers, that men differ from women in their signing, and that working-class Deaf people sign differently from middle-class Deaf professionals as a function of social class. The challenge for the project, then, was to capture on videotape ASL signing that would be representative of the regional, ethnic, age, gender, and socioeconomic diversity within the American Deaf community.

COMMUNITIES, LOCAL CONTACTS, AND PARTICIPANTS

The Communities

To obtain a representative sample of regional variation, we selected seven sites: Staunton, Virginia; Frederick, Maryland; Boston, Massachu-

setts; Olathe, Kansas; New Orleans, Louisiana; Fremont, California; and Bellingham, Washington. The Kansas site included some signers from Kansas City, Missouri; the Fremont site included some signers from San Jose; and the Boston site included young signers at the Learning Center for Deaf Children in Framingham. All of these sites have thriving communities of ASL users. In addition, Staunton, Frederick, Boston, Fremont, and Olathe are the sites of residential schools for deaf children, all with long-established surrounding Deaf communities. A basic motivation in the selection of the sites was to represent major areas of the country—northeast, east, south, midwest, west, and northwest. Because Staunton and Frederick are within driving distance of Washington, D.C., the site of Gallaudet University, where the project was based, they served as the pilot sites. In the late summer and early fall of 1994, we tested and refined the data collection methodology before implementing it in the other five sites. Data were collected in Boston in January 1995; in Kansas City and Olathe in May 1995; in Fremont and Bellingham in June 1995; and in New Orleans in September 1995.

Participant Selection

It is well known that Deaf people in the United States have many different kinds of backgrounds. Because our focus is on sociolinguistic variation in ASL, we set out to recruit native or near-native ASL users, including deaf individuals from Deaf families who learned to sign natively in the home as well as deaf individuals who learned to sign before age 5 or 6 from their peers in residential schools. Because we wanted to control for the effects of late and second-language acquisition as much as possible, we did not recruit individuals who, while competent adult users of ASL, learned to sign as adolescents either because of lack of exposure to the language or because they were born hearing and were native speakers of English before being deafened.

Our sample included both Caucasian and African American signers in four sites: Boston, New Orleans, Kansas and Missouri, and California. The goal was to gather empirical evidence of the differences that signers feel exist between the signing of African Americans and Caucasian. Although Latino, Asian, and Native American Deaf communities can be found in various areas of the United States, we did not recruit participants from these communities for two reasons. The first reason is practical. The time for data collection was limited and did not allow us to

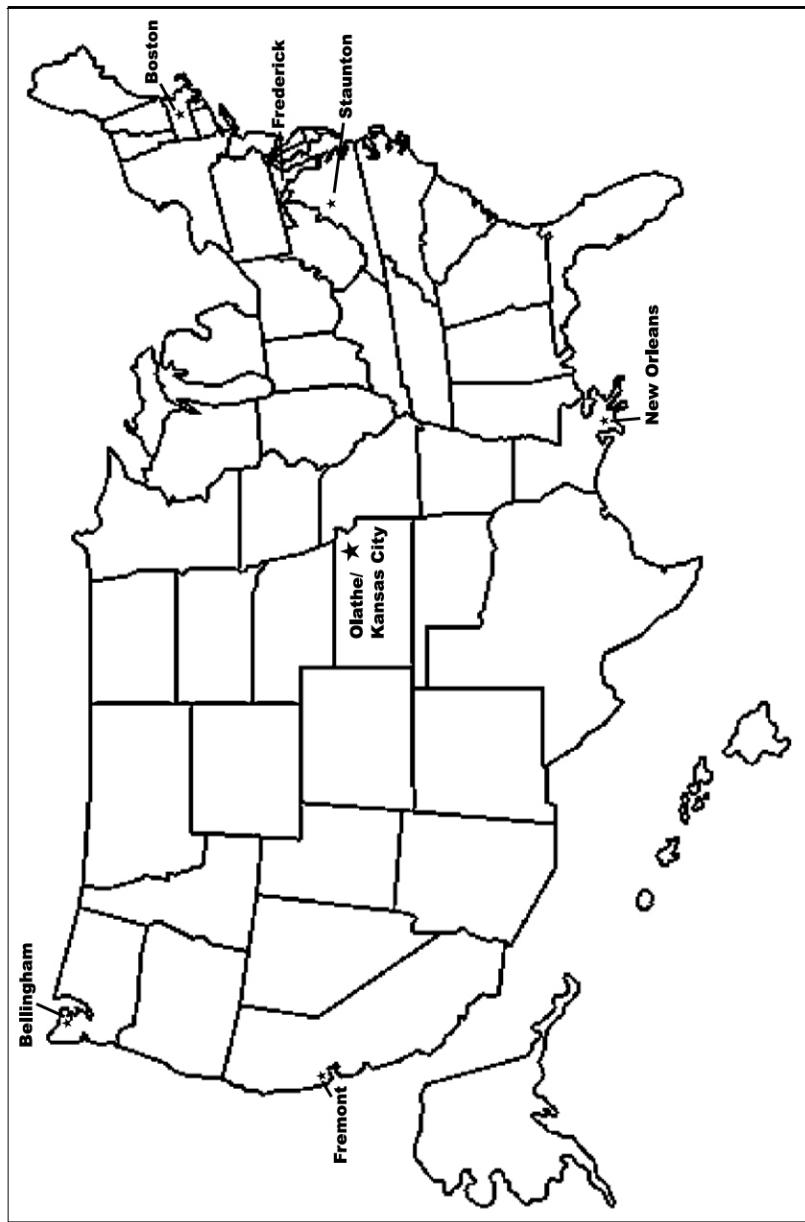


FIGURE 2.1. *The research sites*

collect representative data from all Deaf groups in the country. We hope that the project design and data analysis described here will provide a point of departure for research in other communities. The second reason concerns the sociolinguistic role of a third language in many communi-

ties. That is, we focus on deaf people who use ASL and English in their everyday lives, with special attention to variation in ASL. Latino, Asian, and Native American communities often have Spanish, Chinese, Vietnamese, Hmong, Navajo, or other spoken and sign languages in the picture (see e.g., Davis and Supalla 1995; Gerner de García 1995; Ramsey 2000). Clearly sociolinguistic research is warranted in these multilingual communities. However, the complexities of dealing with the effects of a third, fourth, or *n*th language simply exceeded the practical capabilities of the project.

Participants were recruited in three different age groups: 15–25, 26–54, and 55 and up. The division of participants into these age groups was motivated by developments in language policy in deaf education. Specifically, the early 1970s witnessed both the passage of Public Law 94–142 (the Education of All Handicapped Children Act of 1975, resulting in the implementation of mainstreaming policies) and the shift from purely oral methods of instruction to the philosophy of Total Communication (Denton 1976), which often results in the simultaneous use of speech and signing. The consequences for the acquisition of ASL are that children who previously might have been sent to residential schools and exposed to ASL by their peers (while oral methods dominated in the classroom) may now be mainstreamed with hearing children and may not be exposed to ASL until much later, if at all. Children in residential schools, while still using ASL among themselves, would now be exposed to Total Communication in the classroom. At the same time, ASL has been implemented as the medium of instruction in several locations since the mid-1980s, including at two of our sites (Fremont and Boston), and the recognition of ASL as a full-fledged language independent from English has increased dramatically in recent years. Participants in the 15–25 age group, then, could be expected to have been exposed to Total Communication, possibly to ASL as the medium of instruction, and to increased awareness of the status of ASL. Participants in the 26–54 group would have been exposed to oralism and would also have witnessed the change to Total Communication and the beginning of changes in attitudes about ASL resulting largely from Stokoe's pioneering work in the early 1960s. Finally, participants in the 55-and-up group would most likely have been educated in residential schools through the oral method and possibly also through fingerspelling, with ASL tolerated in the dormitories but certainly not allowed in the classroom. In fact, some project participants in this group told the familiar story of being physically punished for using ASL in class.

Gender has been a major focus of research on variation in spoken languages since the earliest sociolinguistic studies (Fischer 1958; Wolfram 1969; Trudgill 1974). Labov summed up the results of a large number of studies conducted in various cities throughout the world with two general principles:

- (I) In stable sociolinguistic stratification, men use a higher frequency of nonstandard forms than women.
- (II) In the majority of linguistic changes, women use a higher frequency of the incoming forms than men. (1990, 205–6)

In recent years the number of studies of language and gender has expanded greatly. Scholars investigating the social patterning of linguistic variation have moved beyond viewing gender as a dichotomous variable and developed much more finely nuanced views of the relationships among language, gender, and identity (see e.g., Dubois and Horvath 1999; Eckert 1989, 2000; Galindo and Gonzales 1999; Hall and Bucholtz 1995; Romaine 1999; Wodak and Benke 1997). Sign language researchers have also begun to investigate gender differences (see e.g., Nowell 1989; Wulf 1998). We recruited both male and female participants in order to determine whether the principles that Labov (1990) summarized also applied to sign languages and to explore the complex interplay between gender and variable linguistic forms in Deaf communities.

Our sample also included both working-class and middle-class participants. Although social class has long been a major focus of sociolinguistic research on spoken languages, the relationship between linguistic variation and socioeconomic status has not been examined closely in ASL. To define social classes, we followed demographic studies of the Deaf community (see e.g., Schein 1987; Schein and Delk 1974). Working-class participants had not continued their education past high school (in some cases, not past elementary school or eighth grade) and worked in blue-collar, vocational-type jobs. In most cases, they also lived their entire lives in the places where they grew up and went to school. By contrast, middle-class participants had completed college (and in many cases had graduate degrees), were working in professional positions, and often had left their home areas to go to school but had since returned and settled. In all of the seven sites, we were able to recruit participants in all three age groups and at both socioeconomic levels, with one very striking exception: We were unable to recruit any middle-class African American

participants in the 55-and-up age group. This is striking and sad evidence of the double discrimination confronting deaf African Americans of this generation.

Summaries of the demographic characteristics of the participants and of the project appear in table 2.1 and the boxed text.

The Project at a Glance

A seven-year project on sociolinguistic variation in ASL. (June 1, 1994–July 31, 2000)

OVERVIEW OF DATA COLLECTION:

Sites Visited:

1. Staunton, Va.
2. Frederick, Md.
3. Boston, Mass.
4. New Orleans, La.
5. Fremont, Calif.
6. Olathe, Kans./Kansas City, Mo.
7. Bellingham, Wash.

Twelve groups at each site, except for Virginia, Maryland, and Washington (only Caucasian groups)

African American Groups		Caucasian Groups	
Middle Class	Working Class	Middle Class	Working Class
15–25	15–25	15–25	15–25
26–54	26–54	26–54	26–54
(55+)	55+	55+	55+

A total of 207 ASL signers (Each group consisted of two to six signers)

OVERALL GOAL OF THE PROJECT:

A description of phonological, morphosyntactic, and lexical variation in ASL and the correlation of variation with external factors such as age, region, gender, ethnicity, and socioeconomic status

TABLE 2.1. *Signer Social and Demographic Characteristics*

Site	Age			Social Class			Gender			Ethnicity			Language Background	
	15-25	26-54	55+	WC	MC	M	F	AA	C	ASL	Other			
Boston, Mass. (<i>n</i> = 30)	9	12	9	17	13	15	15	11	19	5	25			
Frederick, Md. (<i>n</i> = 21)	7	6	8	11	10	11	10	—	21	6	15			
Spruonton, Va. (<i>n</i> = 26)	5	11	10	15	11	12	14	—	26	5	21			
New Orleans, La. (<i>n</i> = 34)	7	15	12	20	14	17	17	13	21	8	26			
Olathe, Kans.; Kansas City, Mo. (<i>n</i> = 42)	12	16	14	26	16	20	22	14	28	7	35			
Fremont, Calif. (<i>n</i> = 34)	6	16	12	18	16	16	18	15	19	11	23			
Bellingham, Wash. (<i>n</i> = 20)	6	7	7	9	11	12	8	—	20	3	17			
Totals (<i>n</i> = 207)	52	83	72	116	91	103	104	53	154	45	162			

Note: WC = working class; MC = middle class; AA = African American; C = Caucasian.

The Recruitment Process:The Contact People

The approach to the participants was guided by the work of Labov (1972a, 1984) and Milroy (1987). Each group interviewed consisted of two to seven individuals. Groups were assembled in each area by a contact person, a Deaf individual living in the area with a good knowledge of the community. These contact people were similar to the “brokers” described by Milroy, individuals who “have contacts with large numbers of individuals” in the community (1987, 70). At the four sites where we interviewed both Caucasian and African American signers, we had two contact people, one for each community. It was the responsibility of the contact people to identify fluent lifelong ASL users who had lived in the community for at least ten years.

Some potential participants expressed reluctance to the contact person about being videotaped and declined the invitation to participate. Some of the actual participants were asked about this reluctance and gave two reasons for it. The first concerned fear of being videotaped, with the knowledge that the tapes might be shown at large gatherings such as professional conferences. This reason is not surprising, given that sign language researchers depend on videotaped data but, as a result, simply cannot guarantee participants the anonymity enjoyed by participants in spoken language studies in which data are usually audiotaped.

The second reason related to a lack of awareness about the importance of this kind of research. This points to a lack of metalinguistic awareness and even to negative attitudes about ASL and variation. There is, for example, a very commonly expressed perception that phonological variation, such as signing a two-handed sign one-handed or signing a sign usually produced on the forehead at a lower location, is just “lazy” signing. Notwithstanding this reluctance of some potential participants, the contact people were able to recruit 207 people who met the criteria for the study. In some cases the contact people also participated in data collection activities.

Data Collection

The first part of each videotaped session consisted of approximately one hour of free conversation among the members of a particular group without the researchers present. In most cases the participants

already knew each other, and it was very easy to get a conversation started. After this period of free conversation, two participants were selected from the group and interviewed in depth by the deaf researchers about their backgrounds, social networks, and patterns of language use. (In cases where there were only two participants, both were interviewed.)

It has been demonstrated that ASL signers tend to be very sensitive to the audiological and ethnic status of the interviewer (i.e., hearing or deaf, Caucasian or African American) (Lucas and Valli 1992). This sensitivity may be manifested by rapid switching from ASL to Signed English or contact signing in the presence of a hearing person. That is, many Deaf people tend to adjust their signing to bring it closer to what they perceive as the preference of their interlocutor, a phenomenon described by Beebe and Giles (1984) in relation to their accommodation theory. We clearly had to be very mindful of the Observer's Paradox articulated by Labov (1972a), which states that, in studies of the use of the vernacular, "our goal is to observe the way people use language when they are not being observed" (61). To ensure the consistent elicitation of ASL rather than Signed English or contact signing, the participants were never interviewed by a hearing researcher. In addition, all of the African American participants were interviewed by a Deaf African American research assistant. Caucasian researchers were not present during the African American groups' sessions and interviews.

Each data collection session concluded with the interviewees being shown the same set of 34 pictures and fingerspelled words (the latter in cases where an appropriate picture representing the target concept was not found) to elicit their signs for the objects or actions represented in the pictures or by the fingerspelling. Participants also provided general information about themselves on a one-page questionnaire and signed a consent form.

These data collection procedures, consisting of free conversation, an interview, and an elicitation task, were followed for 62 groups. Data were collected at community centers, at schools for deaf students, in private homes, and for three groups, at a public park. Two Panasonic S-VHS camcorders were used on tripods and with wide-angle lenses. In some cases one camera provided a panoramic view of the group while the other provided a close-up view of individuals; in other cases only one camera was used and provided a clear view of the whole group.

THE CREATION OF THE DATABASE

As soon as the data collection was completed for the first site, a cataloguing system was developed to provide easy access to the data tapes, and a computer database was developed to store a wide variety of information about the tapes. Information entered into the database about each group interviewed includes details about when and where the group was videotaped, who appears on each tape (names, ages, educational background, occupation, patterns of language use, and so forth), and detailed information about the phonological, syntactic, and lexical variation observed.

Three target phonological variables were identified early in the data-collection process. In selecting the variables, we followed the guidelines provided by Labov (1963) and Wolfram (1991b). That is, we selected variables that are sufficiently common in the data to allow for statistical analysis and that, judging from initial viewing of the data, appeared to be socially stratified on a number of different dimensions. The three target variables are as follows:

1. Signs produced with a 1 handshape (that is, in citation form, index finger extended and all other fingers and thumb closed). Many signs are produced with this handshape. Moreover, the 1 handshape is found with lexical signs, pronouns, and classifier predicates. There is also a wide range of variation with these signs, including, thumb open, all fingers and thumb open, and several other forms.
2. Signs produced in citation form on the side of the forehead, in the center of the forehead, or at the side of the eye and that allow downward movement, that is, the sign can be produced at a location lower than the citation location. These signs are exemplified by **KNOW**, **SUPPOSE**, and **FOR**.
3. **DEAF**, which in citation form is produced from ear to chin but which can also be produced from chin to ear or as a contact on the cheek (i.e., it shows variation in location). We should clarify that **DEAF** is representative of signs like it that are produced on the face and that move on the vertical plane between the chin and the ear. Other signs in this class include **INDIAN**, **HOME**, **DORM**, and **YESTERDAY**. We chose to focus on **DEAF** because it is the only one that clearly allows metathesis (**INDIAN**, **DORM**, and

YESTERDAY definitely do not—they move only from chin to ear; there are varying opinions about HOME. Liddell and Johnson (1989) claim that it allows metathesis, whereas there is disagreement among Deaf informants as to whether it does). DEAF also occurs frequently enough in discourse to allow for statistical analysis.

In our examination of syntactic variation, the focus was on the fact that in ASL, lexical verbs can be produced without an overt subject pronoun. For this reason ASL has been characterized as a pro-drop language. This absence of a subject pronoun is observed not only with verbs that indicate the subject and object in their morphological structure but also with so-called plain verbs (Padden 1988), verbs whose morphology does not include such subject and object marking and in theory require the production of an overt subject pronoun or noun phrase. The target variables for this part of the analysis were plain verbs with and without overt subjects, extracted from narratives that occurred in the data.

The focus for the analysis of lexical variation was the responses by the interviewees to the thirty-four pictorial and fingerspelled stimuli. In addition, we made note of phonological, syntactic, and lexical variation on the tapes for which there may have been only one or two examples, not enough for statistical analysis but nevertheless worth noting. In one case, for example, a participant substituted the table in front of him for the base hand in SCHOOL. In another case a signer used the chair arm as the base for IMPORTANT. Although not numerous, these examples show us the range of variation that occurred on the tapes.

The information entered into the database about phonological and lexical variation included the identification of the specific variable observed, a brief description of the nature of the variation, the code for the signer producing the example, and for the phonological examples, the syntactic context in which the variable occurred. An example from the database follows:

CONV PV Hdsp PRO.2 1 hdsp -cf; palm up, thumb extended,
234 relaxed (pause) PRO.2 BORN WHERE PRO.2 (pause) FIIT

This is an example of the 1 handshape (Hdsp; 1 Hdsp) target phonological variable (PV) that occurred in a conversation (Conv) as opposed to in a narrative and is not a citation form (-cf). This particular 1 hand-

shape is a second-person pronoun (PRO.2). Because the sign was produced with the palm up, the thumb extended, and with the middle, ring, and pinky fingers relaxed (as opposed to tightly closed), this is considered an example of a nonicitation form. The sentence in which this sign occurred was (pause) PRO.2 born where PRO.2 (pause), “Where were you born?” and is of interest also because of the occurrence of pronoun copy. We note the occurrence of pauses because they may play some role in the variation. Finally, this sentence was produced by FIIT, a 74-year-old working-class Caucasian female from Fremont, hence “F,” the IIT being her individual code. The string of information shown in the example is typical of the information entered in the database for each example extracted from the corpus.

MULTIVARIATE ANALYSIS WITH VARBRUL

The entry of data from the videotapes into the database leads to a discussion of variable rule analysis because the database was designed specifically to facilitate the use of VARBRUL, the statistical package that we used for analysis of the target phonological and syntactic variables. Because variable rule analysis (VARBRUL) has not been commonly used in sign linguistics, we briefly describe the program here.

The goal of the quantitative study of language variation is to understand linguistic phenomena and their relationship to social structure. We want to be able to understand, for example, the direction of linguistic change or the relationship between the form and the grammatical function of a class of signs. We also want to be able to test hypotheses about the relationships between different linguistic and social constraints, to compare alternative analyses, and to create models that allow us to make predictions (Guy 1993, 235). To accomplish these goals, we need to go beyond reporting percentages of occurrence or nonoccurrence of linguistic forms and use statistical procedures that enable us to model simultaneously the many potential influences on variation.

The quantitative modeling of the correlations between language variation and the multiple contextual factors that promote or inhibit use of a particular variant is no easy matter. In studies that relate variation to a single contextual factor (e.g., the effect of the following sign on the choice of a variant of DEAF), a simple statistical procedure such as

comparison of means with the help of a t-test might be adequate. However, such a model is inadequate when multiple influences are likely to be involved.

Analysis of variance is another technique that has been used in studies of spoken language variation (e.g., Tarone 1985) to relate variation to a single independent variable with multiple levels. In principle, it is possible to extend an analysis of variance to additional variables, but with the kind of data usually collected in studies of linguistic variation, this is hardly ever practicable. An example should help make clear why this is the case. Bayley (1994) originally hypothesized that variation in *-t,d* deletion in Tejano/Chicano English was influenced by 11 separate independent variables, each of which had theoretical and empirical support from previous studies. The 11 independent variables were all nominal (that is to say, they could be further subdivided into two or more categories) and were as follows:

Morphological class: monomorpheme, semiweak verb (e.g., *left*), past tense or past participle, *-n't*

Phonetic features of the preceding segment: /s/, nasal, stop, fricative, /r/, /l/

Phonetic features of the following segment: consonant, /l/, /r/, glide, vowel, pause

Syllable stress: unstressed, stressed

Voicing agreement of the preceding and following segments:
homovoicing, heterovoicing

Cluster length: CCC, CC

Speech style: conversation, reading continuous passage, word list

Reported first language: English, Spanish

Current home language: English, English and Spanish, Spanish

Gender: male, female

Age: 14–24, over 25

In this model there are thus 11 separate factor groups (independent variables) comprising a total of 34 separate factors (categories). The number of possible combinations of factors (also known as *cells*) is 82,944. This is an extremely large number of cells for a multiple analysis of variance (ANOVA). In addition, most cells are empty, although Bayley collected nearly 5,000 tokens of the dependent variable—final consonant clusters. This is because many combinations are linguistically impossible or highly unlikely, leaving more than 80,000 cells with missing data.

Moreover, the majority of the filled cells represent only one token of the dependent variable, presence or absence of final *-t,d*. Algorithms for calculating ANOVA normally require equal numbers of tokens in each cell and are clearly inapplicable to such a case. Even algorithms for calculating unbalanced ANOVAs will fail when faced with such extreme distributional imbalances. ANOVA is a statistical procedure designed to deal with the kind of balanced data that emerge from controlled experiments. It is inadequate to handle the kind of naturally occurring data that are collected in studies of sociolinguistic variation.

Modeling linguistic variation can be carried out by a number of commercial statistical software packages, usually under the name of logistic regression (e.g., Norušis and SPSS 1996). However, in sociolinguistics, the programs known as VARBRUL have been used most extensively because they have been deliberately designed to handle the kind of data obtained in studies of variation. They also provide heuristic tools that allow the investigator to modify hypotheses and reanalyze the data easily. The statistical bases for the VARBRUL programs are set out in Sankoff (1988), and the procedures for using the software are explained in Young and Bayley (1996) and in the documentation that accompanies the programs. The two most widely available versions are GoldVarb for the Macintosh (Rand and Sankoff 1990) and VARBRUL for the PC (Pintzuk 1988).

A full explanation of the steps involved in carrying out a multivariate analysis with VARBRUL is beyond the scope of this chapter. Here, we limit ourselves to addressing briefly several questions that arise early in a study, to the interpretation of results, and to the limitations inherent in the program. Readers who wish to pursue the topic in greater depth should consult the literature on the subject (e.g., Cedergren and Sankoff 1974; Guy 1980, 1988, 1993; Rousseau 1989; Rousseau and Sankoff 1978; Sankoff 1988; Sankoff and Labov 1979).

The first steps in a variable rule analysis are to define the variable and the envelope of variation. That is, what forms count as instances of the variable? Are the forms that vary indeed two ways of saying the same thing? In many studies, particularly of phonological variation, defining the envelope of variation is not a problem. For example, KNOW signed at the level of the temple and KNOW signed at the level of the cheek clearly have the same referential meaning. However, it becomes less obvious that variable forms meet the criterion of being two ways of signing the same thing at higher levels of linguistic structure, an issue that has been raised by Lavandera (1978).

The second issue that arises early in a study concerns specifying the factors that may potentially influence a signer's choice of a variant. In general, it is best to be liberal at this stage. Lucas (1995), for example, investigated the potential effects of eight separate factor groups on the choice of a variant of DEAF. As it turned out, most of these groups proved not to be statistically significant. However, the labor of coding for many factors was not in vain. The study demonstrated that Liddell and Johnson's (1989) claim that variation in the form of DEAF is influenced primarily by the location of the preceding sign is at best incomplete. Lucas also demonstrated the previously unsuspected influence on the choice of variant of the grammatical category to which DEAF belongs.

Once coding is complete and the data are entered into the program, VARBRUL estimates the factor values (or probabilities) for each contextual factor specified (e.g., the handshape of the preceding segment or the social class to which a signer belongs). The program provides a numerical measure of the strength of each factor's influence, relative to other factors in the same group, on the occurrence of the linguistic variable under investigation. Values range between 0 and 1.00. A factor value, or *weight*, between .50 and 1.00 indicates that the factor favors use of a variant relative to other factors in the same group. For example, Baugh's (1983) study of African American Vernacular English (AAVE), examined -*t,d* deletion, among other variables. VARBRUL results for the grammatical category of the word containing the -*t,d* cluster are shown in table 2.2.

Baugh's results show that, like speakers of other English dialects, speakers of AAVE are more likely to delete final -*t,d* when it does not carry any grammatical meaning, as is the case in monomorphemic words such as *just, mist*, and *past*. They are less likely to delete -*t,d* when it functions as a past-tense ending. Ambiguous, or semiweak verbs, which are

TABLE 2.2. -*t,d* Deletion by Grammatical Class in African American Vernacular English (AAVE)

Grammatical Function	VARBRUL Weight
No grammatical function, e.g., <i>past</i>	.683
Ambiguous function, e.g., <i>lost</i>	.523
Past tense function, e.g., <i>passed</i>	.353

Source: Baugh 1983, 98.

characterized by an internal vowel change and affixation of *-t,d* such as *lost* or *left*, have an intermediate value.

In addition to grammatical function, Baugh investigated the influence of a number of other factors, among them the type of speech event from which the tokens were extracted. He divided the speech events into four types, depending on the speakers' familiarity with one another and the extent to which they participated in African American vernacular culture. He hypothesized that participants in type-1 events, characterized by familiarity of the speakers and shared participation in African American vernacular culture, would favor use of vernacular forms, in this case, *-t,d* deletion. Conversely, he hypothesized that vernacular forms would be less likely to occur in type-4 events, where the speakers were not well acquainted and where AAVE was not common to all. The results for this factor group are shown in table 2.3.

The results for speech event all hover around .5 and show that, contrary to Baugh's hypothesis, *-t,d* deletion was *not* significantly affected by this factor.

In addition to calculating values or weights for each factor, VARBRUL also calculates the *input probability*, the overall likelihood that speakers/signers will choose the variant selected as the *application value* (the value that counts as an application of the "rule" being investigated). In Bayley's study of *-t,d* deletion in Tejano English, for example, the input probability was .469, indicating that there was a fairly high likelihood that *-t,d* would be deleted regardless of the presence or absence of any other factor in the environment. The program provides several measures of goodness of fit between the model and the data. These

TABLE 2.3. *-t,d* Deletion by Speech Event Type in African American Vernacular English (AAVE)

Speech Event	VARBRUL Weight
Type 1. Familiar participants, all of whom share AAVE	.482
Type 2. Participants are not well acquainted, but all share AAVE	.523
Type 3. Participants are well acquainted but do not share AAVE	.499
Type 4. Participants are not well acquainted, and AAVE is not common to all	.496

Source: Baugh 1983, 98.

