THE SIGNS OF LANGUAGE REVISITED

An Anthology to Honor Ursula Bellugi and Edward Klima

Edited by
Karen Emmorey • Harlan Lane

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Edited by

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The Salk Institute for Biological Studies
and
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2000
LAWRENCE ERLBAUM ASSOCIATES, PUBLISHERS
Mahwah, New Jersey London

This edition published in the Taylor & Francis e-Library, 2009.

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Taylor & Francis or Routledge's collection of thousands of eBooks
please go to www.eBookstore.tandf.co.uk.

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Lawrence Erlbaum Associates, Inc., Publishers
10 Industrial Avenue
Mahwah, NJ 07430

Cover design by Kathryn Houghtaling Lacey

Library of Congress Cataloging-in-Publication Data
The signs of language revisited: an anthology to honor Ursula Bellugi and
Edward Klima/edited by Karen Emmorey, Harlan Lane
p. cm.
Includes bibliographical references and index.
ISBN 0-8058-3246-7
1. Sign language. 2. American Sign Language. I. Emmorey, Karen.
II. Lane, Harlan L. III. Bellugi, Ursula, 1930–.
HV2474.S573 2000
419.21–dc21 99–041589

ISBN 1-4106-0497-7 Master e-book ISBN

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Preface

Few disciplines can trace their body of knowledge and techniques, and the ranks of their practitioners, so extensively to the efforts of one pair of scholars as can signed language research. The two scholars, for whom this volume is published in tribute by their students and collaborators, are Ursula Bellugi and Edward Klima at The Salk Institute for Biological Studies.

Bellugi and Klima's pioneering work, which gave rise to further investigation by scholars worldwide, was in fields as diverse as signed language morphology and syntax, discourse structure, and art forms; memory; neuroscience; language acquisition; and spatial cognition. Their first paper together, titled "Language in Another Mode," appeared in 1974. Two of their books were particularly acclaimed and influential: *The Signs of Language* (Harvard University Press, 1979) and *What the Hands Reveal About the Brain* (MIT Press, 1987; with Howard Poizner). One of their most recent publications—for their active program of research continues apace—is "Neural Organization of Language: Evidence From Sign Language Aphasia" (with Greg Hickok), published in the journal *Trends in Cognitive Sciences*.

Bellugi and Klima's intellectual contribution has extended well beyond signed language studies into adjacent disciplines. Because signed languages are indeed language in another mode (visual-manual rather than aural-oral), the facts uncovered about their structure and function probe the more general conceptions (invariably rooted in spoken language) that guide those disciplines. Consider the example of neuroscience: Bellugi and Klima's finding that aphasias of sign language—like those of spoken language—are associated with left-hemisphere lesions indicates that hemispheric dominance for language is rooted in something as abstract as grammatical structure and not in mechanisms of speech production and perception as was widely believed. Within the fields of psychology and linguistics, Bellugi and Klima illustrated how the study of signed languages can provide critical insights into the nature of human cognition and language. They were the first to pose many significant questions in this domain: Does the visual modality (and conversely, the auditory modality) affect the nature of grammatical systems? How do children learn a visual-gestural language and what does this tell us about the nature of human language acquisition? What cognitive processes are involved in the comprehension of visual as opposed to auditory language? Researchers are still pondering these questions, which is a testament to their depth and importance.

Students of the culture that uses American Sign Language (ASL), known as the Deaf-World, are aware of the way in which a single Deaf educator, Laurent Clerc, ended up profoundly influencing educational practices and ASL throughout the United States, through a ramifying process in which he taught Deaf pupils and hearing superintendents, and they created schools and taught more in turn, and *their* pupils created further schools and taught others, and so on. So, too, Bellugi and Klima have trained numerous scholars in their laboratories who went on, not only to make contributions of their own but in many cases also to train students in turn, who went on…. The sweep of their influence is actually constructed of many small personal epiphanies; in the following, Harlan recounts his own: In 1973, I was visiting professor of linguistics at the University of California, San Diego. Ursie greeted me warmly on arrival (we had both been students of Roger

Brown's at Harvard) and asked me if I would like "to play" with her across the road at The Salk Institute. As it turned out, "play" captured the sheer delight of discovery and intellectual engagement that sparked across the roundtable at which we gathered daily, but it did not capture the fierce and focused commitment and long hours, and it was much too playful a word to bespeak the astonishing discovery—especially to the student of speech perception that I was—that language could be conducted by hand and by eye, and indeed was so conducted by Deaf communities all over the world. This seemed to me to open an entire new avenue to exploring language structure and use; I leapt aboard.

As for Karen, she recounts a similar epiphany several years later: I arrived at The Salk Institute at the end of 1987 with a fresh PhD in linguistics from UCLA, knowing very little about sign language. Vicki Fromkin (my thesis advisor and a contributor to this volume) had introduced me to Ursie and Ed. From the early days in the 1970s to now, the lab has always been a hubbub of exciting ideas and questions. From the famous roundtable discussions, I was astonished to realize how much we can learn about the nature of human language and cognition by investigating signed languages and that there was so much to discover! Like Harlan, I leapt aboard.

The impact of Bellugi and Klima's research on the Deaf liberation movement in the United States and abroad has been enormous, albeit largely indirect. Their scholarly work has been the bedrock on which other scholars have constructed the field of Deaf studies, political analyses of the Deaf struggle, and proposals for reform. To cite one instance, much of what has been contributed in the area of Deaf empowerment has followed simply and ineluctably from the evidence provided by Bellugi and Klima along with their students for the status of ASL and other signed languages as autonomous natural languages. Without that evidence, the logic of much of the Deaf agenda collapses; with it, everything is possible. Take the example of "BiBi" (bilingual and bicultural education of Deaf children)—the sole promising proposal on the table for the reform of Deaf education. Without the evidence that ASL is an autonomous natural language, BiBi makes no sense. With that evidence, it is the leading sensible proposal. As Bellugi and Klima's initial findings appeared in the 1970s, growing numbers of Deaf leaders, some of them trained in their laboratory, carried the word to the American Deaf-World, particularly through workshops and word of hand: Our precious language is fully legitimate and autonomous; it has the dignity of English. We are, then, a language minority; our idioms are in fact our language; our "ways" are seen to be our culture. Bellugi and Klima teamed up with the Communication Skills Program *[sic]* of the National Association of the Deaf to create linguistically informed materials to teach ASL and linguistically informed Deaf teachers to do the job.

If we contrast Deaf studies today with their standing some three decades ago when Bellugi and Klima began their research, we find that Deaf culture and language are surely better understood and documented and more widely appreciated. There is growing formal recognition of ASL in the United States (more high schools and universities find it fulfills the second language requirement) and of signed languages around the world (e.g., the European Commission has urged its member states to protect and encourage their national signed languages). There are more linguistic and sociolinguistic studies of ASL and other signed languages. More on the acquisition of ASL and other signed languages as native languages. More dictionaries of signed languages and more textbooks and videotapes for learning those languages. More about the profession of interpreting and the ethics and skills involved. More about Deaf peoples' gifts in perception and cognition

and more about how their brains process information. More publications about and schools implementing bilingual-bicultural education of Deaf children. More works of ASL poetry and narrative. We are witnessing the development of Deaf Studies programs in schools and colleges and the growth of the field as a professional specialization. And many more developments that are indirectly rather than directly related to advances in understanding signed language. For example, there are many more studies of the history of Deaf cultures here and abroad. More political analyses of the struggle of Deaf cultures for autonomy. More about minorities in the Deaf-World. Numerous books about the experiences of Codas (hearing children of Deaf adults). More about ministry to Deaf people and more on culturally informed counseling and mental health services. There is more attention to winning fundamental human rights for Deaf people around the world.

All this progress is in substantial part the fruit of Bellugi and Klima's scholarly contributions. Their impact extends beyond the United States because scholars and Deaf leaders in other lands took their cue from the early developments in America. France is an illustration. In the 1970s, American Deaf and hearing scholars, equipped with the new findings and perspectives arising from Bellugi and Klima's research, gave a series of lectures in France, established classes there to teach *la Langue des Signes Française* (LSF), and taught a series of summer institutes at Gallaudet University for French scholars, parents, and Deaf leaders. On their return to France, one group of participants began to investigate LSF, compile an LSF dictionary, and offer classes in LSF. Other graduates of the summer institutes launched a nationwide association that created bilingual classes for Deaf children, ran workshops at which Deaf Americans disseminated the findings of Bellugi and Klima (among other things), and created regional groups engaged in applied research and development related to LSF.

When the early American Deaf leader, Thomas Brown, proposed in the mid-19th century that the mutes of America should raise a monument in tribute to Thomas Gallaudet and Laurent Clerc, "the flame of love ran like a prairie fire through the hearts of the whole deaf-mute band," a journalist reported, "scattered though they were through various parts of the country." Similarly, when we suggested a Festschrift as a monument to Ursula Bellugi and Edward Klima, their students and collaborators warmly embraced the plan, scattered though they are throughout the world. That embrace is easy to understand, considering their impact, which this preface has sketched and which this book more fully documents.

—Harlan Lane
—Karen Emmorey

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I
Reminiscences

1
Two Memorable Meals With Ursula and Ed

Lou Fant
Seattle Central Community College

The National Theatre of the Deaf (NTD) was but 2 years old, so it must have been in 1969. It was about 2:00 in the afternoon, and I was in the New York office of the NTD when I received the call. The secretary said that a Doctor Bellugi wanted to talk to me. We got calls from all kinds of people wanting to know about the NTD, so I assumed this was one of those calls. Instead, a woman invited me to lunch with her and her husband at the faculty dining room at Rockefeller University. I assumed they were interested in having the NTD perform somewhere, and we desperately needed bookings, so I deigned to meet with them. One must make all kinds of sacrifices in the name of Art, I silently thought.

After they introduced themselves—I still had not clearly gotten her name or her husband's—we sat down to lunch and the first words out of her mouth, as I recall, were, "So, what do you think of Stokoe's work?"

This question did not sound as if they were interested in booking the NTD. What had I gotten myself into, I wondered? I had left the faculty of Gallaudet College only 2 years before and at that time, the faculty was hotly divided on the value of Stokoe's work. I had not yet decided what I believed about it. In fact, it took me about three more years before I understood what a masterful thing he had done, and here she was asking for an immediate personal assessment of his work.

I have no idea what I said, but it must not have put them off too much because we talked for 2 or 3 hours. They asked me all kinds of questions, and I shudder to think what I must have said. In spite of having known Bill Stokoe personally, having read his work, and having incorporated some of his ideas into the first text I published on American Sign Language (ASL), I had not yet awakened to the fact that ASL was a language. I had signed ASL since infancy, but I had never thought of it as a language, it was just a way to communicate with deaf people.

Ursula and Ed informed me that they were returning to The Salk Institute soon. When I told them that I was moving to Los Angeles the following year, they invited me to visit them at Salk, which I did several times. I spent many wonderful hours videotaping and answering questions about why I signed things this or that way. Ursula could ask the darndest questions, which is why she is such a brilliant researcher.

On one of my visits, Ursula invited me to her house for dinner to meet a young man. She seemed very keen that he know more about deaf people, ASL, and Deaf culture and thought that perhaps I could help. I cannot recall whether he was visiting her personally at Salk, or was a guest lecturer at the University. At dinner, I tried to relate the saga of how the Abbé Sicard escaped death several times during the Reign of Terror in Paris. He seemed quite interested and at a later date, he sent me a copy of Sicard's escapades, in French. I thanked them for the opportunity to have met Harlan Lane early in his career.

My encounter with Ed and Ursula at Rockefeller University and later at Salk was the beginning of my education concerning the status of ASL as a language. Their probing

was sufficient to cause me to conclude that if such distinguished people as these thought Stokoe's work was brilliant and that ASL was truly a language, then maybe I ought to take a second, closer look.

I reflect on my acquaintance with Ursula and Ed with much appreciation of what their lives have meant for me. Had it not been for them, I wonder how long it would have taken me, if not forever, to understand and appreciate what Bill Stokoe did. I will go so far as to say that they are primarily responsible for the deep affection that I feel for Bill. Had it not been for them, it might have been years, if not forever, before I got to know Harlan, one of the most brilliant minds to come to our field this century. I do not know the details of how Ed and Ursula became attracted to our field, I only know that it was a wondrous day when they did. Had it not been for them, I might have floundered along for years before recognizing what ASL truly is. My love for ASL, for the beauty of its construction and execution, had its origin with my encounters with these two wonderful people.

2
American Sign Language Linguistics 1970–1980: Memoir of a Renaissance

Robbin M.Battison
Canadian Embassy, Stockholm, Sweden

For those who work intimately with sign languages or Deaf culture, it is self-evident that sign languages are autonomous languages with their own linguistic principles. But this has not always been the case: The development of this idea owes much to the seminal contributions of Ursula Bellugi-Klima and Edward Klima, as well as to those they inspired and guided through the years.

This is a memoir focused on the period 1970–1980, because those are the only "sign research years" I can legitimately remember. It was in 1970 that I joined the Bellugi-Klima group (BKG) as a research assistant, and it was in 1980 that I left the field of sign language (SL) linguistics.[1] Because this is a memoir, and not a proper history, I make no apologies for its anecdotal nature nor the paucity of references—in fact, I don't discuss signs at all.

Central to this tale is what others thought about sign languages and what we linguists thought was worth investigating at the time. SL researchers today might not be aware of how little we knew when we started, or how little understanding or support was forthcoming from the educational establishment, or how blunt our analytical tools were.

The background to this period includes a dismal analysis by the speech and hearing establishment, which held a steady hand on deaf education. A 1950 textbook, reprinted as late as 1975, proclaimed that "The language of gesture is devoid of prepositions, conjunctions, and abstract words…. Abstract verbs are replaced by specific concepts that permit the essential meaning to be communicated" (Eisenson & Boase, 1975). Another textbook published closer to the period in question was equally bizarre: "It is generally agreed [!] that sign language is bound to the concrete and is rather limited with respect to abstraction, humor, and subtleties such as figures of speech which enrich expression" (Davis & Silverman, 1970). These pronouncements were made without any scientific evidence whatsoever, which makes us shudder at both the audacity of their authors and the gullibility of those who believed them. The implications for Deaf education are also depressingly clear.

[1]All right, I've tapped other people's memories of the 1970s too, principally those of Dennis Cokely, Penny Boyes-Braem, Nancy Frishberg, Joe McLaughlin, and Francis Grosjean. I remain responsible for any false memories we might have created while reconstructing the past, and any sweeping generalizations are of course my own. As for other decades, forget it. I believe it was the folk singer Judy Collins who said: "If you can remember the 60s, then you weren't really there."

Against this background, there were three significant contemporary trends that would shape the research on American Sign Language (ASL) that the BKG conducted—trends stemming from philosophy, demography, and technology.

The philosophical trend was due to Noam Chomsky of the Massachusetts Institute of Technology (MIT) and the so-called Chomskian revolution of the late 1960s, which led to a set of paradigm-busting theories that were loosely referred to as TG, or transformational-generative grammar. This led to the following changes in linguistic theory and practice:

1. Linguistic competence and linguistic performance were distinguished, allowing the use of both intuitions and utterances as evidence for theory building. Linguists could shift focus to the mental nature of language. This was analogous to examining how a computer's central processing unit works and putting the computer peripherals aside. Speech (the physical phenomenon) was thus separate from language per se. Language competence was something more abstract than language performance.

2. Linguistic research, although still based on fieldwork, was guided by a heuristic construct: the "ideal speaker-listener in a homogenous speech community." Native speakers of a language were the norm. Monolingualism was assumed and bilingualism was hardly ever mentioned.

3. The search was on for the "psychological reality" or mental counterparts of linguistic constructs. In other words, the validity of linguistic models was not based on pure formalism but also required the model to explain something about how the mind worked. This dovetailed with another emerging field, cognitive psychology.

These theoretical changes in turn supported the emerging linguistic focus on sign languages. If language competence is like a central processing unit, then the actual physical nature of the inputs and outputs may be able to be factored out in some way. In other words, what does it matter to the core linguistic competence if inputs are acoustic strings or visual displays and outputs are spoken words or gestures? Does it matter? This became a central question for SL researchers in the 1970s.

This new and exciting way of doing linguistics coincided with a demographic trend, as recounted by Frederick Newmeyer (1980) in his history of linguistic theory in America:

> In the mid and late 1960s, American universities underwent the greatest expansion in history. New linguistics departments sprung up in a dozen locations and some existing ones literally quadrupled in size. The reputation of Chomsky's theory had grown to the point where, by and large, transformationalists were sought to fill the new positions. In fact, linguistics grew at a much greater rate than almost any other field—a testament to the intellectual appeal of the theory, (p. 20)

In fact, the Linguistics Department at University of California, San Diego (UCSD) had a heavy influx of "Easterners" from Harvard and MIT in the late 1960s, including Paul Chapin, Sandy Schane, Edward Klima, and Yuki Kuroda. This resulted in a "bicoastal Zeitgeist" that bound these universities' researchers together in practice, as when Harlan Lane filled a visiting professorship at UCSD in the early 1970s.

UCSD hired Ed Klima, and Ursula Bellugi established herself at The Salk Institute for Biological Studies, a few hundred yards down the street. This institute, founded and headed by Jonas Salk of polio vaccine fame, is of course primarily a biological research center. Bellugi's initial sponsor there was the late Dr. Jacob Bronowski, a distinguished

mathematician who was refocusing his work on the history of science and the humanities. Moreover, as the Institute is perched on a cliff with a magnificent unobstructed view of the Pacific Ocean, it lent itself to making unobstructed intellectual forays into the mental nature of language.

The third major trend shaping the ASL research of the BKG was technological: the emergence of new consumer electronic equipment that made recording of gestural data practical, affordable, and accessible. Video cameras and tape recorders made it possible to record gestural data and use it in ways undreamed of only a few years previously, when researchers depended on still photography and film. Of course, video back then was pretty primitive, as we shall show.

ASL RESEARCH AND NATIVE SIGNERS

Homogeneous monolingual signing communities don't exist. About 90% of Deaf people are born to hearing, nonsigning parents, grow up in restrictive linguistic environments, and emerge as adults into bilingual and multilingual signing and speaking language situations. There is no monolingual community of Deaf signers on some remote Atlantis, waiting to be discovered. The near exceptions prove the rule: Frishberg (1986) managed to do some field work in a Ghanaian village with about 15% deaf people and widespread signing, and Groce (1985) researched the once-extensive bilingual signing communities of Martha's Vineyard, an island off the coast of Massachusetts.

Ursula Bellugi's early research on ASL, studying how Deaf children acquire ASL from their Deaf parents, can be viewed as a logical extension of her work with Roger Brown on patterns of child language acquisition in English. It was natural that her early focus was more about language acquisition than about adult linguistic competence. But there was another advantage to starting with Deaf children: This was the closest one could come to studying monolingual native speakers of this uncharted language.

Bellugi's early program of research on child language included two children from two different families in different California cities. Each child participated in a monthly videotaped "informant session," with home visits alternating with visits to The Salk Institute. In those early days, Bonnie Gough was our Deaf research assistant and primary source of information on ASL and Deaf culture. Her daughter, Darlene Scates, was a professional interpreter who assisted in these elicitation sessions. The roles we research assistants played in the beginning were general factotum, cameraman, recording engineer, and driver, as well as the most demanding job of all—transcriber of tapes.[2]

[2]How challenging these simple roles were can best be illustrated by the fact that I did get lost in the desert while driving home from an informant session. Also, when accompanying Ursie and Ed to Paris for a conference and research session in 1971, I managed to record videotapes that could not be shown on any known U.S. system. Plus, I mixed up the still pictures of French signs with the vacation pictures from my Parisian girlfriend's camera. Neither Ursie nor Claudine has ever forgiven me.

Our camera equipment was simple, having fewer buttons than modern telephones and thus offering fewer chances to do something stupid. The taping equipment consisted of an ever-increasing phalanx of Sony video recorders, which, as I recall, required changing tape reels every half hour. This required rewinding and threading the tape, cuing it up with the help of a ridiculously clumsy tape counter (with an apparent accuracy of +/–6 seconds), and of course labeling it—all the while taking copious notes on the signing session. Today's electronic marvels, with videocasettes, digital frame counters and precision electronic editing, existed on drawing boards or in unreliable prototype versions.

Transcription was a chore, especially because the signing expertise in the group naturally took years to develop adequately. But even here, the theoretical work depended heavily on progress made in linguistic description. We transcribed ASL conversations at first by glossing: finding a roughly equivalent English word to match the apparent meaning of the sign. Soon we found ourselves richly hyphenating our glosses to try to capture all the morphological and semantic nuances.

We sometimes used an adapted "Stokoe notation," and even tried a kind of 8-track notation that looked like a musical score, seeking to capture more and more of the physical details of signing in our efforts to separate the important from the unimportant parts of the linguistic signal. Don Newkirk of the BKG created a system allowing signs to be transcribed using an ordinary typewriter.

THE THRILL OF IT ALL

Working with Ed and Ursie was both challenging and thrilling during those early exploratory years. We were numerous students, associates, assistants, visiting researchers, and visiting poets who got together every Friday afternoon for a formal discussion of whatever topic was at hand, but the real interaction took place everywhere and anywhere. A suggestion or question one day would turn into a working paper within a few weeks. Someone would notice a single sign that would cause us to open (or close) a line of inquiry. New discoveries came almost daily. We felt we were really developing the tools to answer the question, "How does ASL work?"

Work was carried out on a broad front simultaneously: lexicography, "phonology," "phonetics," morphology, psycholinguistics, syntax, semantics, poetics, folklore, and neurolinguistics. We fed each other (sometimes literally), consulted each other, and worked out individual areas of expertise.

Bellugi and Klima encouraged the group's exploratory work in developing binary feature analyses for ASL phonetics and phonology, partly as a way to improve the basic lexical descriptions, but also to pave the way for many later phonological investigations.

Another member of the group, the late Frank Allen Paul, made unique contributions to ASL descriptions by developing special techniques for transferring video frame shots of signers to line drawings that captured crucial spatial and temporal information. Parts of his illustration style have since been adopted by others, both in the United States and abroad.

I chose to work on ASL phonology because it seemed to me that work on the sublexical level was essential to moving forward in other areas. But refining impulses came from others in the group. Ed wondered out loud one day in 1971, "I wonder if there

are any signing aphasics?" thus sidetracking me into working with one in 1972 and another in 1975 (Kimura, Battison, & Lubert, 1976). But it was my fellow student Richard Lacy who turned me in the direction of working with morpheme structure constraints, while we were standing on a hill in 1973 overlooking Stanford University and he was trying to talk me down from preconference jitters. And it was my friends and informants Ella Mae Lentz and Carol Padden who so overwhelmed me with data in 1975 that I decided that my whole dissertation would pivot on lexical borrowing in ASL (Battison, 1978). ASL linguistics works better in groups.

GETTING THE WORD OUT

Sharing the results of our work with Deaf people and practitioners in Deaf education or interpreting was another matter. The more technical we became, the harder it became for nonspecialists to understand what we were up to. And Ursula, for one, resisted getting involved with educational controversies or policy issues at all; she seemed to feel more comfortable with science. Although practitioners did not always wait for researchers to deliver the goods, we did have memorable meetings with individuals who were able to turn linguistic findings into changes in educational content or policy.

Lou Fant was fascinated to find that linguists actually had terms that corresponded to something he had been dealing with for years, namely, the difference between translation and transliteration (this distinction was adopted by the Registry of Interpreters of the Deaf, the U.S. interpreters' organization, in 1979). The late T.J.O'Rourke was able to turn the National Symposia on Sign Language Research and Teaching (NSSLRT) into forums for both researchers and practitioners. But I remember having to go head-to-head in public at the first NSSLRT in 1977 with a well-known special educator who insisted that ASL was not a language. During the second NSSLRT, I recall being sharply questioned for stating that a hearing student's goal in learning SL should be "to learn to sign like a Deaf person." What was self-evident to a linguist was still controversial to a larger professional public! (If it's not self-evident to you, try replacing "SL" and "Deaf" with the word "French" and the word "sign" with "speak.")

In the background of the 1970s lurked the pseudolinguists, who had created signing systems that aped the morphology and syntax of English. Imagine my surprise when I found myself trapped in a Holiday Inn in Iowa for a weekend seminar with 30 young teachers of the Deaf, all of them hearing, all of them chatting away in some variety of signed English that no one but they could understand. It vexed the spirit sorely.

In 1975, Harlan Lane and I were actively seeking funds to establish a new training program for "communication specialists with the Deaf," which I suppose now would be called "sign resource specialists." We met with an influential woman on the U.S. Senate staff, who listened politely to our pitch over lunch and then wondered why we hadn't first consulted with "her expert on Deafness," an otorhinolaryngologist in California. Of course we received no funds back then, but I've heard that a similar proposal was recently funded. Times change.

But the 1970s did undeniably represent a renaissance for ASL, nearly a century after the infamous 1880 Milan Congress on the education of the Deaf, which tried to bury SL once and for all. It is interesting to note the number of firsts in the following chronology

of the 1970s as well as the interplay of practical and research-related milestones. This table is based on that provided by Dennis Cokely and Charlotte Baker (from Baker & Battison, 1980, p. xv–xx).

1970 • Ursula Bellugi (The Salk Institute for Biological Studies) and Edward Klima (Linguistics, UCSD) establish ASL research group.

• National Theater of the Deaf is established.

1971 • William Stokoe establishes Linguistics Research Lab at Gallaudet College, independent of other academic departments.

1972 • First SL journal—William Stokoe begins publishing *Sign Language Studies*.

• First book on teaching ASL, "Ameslan" by Lou Fant.

1973 • First PhD dissertation on ASL. Author: James Woodward.

• First play involving attitudes toward ASL ("Sign Me Alice" by Gil Eastman).

1974 • First SL Conference held at Gallaudet College.

• First International Symposium on SL takes place at the American Anthropological Society conference in Mexico City.

1975 • First Deafness and Mental Health Conference, Chicago.

1976 • First PhD dissertation on ASL produced by the BKG. Author: Nancy Frishberg.

1977 • First National Symposium on Sign Language Research and Teaching (NSSLRT), Chicago.

1978 • NSSLRT II in San Diego, "Bilingual and Bicultural Education."

• First conference on ASL poetry, University of Indiana at South Bend.

1979 • First survey book on ASL linguistics: Klima and Bellugi publish *The Signs of Language*.

• First (freestanding) International SL Symposium, Stockholm.

• First NATO Advanced Study Institute "Language & Cognition" devoted to SL linguistics, in Copenhagen.

1980 • First multidisciplinary international conference on SL, "Signed and Spoken Language: Biological Constraints on Linguistic Form," Dahlem Conference, Berlin.

• NSSLRT III in Boston.

• First ASL books for teachers and students based on linguistic analyses—Baker and Cokely produce the "Green Books."

• First ASL festschrift, in honor of William Stokoe, by Baker and Battison.

CROSSING THE POND

ASL linguistics took a little different turn than European sign linguistics did, partly owing to the general trends outlined in Newmeyer's (1980) history, but also because many European SL research groups had different starting points, different goals, and different methods—as well as different social, political, and economic contexts.

In most of Western Europe, social and educational services, including anything to do with the Deaf, were delivered by centralized government agencies. Many SL researchers in Europe seem to have concentrated more on education and service delivery—whether using SL was beneficial, which kind of SL, combined with what, and so forth—rather than on descriptive or theoretical issues.

The practical consequence was that the vital linguistic role of native signers—whether hearing or Deaf—was apparently not as salient from the beginning in European SL linguistics. Valid data might come from any signer, and the backgrounds of the signers were not always documented in the literature of the 1970s. In addition, data during this period were often collected in classrooms with peer-to-peer or student-teacher signing (because of the educational focus) rather than free-ranging home and family settings with deaf intergenerational signing.

Some theoretical underpinnings were also slower to take root in parts of Europe. A BKG researcher who relocated to Europe in the early 1970s noted a lack of enthusiasm then for new TG theories. At the end of a meeting with a linguistics professor, the professor leaned forward and asked her earnestly, "Before you go, tell me something. Do all Americans really take Chomsky seriously?" In any case, she noted that "sign language research in her country couldn't ride in on any Chomsky coattails."

In addition to differences in SL linguistics on the two sides of the Atlantic, there were also barriers to free communication. The late 1960s and early 1970s were a time of student revolts, reform, and quasi-reform of European universities, dominated by a general political shift to the left. Due to the U.S. role in the later stages of the Vietnam War, many European academics found it fashionable to spurn anything American, regardless of its scientific or political merits. As one visiting ASL researcher said to me of her year in Europe a decade later, in the late 1980s, "I got tired of fighting the Vietnam War every time I was invited to a dinner party. And I was part of the war resistance in the U.S.!"

Some of this anti-American sentiment may have been exacerbated by the "not-invented-here" syndrome or by envy, as U.S. language research labs of the time were often better equipped than their European counterparts (due to the expansions already mentioned). For example, my colleague at Northeastern University (NU), François Grosjean (now at the University of Neuchâtel), regularly hosted European psycholinguistic researchers who wanted to use our lab facilities at NU in the summer to run experiments.

These points and others may have led to the conflicts that surfaced at the 1979 NATO Advanced Study Institute on Language and Cognition in Copenhagen. This event was organized by Harlan Lane, François Grosjean, and me and attracted about 110 SL scholars from around the world. One of the European participants—who missed the whole point of this scientific symposium and of much of the work that was presented —opened his presentation by condemning the gathering as "an insult to Deaf people," apparently because it didn't touch sufficiently on socially relevant issues such as language policy in the classroom

Resistance to certain empirical methods also occurred. When ASL linguistics had apparently advanced further in phonology and phonetics than any other SL studied to date, several groups, the BKG and Harlan Lane's lab at NU among them (with Howard Poizner in the forefront), experimented with instrumental phonetic methods, modeled on instrumental studies of speech. These groups tried everything to measure sign movements

exactly; using two or three cameras at different angles; attaching points of light to hands that were filmed in darkness; taping accelerometers borrowed from a space engineering lab to signers' hands (these devices were hard to calibrate); and adapting instrumentation used in physical therapy (like elgonometers).

When this work on instrumental phonetics was introduced at the conference in Copenhagen in 1979, several Europeans publicly ridiculed the whole idea. Attaching lights and wires and gadgets to signers' bodies to gain insights into the structure of sign languages was viewed as somehow "unnatural" and a "violation of personal integrity." Twelve years later, one of the researchers who had rejected the approach asked me how to set up a program for instrumental phonetics. The idea had somehow become attractive, or at least unavoidable.

In the age of communication over the Internet and via CD-ROMs, it is apparent that precise instrumental recordings of sign behavior may teach us how to electronically code sign languages in new interactive media and telecommunications, in which optimizing temporal and spatial resolution buys precious bandwidth and transmission time. Success here depends on knowledge of signs down to the last digit.

OF APES AND MEN

As The Salk Institute is a biological institute, replete with white lab coats, it wasn't uncommon for visitors in the early 1970s to ask us, "Where do you keep the chimps that you're teaching sign language?" This was slightly annoying but easily corrected.

More annoying were encounters with scientists who were working with apes and signs. My first encounter was at an international conference, when I saw one of them trying to discreetly sign to another "What time is it?" while they were sitting next to each other on a discussion panel. As the addressee couldn't understand this simple signed question, they had to resort to speech to communicate. So much for involving yourself in the object of study!

My second contact came during a site visit, when I was a member of a reviewing team convened by a federal granting agency. During a tour of the site, two of us reviewers witnessed an ape making an indiscriminate, isolated gesture that touched his head. Our host researcher immediately pronounced this gesture to be the sign for "comb" but demonstrated it using a very different gesture. We helpfully pointed out this "pronunciation difference," but our point was hotly contested. Needless to say, any credibility this researcher had for gathering empirical data on gestures was considerably weakened in our eyes.

The third contact with signing apes came in reviewing the proposals for two different ape signing studies, again at a granting agency's request. I found a remarkable indifference to data transcription. What the apes were actually doing with their hands was apparently uninteresting, as the observers merely wrote down the English equivalents of what they thought the apes were trying to convey. If sign language researchers working with Deaf people had used a similar methodology, a great Sign Renaissance might never have occurred. This was all the more reason to appreciate the emphasis that Bellugi and Klima placed on careful recording and transcription.

A PERSONAL CLOSING

Those who use and work with ASL today owe a debt of thanks to the Bellugi-Klimas for helping to grow a new generation of researchers. We know that future generations will thank them as well.

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3
A Fish Story for Ursula and Other Remembrances

Bernard Bragg

My friendship with Ursula Bellugi began in 1969, a couple of years after the National Theatre of the Deaf (NTD) was established. I was deeply involved in exploring a new way of illuminating the language of signs for theater use. For lack of a better word to describe it, I coined "Sign-Mime." Some of my writings on this subject were included in the grant application, submitted to the U.S. Department of Health, Education, and Welfare, to found the NTD. I think it was about the same time that Dr. Bellugi was in the process of establishing her research laboratory at The Salk Institute. Her aim was to analyze the sign language from a linguistic point of view, whereas mine was to bring it to stage as an art form. She gave the language a new name—American Sign Language (ASL). The difference between Sign-Mime and ASL lies in the fact that the former focuses on adapting English dialogue and poetry into sign whereas the latter represents the communicative mode of the Deaf community.

After attending the performance of the NTD in San Diego, Dr. Bellugi invited me to visit her research lab at The Salk Institute. We had a lengthy discussion on the nature of sign language, and, much to our mutual surprise, we found that each of us saw it quite differently. She perceived it as a pure language unto itself with its own unique grammar and syntax, com-pletely devoid of English; whereas I had long since understood it to be a language of signs strongly influenced by English, or rather, blended with it. Such language was later labeled Pidgin Sign English. Our different perceptions resulted in a continuing dialogue for many years. It took me quite a while before I was convinced that ASL can and does stand on its own, but I have always maintained my own conviction that as one becomes older and more literate, his or her use of ASL gradually reflects many English borrowings. Dr. Bellugi admitted to me years later that English does influence ASL greatly.

We understand each other well. She is a scientist focusing on the nature of sign language as used by deaf parents with their deaf children. She has studied it objectively. I am a native user of the language. My use of ASL has been greatly influenced by older deaf people, both deaf teachers and hearing teachers at school and college, my deaf parents and relatives, and their deaf friends.

Because of our longtime friendship and my frequent visits to her lab, I was inspired to write articles, letters to the editor, even a book, depicting how I see the language of Deaf people and their use of it. Indeed, their use of the language varies greatly. In brief, there are four basic categories of the language, namely (a) Traditional ASL (pure), (b) Modern ASL (creole), (c) Englished ASL (blended with English borrowings), & (d) Rarefied ASL (theatricalized). On the whole, I see ASL as the generic term for these varieties of the language, as used by the Deaf community.

In one of my visits to her research lab, Ursula had me translate Shakespeare's famous love poem into ASL, or, in my own terms—Sign-Mime. The poem was recorded in its

entirety on videotape, and with this videotape played back, I went on to describe why I translated it the way I did—sign by sign, phrase by phrase, expression by expression. Frankly, I did not know what she was going to do with the videotape. I asked, but she simply looked at me with a smile. It was not until several years later—when, much to my astonishment and delight, I found her thorough analysis of my Shakespearean translation in her first published book—that I finally understood the reason behind this probing. In it, she included tracings of my signs, with emphasis on the harmonious flow of hand movement, as I sign-mimed the poem for her. I did it intuitively, but she saw it scientifically. We complemented each other, indeed.

Oftentimes, I shared with her my observations and discoveries from my world travels of how Deaf people communicate among themselves or with other Deaf persons from other countries. She has always been very interested and encourages me to make comparisons from my own perspective. What excited us the most was that there are a great number of universals in our sign languages. In my workshop during The Deaf Way Congress at Gallaudet University in 1989, I set up an experiment using five pairs of Deaf foreigners and studied how in each pair, one member described to his partner what he had previously seen on a videotaped clip, which showed the action of two clandestine lovers in trouble. Low and behold, we caught a great number of similarities in their different sign languages, namely, eye movement, hand placement, emotional expression through nonmanuals, gestures, and body language. Despite the diversity of the sign languages and cultures, the universals, as discovered from this videotaped experiment, tell us pretty much about why Deaf peoples of the world find it so very easy to make known their thoughts or ideas to each other and how they are able to quickly grasp meaning in their conversations. I mailed this videotape to Dr. Bellugi along with the following story as an example: I once rode in an elevator with a Deaf foreigner whom I met by chance, but when I arrived at the eleventh floor, I already knew his entire life story.

Dr. Bellugi is one of the very few linguists who have shown genuine respect for my own perspective, whether they agree with it or not. She asked me many times to give lectures to various professionals at The Salk Institute and, without fail, videotaped my talks either at the roundtable or in the lecture room. Again, she is one of the very few who analyzed ASL and wrote books about it without going out to proselytize how we should use it. I am proud of my part in her work and value her influence on my life, my thinking, and my understanding of what ASL is all about.

In closing, I would like to share with you one of her favorite stories, which she invariably related while introducing me to her audiences at The Salk Institute. Here it is: In one of the videotaping sessions with me, she asked me to tell a particular story without any facial expression whatever. I argued that it was not sensible or practical to do so. She looked at me with a smile and asked if I didn't realize that it was only for the purpose of research and that "You ain't no actor for nothing." She challenged me, indeed. Emboldened, I went on and told the story as best as I could without a single facial expression. To my shock, I did use one slight expression (or should I say it simply crept into my face?), so I had to do it all over again from the top of the story. I did it very laboriously, but I tried to make it look as if I were doing it effortlessly. With straight face all the way, I described how I went out fishing in a rowboat with a friend, which included telling one another wild jokes, laughing hysterically, picking up worms squeamishly from a can, catching a huge fish excitedly, struggling to get it into the boat, hitting it repeatedly with a paddle but instead accidentally hitting my thumb, and suffering the throbbing pain.

Actually, I succeeded in telling the whole story without a hint of facial expression. Everyone in the audience was floored in fits of laughter. Finally, when they quieted down, Dr. Bellugi came up to me to congratulate me, but I bowled over, covering my face with my hands. She was alarmed, and asked me what was the matter. I looked up and signed with a full expression of agony on my face: "Ouch, my face hurts!"

II
Historical and Comparative Analyses of Sign Languages

4
Sign Languages and Sign Language Families in Thailand and Viet Nam

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I have a long-standing interest in the history of sign languages and the historical relations of sign languages. Part of this interest stems from my own training in sociolinguistic variation and change, and part stems from contact with Ursula Bellugi and other researchers working with her. Specifically, Ursula Bellugi's early comparative sign language research work (see Klima & Bellugi, 1979), as well as Nancy Frishberg's (1975, 1976) seminal work on historical change in American Sign Language (ASL), played extremely important roles in some of my early efforts to apply general historical-comparative linguistic techniques to sign language research. One such work, "Historical Bases of American Sign Language" (Woodward, 1978), focused on the historical relations of French Sign Language and ASL. Since that time, I have applied historical-comparative linguistic techniques to a number of other sets of sign language varieties: sign language varieties in India (Vasishta, Woodward, & Wilson, 1978); in Costa Rica (Woodward, 1991, 1992); in India, Pakistan, and Nepal (Woodward, 1993b); in Hong Kong and Shanghai (Woodward, 1993a); in Thailand (Woodward, 1996, 1997a); and in Viet Nam (Woodward, 1997b).

This chapter is intended to add to previous research on the relations of Asian sign language varieties by comparing sign languages in Thailand with sign languages in Viet Nam. To determine the possible linguistic relations of sign language varieties in Thailand and in Viet Nam, this chapter (a) describes the sources of comparative data for sign language varieties in Thailand and in Viet Nam, (b) summarizes the findings of previous comparative lexical research on sign language varieties in Thailand, (c) summarizes the findings of previous comparative lexical research on sign language varieties in Viet Nam, (d) compares for cognates in basic vocabulary between each distinct sign language in Thailand with each distinct sign language in Viet Nam, (e) discusses the results of the analysis, and (f) concludes with implications for future research.

SOURCES OF DATA

This section discusses the type of linguistic data collected and the background of the Deaf consultants from whom the data were collected.

The Type of Linguistic Data Collected

The amount of data available on the language varieties determines the historical-comparative technique that should be used to analyze the data.

Standard books on historical linguistics (e.g., Crowley, 1992; Lehmann 1992) point out that lexicostatistics is often used for determining relationships across unwritten languages that are underdescribed or undescribed and for which there are relatively limited amounts of data available. As Crowley (1992) stated, "There is a…technique for subgrouping languages that is often used with languages for which there are relatively limited amounts of data available, and that is lexicostatistics" (p. 168). Lexicostatistics has been especially useful in the classification of 959 distinct, underdescribed Austronesian spoken languages and 250 distinct, underdescribed Australian spoken languages (Lehmann, 1992).

Given the facts that (a) all seven sign language varieties examined in this chapter are unwritten, (b) six out of the seven language varieties are underdescribed, and (c) there is limited data on six out of the seven languages, lexicostatistics was chosen as the appropriate historical-linguistic technique for analysis.

The reason why lexicostatistics is such an appropriate technique for underdescribed languages is that as Crowley (1992) pointed out:

> Lexicostatistics is a technique that allows us to determine the degree of relationship between two languages, simply by comparing the (core or basic) vocabularies of the languages and determining the degree of similarity between them…. [C]ore vocabulary includes items such as pronouns, numerals, body parts, geographical features, basic actions, and basic states." (pp. 168–169)

According to standard lexicostatistical guidelines for subgroupings (Crowley, 1992; Gudschinsky, 1956; Lehmann, 1992), dialects of the same language should have an 81% to 100% rate of cognates, and languages belonging to the same language family should have a 36% to 81% rate of cognates.

To compare basic vocabulary, Crowley (1992) stated that "most lexico-statisticians tend to operate with 200-word lists. The most popular list of this length is known as the *Swadesh list,* which is named after the linguist Morris Swadesh, who drew it up" (pp. 170–171).

Whereas it is common to use the original 200-word Swadesh list to compare for cognates in basic vocabulary across spoken languages, it is not generally desirable to use the same list for sign language research. Use of the original 200-word Swadesh list in sign language research may result in slight overestimation of the relation of closely related sign languages, moderate overestimation of the relation of loosely related sign languages, and great overestimation of the relation of historically unrelated sign languages (Woodward, 1993a).

These overestimations occur because the original 200-word Swadesh list contains many items, such as body parts and pronouns, which are represented indexically (i.e., simply by pointing) in many sign languages. The comparison of such indexic signs results in a number of false potential cognates.

To avoid these problems of overestimation, a special vocabulary list (Table 4.1) has been used for comparisons of sign language varieties within Thailand and Viet Nam.

The list in Table 4.1 is a modification of the 200-word Swadesh list that removes typically indexic signs and has proven useful in earlier comparisons of sign languages (Woodward, 1978, 1991, 1992, 1993a, 1993b).

The Background of the Deaf Consultants

Sign translations of the basic vocabulary list in Table 4.1 were collected from fluent Deaf signers in four signing communities in Thailand and from three signing communities in Viet Nam.

The four signing communities in Thailand include (a) the Ban Khor signing community, (b) the Original Chiangmai signing community, (c) the Original Bangkok signing community, and (d) the Modern Thai signing community.

The Ban Khor signing community refers to a small community of signers living in certain rice farming villages in the district of Ban Khor in Nakornpanom province in Northeastern Thailand. From this community, signs were obtained from 9 female signers and 5 male signers ranging in age from 13 years to more than 60 years of age. Signs were elicited in Ban Khor in 1996.

TABLE 4.1 Special Modified Swadesh Vocabulary List for Sign Languages

1. all	26. grass	51. other	76. warm
2. animal	27. green	52. person	77. water
3. bad	28. heavy	53. play	78. wet
4. because	29. how	54. rain	79. what
5. bird	30. hunt	55. red	80. when
6. black	31. husband	56. correct	81. where
7. blood	32. ice	57. river	82. white
8. child	33. if	58. rope	83. who
9. count	34. kill	59. salt	84. wide
10. day	35. laugh	60. sea	85. wife
11. die	36. leaf	61. sharp	86. wind
12. dirty	37. lie	62. short	87. with
13. dog	38. live	63. sing	88. woman
14. dry	39. long	64. sit	89. wood
15. dull	40. louse	65. smooth	90. worm
16. dust	41. man	66. snake	91. year
17. earth	42. meat	67. snow	92. yellow
18. egg	43. mother	68. stand	93. full
19. grease	44. mountain	69. star	94. moon
20. father	45. name	70. stone	95. brother
21. feather	46. narrow	71. sun	96. cat
22. fire	47. new	72. tail	97. dance
23. fish	48. night	73. thin	98. pig
24. flower	49. not	74. tree	99. sister
25. good	50. old	75. vomit	100. work

The Original Chiangmai signing community refers to the community of signers in Chiangmai before 1951 and to certain signers older than 45 still living in the urban Chiangmai area in Northern Thailand. Signs were obtained from 1 male signer in his late forties from this community. Signs were elicited in Chiangmai in 1996.

The Original Bangkok signing community refers to the community of signers living in the urban Bangkok area before 1951 and to certain signers older than 45 still living in the urban Bangkok area. From this community, signs were obtained from 1 male signer in his late fifties and 1 female signer in her late forties. Signs were elicited in Bangkok in 1996.

The Modern Thai signing community refers to the majority of signers younger than 40 living in the urban areas of Thailand. From this community, signs were obtained from a total of 8 signers younger than forty: 2 males and 2 females from Bangkok and 2 males and 2 females from Nakornpanom City in Northeastern Thailand. Signs were elicited in Bangkok and Nakornpanom City in 1996.

The three signing communities in Viet Nam include (a) the Ho Chi Minh City signing community, (b) the Ha Noi signing community, and (c) the Hai Phong signing community.

The Ho Chi Minh signing community refers to the community of signers living in the Ho Chi Minh City Metropolitan Area of Southern Viet Nam. Signs were obtained from 2 female signers in their early twenties from this community. Signs were elicited at a conference in Ha Noi in 1997.

The Ha Noi signing community refers to the community of signers living in the Ha Noi Metropolitan Area in Northern Viet Nam. Signs were obtained from 1 male signer in his twenties from this community. Signs were elicited in Ha Noi in 1997.

The Hai Phong signing community refers to the community of signers living in the Hai Phong Metropolitan Area of Northern Viet Nam. From this community, signs were obtained from 2 female signers in their late twenties and 1 male signer is his early twenties. Signs were elicited at a conference in Ha Noi in 1996.

PREVIOUS RESEARCH ON SIGN LANGUAGES IN THAILAND

Previous research (Woodward, 1996, 1997a) compared for cognates in basic vocabulary across the four signing communities in Thailand: (a) the Ban Khor signing community, (b) the Original Chiangmai signing community, (c) the Original Bangkok signing community, and (d) the Modern Thai signing community. Table 4.2 shows a summary

TABLE 4.2 Summary Results of Previous Cognate Comparisons of Thai Sign Language Varieties

	Ban Khor SL (%)	*Original Chiangmai SL (%)*	*Original Bangkok SL (%)*	*Modern Thai SL (%)*
Ban Khor SL	X	34	33	24
Original Chiangmai SL		X	65	29
Original Bangkok SL			X	26
Modern Thai SL				X

Note: SL=sign language.

TABLE 4.3 Summary Results of Previous Cognate Comparisons of Sign Language Varieties in Viet Nam

	Ho Chi Minh City SL (%)	*Ha Noi SL (%)*	*Hai Phong SL (%)*
Ho Chi Mihn City SL	X	58	54
Ha Noi SL		X	54
Hai Phong SL			X

Note: SL=sign language.

of the results of the cognate comparisons of the sign language varieties used in these four communities.

Following standard lexicostatistical guidelines for subgroupings[1] (Crowley, 1992; Lehmann, 1992), these four sign language varieties were classified as four separat languages that belong to three separate language families. Fig. 4.1 illustrates this classification with a traditional family tree diagram.

PREVIOUS RESEARCH ON SIGN LANGUAGES IN VIET NAM

Previous research (Woodward, 1997b) compared for cognates in basic vocabulary across the three signing communities in Viet Nam: (a) the Ho Chi Minh City signing commu nity, (b) the Ha Noi signing community, and (c) the Hai Phong signing community.

Table 4.3 shows a summary of the results of the cognate comparisons of the sig language varieties used in these three communities.

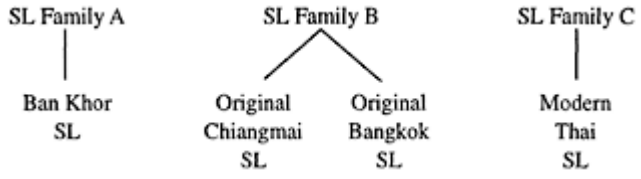

FIG. 4.1. Sign Languages in Thailand Classified by Traditional Language Family Trees.

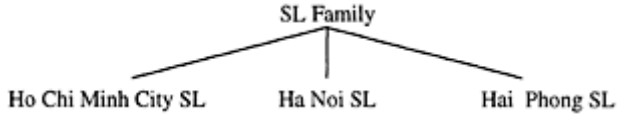

FIG. 4.2. Sign Languages in Viet Nam Classified by a Traditional Language Family *Tree.*

Following standard lexicostatistical guidelines for subgroupings[1] (Crowley, 1992; Lehmann, 1992), these three sign language varieties should be classified as three separate languages that belong to the same language family. Fig. 4.2 illustrates this classification with a traditional family tree diagram.

COMPARISON OF BASIC VOCABULARY IN SIGN LANGUAGES IN VIET NAM WITH BASIC VOCABULARY IN SIGN LANGUAGES IN THAILAND

To determine the possible relationships of sign languages in Viet Nam with sign languages in Thailand, we compare for cognates in basic vocabulary from each of sign languages in Viet Nam with basic vocabulary from each of the sign languages from the three sign language families in Thailand.

Tables 4.4 to 4.15 (in the Appendix at the end of this chapter) show detailed comparisons of individual pairs of sign languages. In each of these tables, possible cognates are shown in **bold** print; missing data are shown ~~struck-out;~~ and noncognates are shown in straight print. All fractions in percentages are rounded to the next highest whole number.

TABLE 4.4 Summary Results of Cognate Comparisons of Sign Languages in Viet Nam With Sign Languages in Thailand

	Ho Chi Minh City SL (%)	*Ha Not SL (%)*	*Hai Phong SL (%)*
Ban Khor SL	~~18~~	~~19~~	~~26~~
Original Chiangmai SL	~~23~~	~~33~~	46

[1]According to standard lexicostatistical guidelines for sub-groupings (Crowley, 1992; Gudschinsky, 1956; Lehmann, 1992), dialects of the same language should have an 81% to 100% rate of cognates, and languages belonging to the same language family should have a 36% to 81% rate of cognates. These percentages are based on the results of historical linguistic studies in 13 languages for which there are written records going back more than 1,000 years (Crowley, 1992) and are considered the standard measuring tool for lexicostatistical studies.

Original Bangkok SL	~~25~~	~~31~~	48
Modern Thai SL	39	45	40

Note: SL=sign language.

Table 4.16 shows such a summary of the findings in Table 4.4 through Table 4.15. Percentages lower than 36% are ~~struck out,~~ because language varieties with less than 36% cognates should be classified as belonging to different language families.

We can summarize the language family relations in Table 4.16 as follows:

1. The seven sign languages in Thailand and in Viet Nam can be classified into three language families.
2. The first language family includes Ban Khor Sign Language. Ban Khor Sign Language is the only known member of this sign language family.
3. The second language family includes Original Chiangmai Sign Language, Original Bangkok Sign Language, and Hai Phong Sign Language.
4. The third language family includes Modern Thai Sign Language, Ha Noi Sign Language, Ho Chi Minh Sign Language, and Hai Phong Sign Language.

DISCUSSION

The composition of the second family and the composition of the third language family are a bit surprising, particularly in regard to the lexicostatistical classifications of Modern Thai Sign Language and of Hai Phong Sign Language.

Specifically, we need to answer the following three questions:

1. How can the lexicostatistical classification of Modern Thai Sign Language in a separate language family from original sign languages in Thailand be explained?
2. How can the lexicostatistical classification of Modern Thai Sign Language in the same language family with sign languages used in Viet Nam be explained?
3. How can the lexicostatistical classification of Hai Phong Sign Language as a member of two separate language families be explained?

The answer to Question 1 lies in the different histories of sign languages in Thailand. Research on Modern Thai Sign Language (Woodward, 1996) has shown that the introduction of vocabulary from ASL into schools for the Deaf in Thailand has resulted in a 52% rate of cognates between basic vocabulary in Modern Thai Sign Language and ASL.

Given the great amount of foreign contact and borrowing that has influenced Modern Thai Sign Language's development and use and the lack of such contact and borrowing in other sign languages in Thailand, there should be little doubt why Modern Thai Sign Language is not closely related to any other sign language in Thailand and why it belongs to a separate language family from any other sign language in Thailand.

The answer to Question 2 can be found by examining external factors that have influenced the history of Modern Thai Sign Language and sign languages in Viet Nam. The relation of Modern Thai Sign Language to sign languages in Viet Nam is in fact not a result of direct contact but of indirect contact. Ha Noi Sign Language, Ho Chi Minh Sign Language, and Hai Phong Sign Language all show very strong influences from French Sign Language, which was introduced into schools for the Deaf in Viet Nam. French Sign Language and ASL have a 61 % rate of cognates in basic vocabulary and therefore belong to the same language family (Woodward, 1978). Thus, the influence of ASL on Modern Thai Sign Language and the influence of French Sign Language on Ha Noi Sign Language, Ho Chi Minh Sign Language, and Hai Phong Sign Language result in a large number of shared cognates between Modern Thai Sign Language and sign languages in Viet Nam.

We can now turn to the final issue of why Hai Phong Sign Language appears to belong to two separate sign language families. Ha Noi Sign Language, Ho Chi Minh Sign Language, and Hai Phong Sign Language have all three been influenced by French Sign Language. However, Hai Phong signers, perhaps because of their relative isolation from Ha Noi and Ho Chi Minh City, have managed to preserve more original Southeast Asian signs than the other signers in Ha Noi and Ho Chi Minh City.

Even when Hai Phong has borrowed a French sign for a vocabulary item, Hai Phong signers sometimes keep the original Southeast Asian sign along with the French sign. This has resulted in pairs of cognates for a number of words. One sign in the cognate pair is cognate with original sign languages in Thailand and one with French Sign Language. Examples of this can be found in signs for WIFE, HUSBAND, and PIG, among others. Because of these pairs, Hai Phong Sign Language shows strong similarities to Southeast Asian sign languages that *have not* been influenced by French Sign Language or ASL (Original Chiangmai Sign Language and Original Bangkok Sign Language) and also shows strong similarities to Southeast Asian sign languages that *have* been influenced by French Sign Language or ASL (Ha Noi Sign Language, Ho Chi Minh Sign Language, and Modern Thai Sign Language).

When we put all of these facts together, an interesting picture of linguistic relations emerges. This picture is graphically represented in Fig. 4.3.

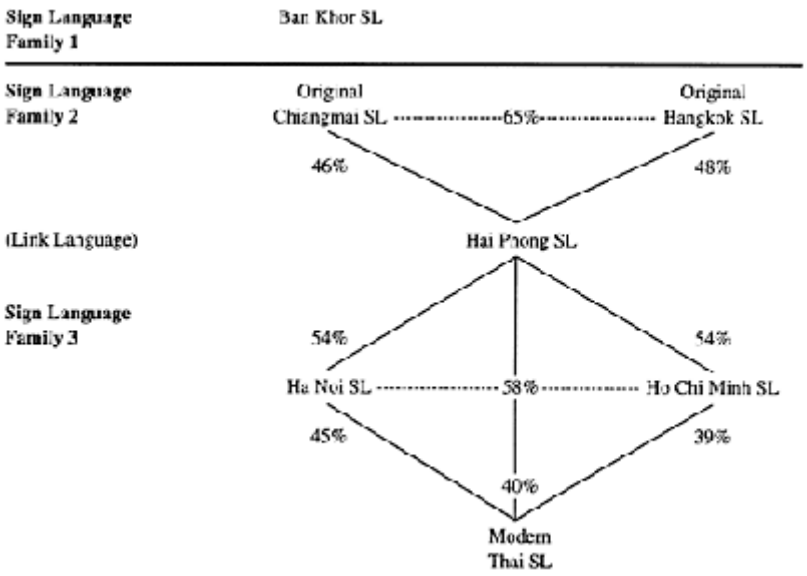

FIG. 4.3. Linguistic Relations Between Sign Languages in Thailand and Viet Nam.

The first family is an indigenous sign language family in Thailand that includes Ban Khor Sign Language. Ban Khor Sign Language developed in a small village with a large proportion of Deaf people. Thus, Ban Khor Sign Language developed in isolation from other sign languages in Southeast Asia. There may be other related indigenous sign languages in other small villages with large Deaf populations in the same general region in Northeast Thailand. For example, the villages of Pla Bag and Bang Na, which are relatively close to Ban Khor, also appear to have larger Deaf populations than expected, and Pla Bag and Bang Na may have sign language varieties related to Ban Khor Sign Language. There may also be other indigenous sign language families in Thailand and in Viet Nam.

The second sign language family includes original Southeast Asian sign languages that developed in contact with other sign languages in Southeast Asia but with no contact (or extremely limited contact) with Western sign languages. This sign language family includes Original Chiangmai Sign Language and Original Bangkok Sign Language. Hai Phong Sign Language is still linked to this family. Other related original sign languages may have existed in urban areas in Thailand and Viet Nam. For example, it is likely that there were original sign languages in the Northeastern and Southern parts of Thailand. It is also likely that there was an Original Ha Noi Sign Language and an Original Saigon (Ho Chi Minh City) Sign Language before French Sign Language had an impact on sign languages in Viet Nam. Some of these original sign languages may still exist among older signers. Some probably have already died out.

The third sign language family includes “modern” sign languages that are mixtures, probably creolizations, of original sign languages with French Sign Language, ASL, or both. Modern sign languages have already replaced original sign languages among younger signers in Thailand and in Viet Nam. Within 50 years, it is highly likely that all

original sign languages in Thailand and Viet Nam will be extinct, dying out with the users who still remember them.

IMPLICATIONS FOR FUTURE RESEARCH

In conclusion, although we have gained some knowledge about the relations of sign language varieties in Thailand and Viet Nam, there are still many gaps in our knowledge. For example, we still do not know the following:

- How many original sign languages and how many indigenous sign languages exist or have existed in Thailand or in Viet Nam, not to mention in other countries in Southeast Asia
- How many language families these original sign languages and indigenous sign languages belonged to
- What intercountry and intracountry relations exist among original sign languages in Southeast Asia
- How many "link languages," like Hai Phong Sign Language, may still exist in Southeast Asia
- What the future of endangered original and endangered indigenous sign languages in Southeast Asia may be.

What is needed at this point is a large-scale, in-depth sociolinguistic study of sign languages in Southeast Asia. This sociolinguistic study must look at a large number of Deaf linguistic informants who have competence in one or more sign languages in Southeast Asia. These Deaf people must be selected from various stratified age groups and various regions of Southeast Asia, and they should represent various Deaf social identities in Southeast Asia. This research needs to include original, indigenous, and modern sign languages and needs to focus primarily on sign languages that are most endangered and on link languages. Link languages, which preserve older forms and still link certain sign languages in modern sign language families with certain sign languages in original sign language families, provide important clues about the history of sign languages in Southeast Asia.

At this point, it is likely that the great majority of users of original sign languages in most countries in Southeast Asia are around 50 years old. If the documentation of these original sign languages is not completed in one generation, it is quite likely that they will be lost to linguistic study forever, because there are currently no records of these sign languages.

If original sign languages in Southeast Asia die out before they can be properly documented and described, Deaf people in Southeast Asia will lose a valuable part of their history, all Southeast Asian people will lose a valuable part of their national or regional heritage, and the rest of us will lose one of the important keys to understanding the history of sign languages in Southeast Asia.

ACKNOWLEDGMENTS

Research on which this chapter is based was supported in part by the Research Department at Ratchasuda College; by an internal Mahidol University Grant, "A Study of the Bangkok Metropolitan Variety of Thai Sign Language"; by an external grant from the Thai Government, "A Study of the Grammar of Thai Sign Language and of Thai Deaf Culture"; by a grant from Ratchasuda Foundation, "A Pilot Study of Sign Language Varieties in Ban Khor, Nakornpanom"; and by Sign Language Research, Inc. Parts of this chapter were presented at the 1997 Annual Meeting of the American Anthropological Association, Washington, D.C., in section 4-025, Ethnically Deaf: Identity, Culture, and the Making of Sign Language Communities, organized by Karen J.Nakamura and Lelila Monaghan. I would like to thank Angela M.Nonaka for her comments and criticisms on an earlier draft of this chapter.

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APPENDIX

TABLE 4.4 Ho Chi Minh City SL/Ban Khor SL: 18% Possible Cognates (17/97)

1. all	26. grass	51. other	**76. warm**
2. animal	27. green	52. person	77. water
3. bad	28. heavy	53. play	**78. wet**
4. because	29. how	54. rain	79. what
5. bird	30. hunt	**55. red**	80. when
6. black	31. husband	56. correct	81. where
7. blood	32. ice	57. river	82. white
8. child	33. if	58. rope	83. who
9. count	34. kill	**59. salt**	**84. wide**
10. day	35. laugh	60. sea	85. wife
11. die	36. leaf	61. sharp	86. wind
12. dirty	37. lie	62. short	87. with
13. dog	38. live	**63. sing**	88. woman
14. dry	39. long	**64. sit**	89. wood
15. dull	40. louse	~~65. smooth~~	~~90. worm~~
16. dust	41. man	66. snake	91. year
17. earth	42. meat	67. snow	92. yellow
18. egg	43. mother	68. stand	93. full
~~19. grease~~	**44. mountain**	69. star	94. moon
20. father	45. name	70. stone	95. brother
21. feather	46. narrow	71. sun	96. cat
22. fire	47. new	72. tail	97. dance
23. fish	48. night	73. thin	98. pig
24. flower	**49. not**	74. tree	99. sister
25. good	50. old	**75. vomit**	100. work

Note: SL=sign language.

TABLE 4.5 Ha Noi SL/Ban Khor SL: 19% Possible Cognates (18/97)

1. all	26. grass	51. other	**76. warm**
2. animal	27. green	52. person	77. water
3. bad	28. heavy	53. play	78. wet
4. because	29. how	54. rain	79. what
5. bird	30. hunt	**55. red**	80. when
6. black	31. husband	56. correct	81. where
7. blood	32. ice	57. river	82. white
8. child	33. if	58. rope	83. who
9. count	34. kill	**59. salt**	**84. wide**
10. day	35. laugh	60. sea	85. wife
11. die	36. leaf	61. sharp	86. wind
12. dirty	37. lie	62. short	87. with
13. dog	38. live	**63. sing**	88. woman
14. dry	39. long	**64. sit**	89. wood
15. dull	40. louse	~~**65. smooth**~~	~~**90. worm**~~
16. dust	41. man	66. snake	91. year
17. earth	42. meat	67. snow	92. yellow
18. egg	43. mother	**68. stand**	93. full
~~**19. grease**~~	**44. mountain**	69. star	94. moon
20. father	45. name	70. stone	95. brother
21. feather	**46. narrow**	71. sun	96. cat
22. fire	47. new	72. tail	97. dance
23. fish	48. night	73. thin	98. pig
24. flower	**49. not**	74. tree	99. sister
25. good	50. old	**75. vomit**	100. work

Note: SL=sign language.

TABLE 4.6 Hai Phong SL/Ban Khor SL: 26% Possible Cognates (25/97)

1. all	26. grass	51. other	**76. warm**
2. animal	27. green	52. person	77. water
3. bad	28. heavy	53. play	**78. wet**
4. because	29. how	**54. rain**	79. what
5. bird	30. hunt	**55. red**	80. when
6. black	31. husband	56. correct	81. where
7. blood	32. ice	57. river	82. white
8. child	33. if	58. rope	83. who
9. count	**34. kill**	**59. salt**	**84. wide**
10. day	35. laugh	60. sea	85. wife
11. die	**36. leaf**	61. sharp	86. wind
12. dirty	37. lie	62. short	87. with
13. dog	38. live	**63. sing**	88. woman
14. dry	39. long	**64. sit**	89. wood
15. dull	40. louse	~~65. smooth~~	~~90. worm~~
16. dust	41. man	66. snake	91. year
17. earth	42. meat	67. snow	92. yellow
18. egg	43. mother	68. stand	93. full
~~19. grease~~	**44. mountain**	**69. star**	**94. moon**
20. father	45. name	70. stone	95. brother
21. feather	**46. narrow**	71. sun	96. cat
22. fire	47. new	72. tail	97. dance
23. fish	48. night	73. thin	98. pig
24. flower	**49. not**	74. tree	99. sister
25. good	50. old	**75. vomit**	100. work

Note: SL=sign language.

TABLE 4.7 Ho Chi Minh City SL/Original Chiangmai SL: 23% Possible Cognates (22/97)

1. all	26. grass	**51. other**	76. warm
2. animal	27. green	**52. person**	77. water
3. bad	28. heavy	53. play	**78. wet**
4. because	29. how	54. rain	79. what
5. bird	30. hunt	**55. red**	80. when
6. black	31. husband	56. correct	81. where
7. blood	32. ice	57. river	82. white
8. child	33. if	58. rope	83. who
9. count	34. kill	**59. salt**	**84. wide**
10. day	35. laugh	60. sea	85. wife
11. die	36. leaf	61. sharp	86. wind
12. dirty	37. lie	**62. short**	87. with
13. dog	38. live	63. sing	88. woman
14. dry	39. long	**64. sit**	89. wood
15. dull	40. louse	~~**65. smooth**~~	~~**90. worm**~~
16. dust	41. man	66. snake	91. year
17. earth	42. meat	67. snow	92. yellow
18. egg	43. mother	68. stand	93. full
~~**19. grease**~~	**44. mountain**	69. star	94. moon
20. father	45. name	70. stone	**95. brother**
21. feather	46. narrow	71. sun	96. cat
22. fire	47. new	72. tail	**97. dance**
23. fish	**48. night**	73. thin	98. pig
24. flower	**49. not**	**74. tree**	**99. sister**
25. good	50. old	**75. vomit**	100. work

Note: SL=sign language.

TABLE 4.8 Ha Noi SL/Original Chiangmai SL: 33% Possible Cognates (32/97)

1. all	26. grass	51. other	76. warm
2. animal	27. green	**52. person**	77. water
3. bad	28. heavy	53. play	78. wet
4. because	29. how	54. rain	79. what
5. bird	**30. hunt**	**55. red**	80. when
6. black	31. husband	56. correct	81. where
7. blood	32. ice	57. river	**82. white**
8. child	33. if	**58. rope**	83. who
9. count	34. kill	**59. salt**	**84. wide**
10. day	35. laugh	60. sea	85. wife
11. die	36. leaf	61. sharp	86. wind
12. dirty	37. lie	**62. short**	**87. with***
13. dog	38. live	63. sing	88. woman
14. dry	**39. long**	**64. sit**	89. wood
15. dull	40. louse	~~**65. smooth**~~	~~90. worm~~
16. dust	41. man	66. snake	91. year
17. earth	42. meat	67. snow	92. yellow
18. egg	43. mother	**68. stand**	93. full
~~**19. grease**~~	**44. mountain**	69. star	94. moon
20. father	45. name	**70. stone****	**95. brother**
21. feather	**46. narrow**	71. sun	96. cat
22. fire	47. new	**72. tail**	**97. dance**
23. fish	**48. night**	73. thin	98. pig
24. flower	**49. not**	**74. tree**	**99. sister**
25. good	50. old	**75. vomit**	100. work

Note: SL=sign language.
*Original Chiangmai SL has 2 signs; one is cognate with Ha Noi SL.
**Ha Noi SL has a compound sign; one part is cognate with Original Chiangmai SL.

TABLE 4.9 Hai Phong SL/Original Chiangmai SL: 46% Possible Cognates (44/97)

1. all	26. grass	**51. other****	76. warm
2. animal	27. green	**52. person**	77. water
3. bad	28. heavy	53. play	**78. wet**
4. because	29. how	**54. rain**	79. what
5. bird	**30. hunt**	**55. red**	**80. when**
6. black	**31. husband****	56. correct	81. where
7. blood	32. ice	**57. river**	82. white
8. child	33. if	**58. rope**	83. who
9. count	34. kill	**59. salt**	**84. wide**
10. day	35. laugh	60. sea	**85. wife****
11. die***	**36. leaf**	61. sharp	86. wind
12. dirty	**37. lie****	**62. short**	**87. with***
13. dog	**38. live**	63. sing	88. woman
14. dry	39. long	**64. sit**	89. wood
15. dull	**40. louse**	~~**65. smooth**~~	~~**90. worm**~~
16. dust	41. man	66. snake	**91. year**
17. earth	42. meat	67. snow	92. yellow
18. egg	43. mother	68. stand	93. full
~~**19. grease**~~	**44. mountain**	**69. star**	94. moon
20. father	45. name	70. stone	**95. brother**
21. feather	**46. narrow**	71. sun	96. cat
22. fire	47. new	72. tail	**97. dance**
23. fish	48. night	73. thin	**98. pig****
24. flower	**49. not**	**74. tree**	**99. sister**
25. good	**50. old**	**75. vomit**	100. work

Note: SL=sign language.
*Original Chiangmai SL has 2 signs; one is cognate with Hai Phong SL.
**Hai Phong SL has two signs; one is cognate with Original Chiangmai SL.
***Hai Phong SL has a compound sign; one part is cognate with Original Chiangmai SL.

TABLE 4.10 Ho Chi Minh City SL/Original Bangkok SL: 25% Possible Cognates (24/97)

1. all	26. grass	**51. other**	76. warm
2. animal	27. green	52. person	**77. water**
3. bad	28. heavy	53. play	**78. wet**
4. because	29. how	54. rain	79. what
5. bird	30. hunt	**55. red**	80. when
6. black	31. husband	56. correct	81. where
7. blood	32. ice	57. river	82. white
8. child	33. if	58. rope	83. who
9. count	34. kill	**59. salt**	**84. wide**
10. day	35. laugh	60. sea	85. wife
11. die	36. leaf	61. sharp	86. wind
12. dirty	37. lie	**62. short**	87. with
13. dog	38. live	63. sing	88. woman
14. dry	39. long	**64. sit**	89. wood
15. dull	40. louse	~~**65. smooth**~~	~~**90. worm**~~
16. dust	41. man	66. snake	91. year
17. earth	42. meat	67. snow	92. yellow
18. egg	43. mother	68. stand	93. full
~~**19. grease**~~	**44. mountain**	69. star	94. moon
20. father	45. name	70. stone	**95. brother**
21. feather	46. narrow	71. sun	**96. cat**
22. fire	47. new	72. tail	**97. dance**
23. fish	**48. night**	73. thin	98. pig
24. flower	**49. not**	74. tree	**99. sister**
25. good	50. old	**75. vomit**	**100. work**

Note: SL=sign language.

TABLE 4.11 Ha Noi SL/Original Bangkok SL: 31% Possible Cognates (30/97)

1. all	26. grass	51. other	76. warm
2. animal	27. green	52. person	**77. water**
3. bad	28. heavy	53. play	78. wet
4. because	29. how	54. rain	79. what
5. bird	**30. hunt**	**55. red**	80. when
6. black	31. husband	56. correct	81. where
7. blood	32. ice	57. river	82. white
8. child	33. if	**58. rope**	83. who
9. count	34. kill	**59. salt**	**84. wide**
10. day	35. laugh	60. sea	85. wife
11. die	36. leaf	61. sharp	86. wind
12. dirty	37. lie	**62. short**	**87. with**
13. dog	38. live	63. sing	88. woman
14. dry	39. long	**64. sit**	89. wood
15. dull	40. louse	~~**65. smooth**~~	~~**90. worm**~~
16. dust	41. man	66. snake	91. year
17. earth	42. meat	67. snow	92. yellow
18. egg	43. mother	**68. stand**	93. full
~~**19. grease**~~	**44. mountain**	69. star	94. moon
20. father	45. name	70. stone	**95. brother**
21. feather	**46. narrow**	71. sun	96. cat
22. fire	47. new	72. tail	**97. dance**
23. fish	**48. night**	73. thin	98. pig
24. flower	**49. not**	74. tree	99. sister
25. good	50. old	**75. vomit**	**100. work**

Note: SL=sign language.

TABLE 4.12 Hai Phong SL/Original Bangkok SL: 48% Possible Cognates (46/97)

1. all	26. grass	**51. other***	76. warm
2. animal	27. green	52. person	**77. water**
3. bad	28. heavy	53. play	**78. wet**
4. because	29. how	**54. rain**	79. what
5. bird	**30. hunt**	**55. red**	**80. when**
6. black	**31. husband***	56. correct	81. where
7. blood	32. ice	57. river	82. white
8. child	33. if	**58. rope**	83. who
9. count	**34. kill**	**59. salt**	**84. wide**
10. day	35. laugh	60. sea	**85. wife***
11. die**	**36. leaf**	61. sharp	**86. wind**
12. dirty	**37. lie***	**62. short**	87. with
13. dog	38. live	63. sing	**88. woman****
14. dry	**39. long***	**64. sit**	89. wood
15. dull	**40. louse**	~~**65. smooth**~~	~~**90. worm**~~
16. dust	**41. man***	66. snake	**91. year**
17. earth	42. meat	67. snow	92. yellow
18. egg	43. mother	68. stand	93. full
~~**19. grease**~~	**44. mountain**	**69. star**	**94. moon**
20. father	45. name	70. stone	**95. brother**
21. feather	**46. narrow**	71. sun	**96. cat**
22. fire	47. new	72. tail	**97. dance**
23. fish	48. night	73. thin	**98. pig***
24. flower	**49. not**	74. tree	**99. sister**
25. good	50. old	**75. vomit**	**100. work**

Note: SL=sign language.
*Hai Phong SL has two signs; one is cognate with Original Bangkok SL.
**Hai Phong SL has a compound sign; one part is cognate with Original Bangkok SL.

TABLE 4.13 Ho Chi Minh City SL/Modern Thai SL: 39% Possible Cognates (37/97)

1. all	26. grass	51. other	**76. warm***
2. animal	27. green	52. person	77. water
3. bad	**28. heavy**	53. play	78. wet
4. because	**29. how**	54. rain	79. what
5. bird	**30. hunt**	**55. red**	80. when
6. black	**31. husband**	56. correct	81. where
7. blood	32. ice	**57. river**	82. white
8. child	33. if	58. rope	83. who
9. count	34. kill	**59. salt**	**84. wide**
10. day	35. laugh	60. sea	**85. wife**
11. die	36. leaf	61. sharp	**86. wind**
12. dirty	37. lie	**62. short**	**87. with**
13. dog	**38. live**	**63. sing**	88. woman
14. dry	39. long	64. sit	**89. wood**
15. dull	40. louse	~~**65. smooth**~~	~~**90. worm**~~
16. dust	41. man	66. snake	**91. year**
17. earth	**42. meat**	67. snow	92. yellow
18. egg	43. mother	**68. stand**	**93. full**
~~**19. grease**~~	**44. mountain**	69. star	94. moon
20. father	**45. name**	70. stone	**95. brother**
21. feather	46. narrow	71. sun	96. cat
22. fire	47. new	72. tail	97. dance
23. fish	48. night	**73. thin***	**98. pig**
24. flower	**49. not**	74. tree	**99. sister**
25. good	50. old	**75. vomit**	100. work

Note: SL=sign language.
*Modern Thai SL has two signs; one is cognate with Ho Chi Minh City SL.