Signs Have Parts: A Simple Idea

Robbin Battison

It was December of 1971 and I was flying from San Diego to Europe to attend some meetings and see some friends. I had been working with American Sign Language for about a year, and one of the books that I kept going through again and again was the Dictionary of American Sign Language. *I decided to meet the principal author of that book as long as I was stopping in at Washington, D.C. Who knew when I would have a chance like that again? I called up Bill Stokoe and he invited me to lunch. At lunch, we chatted; he was friendly and full of ideas and wanted to know about mine.*

He later surprised me when he wrote to offer me a job that summer (the Watergate summer of 1972) in the Linguistics Research Lab. Of course I accepted; the salary he offered was twice what I would have asked for. I made several false starts that first summer and actually wrote up very little of my research or my ideas; but the following year Bill asked me to come out again. After the second summer in the Lab, I did not return to graduate school in San Diego. After all, I had finished my course work, and at Gallaudet College I could write my dissertation while surrounded by hundreds of skilled signers, the people who could help me discover new things about this very peculiar language that I had chosen to study. I had some ideas but very little direction at this point. Bill gave me the support I needed to develop my ideas and to shape my work into something coherent. It took years . . .

Introduction

The thing that interested me most about Bill Stokoe was that he had hold of an exciting idea, one that clearly was going to lead somewhere. He said that Sign Language was a language like any other language and that it could be analyzed as a language. This simple idea contradicted many popular beliefs: for who could see similarities between the movements of hands and body and the audible sounds produced by speaking? What possible basis of comparison was there? And, as the argument went, even if they did have some casual similarity, we would still know that signed languages were fundamentally different from spoken languages: after all, signs

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are like pictures drawn in the air with hands, aren't they, while words are quite abstract?

This is actually the crucial part of the argument, and the basic idea that Bill developed. Bill believed that the basic way to think of a sign was *not* as a picture, but as a complex and abstract symbol that could be analyzed into parts. This heretical idea contradicted what most experts had always said about signed languages, but eventually it took hold, because it opened new doors of understanding. Analyzing signs into parts allowed us to develop new theories about how signed languages work, where they came from, where they are going, and what is the best way to teach them. This simple idea also later influenced the way in which Sign Language is used in classrooms, and how it is used by interpreters. In this chapter I would like to give a short history of how this simple idea developed, the scientific inquiries that it inspired, and the social action and professional policies that derive from it. The story is not yet at an end.

Signs as Pictures

There are perhaps several reasons for the tradition of thinking of signs as pictures: they are visual; they involve space and size and shape; and they sometimes seem to represent things wholly and directly, just like a picture or a drawing. I would not argue against any of those very common observations. Signs are like pictures in many ways. But to stop there is to miss an important point. Saying that signs are like pictures is like saying that speech is like music. Spoken languages certainly have their musical aspects, but there are so many things about words and connected speech that are not like music—especially how they transmit meanings. There is more to signs than meets the eye; even if a sign does seem like a picture, that may not be the most important aspect of a sign to investigate.

There are several kinds of evidence which demonstrate that the pictorial or graphic nature of signs is not the most important aspect of Sign Language. First, several different kinds of experiments show that people who don't know Sign Language have a hard time guessing what very common signs mean, even in a multiple-choice test. Second, if we compare signs from different countries, we find that not everyone uses the same kind of gesture to represent the same meaning; in other words, different signed languages may represent the same thing with different kinds of gestures. Third, if we look very carefully at written and filmed records of older signs, we find that very often these signs have changed to become *less* graphic or picture-like, and have become more like a standardized gesture that must be pronounced in a particular way to be "just right." For example, the sign STUDENT (based on the sign LEARN) originally was made so that it seemed to create the image of taking something from a book and absorbing it into the mind; however, the modern sign looks very much like taking something and tossing it away! Fourth, sometimes even if you know what a sign means, you may find it hard or impossible to decide just exactly what pictorial image connects the meaning with the gesture. Some signs are just less pictorial than others.

For all these reasons and others (which are reviewed more carefully by Klima and Bellugi in their 1979 book) it is evident that we cannot learn very much or explain very much about Sign Language by depending on the weak idea that they are graphic pictures written in the air with the hands. There has to be something more.

Writing about Signs

Bill Stokoe had a lot of faith in his ideas; that is, he always was a stubborn man, unwilling to change his opinions just because very few

people agreed with him. Faith and stubbornness are sometimes just two ways of looking at the same thing.

At first his ideas didn't make sense to anyone. Many respected experts (including some of the authors in this volume) dismissed his ideas as worthless; he was wasting his time. But knowledge comes step by step, and Bill Stokoe had a plan for studying Sign Language. First, he would need to describe the language in an elemental sense: he must write a dictionary. But before he could do that, he would need to write signs down on paper, in order to "capture" them accurately and describe how they are made. So first he would have to invent an adequate writing system—and that's where the idea began to take real shape.

In order to develop a transcription (writing) system for signs, Bill was forced to take a good hard look at how signs are made: what parts of the body move or don't move, how the fingers bend or extend, how the hands contact the body, where they touch, the speed and repetition of movements, and so on. If he could just think of a written symbol for each of the *important* elements in making signs, then he could write them down, collect signs, and begin even further analyses that could provide important information about these very strange communication systems.

Very early on, he proposed that every sign had at least three independent parts:

location— where on the body or in space is the sign being made? On the cheek, the chest, in front of the body, etc.?

handshape— how are the fingers extended and bent in this particular sign? Is the hand a fist, or does it have some fingers extended, etc.?

movement— how does the hand (or hands) move? In a circle, up-and-down, forward, etc.?

From his experience and training with other languages, Stokoe then made an assumption that turned out to be true. He assumed that within each of these three categories, there were probably a limited number of different ways of making these sign parts. For example, there might be ten different handshapes, or there might be one hundred; the important thing was that he could probably develop a list of all the possibilities, and then develop symbols for each one of them—the list was not going to be infinitely long. The same would be true of different locations and movements. The possibilities were not endless. There was probably a system to it, waiting to be discovered.

In the end, he came up with a system that worked: he had 19 different basic symbols for handshapes, 12 different basic symbols for locations, and 24 different basic symbols for types of movements. In much the same way that the symbols 0123456789 allow us to express any number, Stokoe now had a system that would allow him to express any sign on paper. He published a list of symbols and some of his early thoughts about how to use them in a thin volume in 1960 called *Sign Language Structure*. Table 1 shows the chart he published.

Regardless of how well this system captured the important parts of signs, it was an advance for the time, and it gave us some new tools to work with in probing Sign Language further. There were also practical applications. Using a transcription system, for example, a dramatist could use the transcription system to record exactly the signs needed for a play, a poem, or some other dramatic presentation; a Sign Language teacher could begin to organize lesson material according to which signs are similar, or which signs are different. The most important thing that Stokoe went on to create, however, was the first true dictionary of Sign Language. With Carl Croneberg

Table 1. Stokoe's Transcription Symbols

Tab symbols

1. ø zero, the neutral place where the hands move, in contrast with all places below
2. ∩ face or whole head
3. ⌒ forehead or brow, upper face
4. ⏢ mid-face, the eye and nose region
5. ∪ chin, lower face
6. ʒ cheek, temple, ear, side-face
7. Π neck
8. [] trunk, body from shoulders to hips
9. ↖ upper arm
10. √ elbow, forearm
11. ɑ wrist, arm in supinated position (on its back)
12. ɒ wrist, arm in pronated position (face down)

Dez symbols, some also used as tab

13. A compact hand, fist; may be like 'a', 's', or 't' of manual alphabet
14. B flat hand
15. 5 spread hand; fingers and thumb spread like '5' of manual numeration
16. C curved hand; may be like 'c' or more open
17. E contracted hand; like 'e' or more claw-like
18. F "three-ring" hand; from spread hand, thumb and index finger touch or cross
19. G index hand; like 'g' or sometimes like 'd'; index finger points from fist
20. H index and second finger, side by side, extended
21. I "pinkie" hand; little finger extended from compact hand
22. K like G except that thumb touches middle phalanx of second finger; like 'k' and 'p' of manual alphabet
23. L angle hand; thumb, index finger in right angle, other fingers usually bent into palm
24. 3 "cock" hand; thumb and first two fingers spread, like '3' of manual numeration
25. O tapered hand; fingers curved and squeezed together over thumb; may be like 'o' of manual alphabet
26. R "warding off" hand; second finger crossed over index finger, like 'r' of manual alphabet
27. V "victory" hand; index and second fingers extended and spread apart
28. W three-finger hand; thumb and little finger touch, others extended spread
29. X hook hand; index finger bent in hook from fist, thumb tip may touch fingertip
30. Y "horns" hand; thumb and little finger spread out extended from fist; or index finger and little finger extended, parallel
31. 8 (allocheric variant of Y); second finger bent in from spread hand, thumb may touch fingertip

Sig symbols

32. ^ upward movement } vertical action
33. v downward movement
34. ᴎ up-and-down movement
35. > rightward movement } sideways action
36. < leftward movement
37. z side to side movement
38. ᵀ movement toward signer } horizontal action
39. ⊥ movement away from signer
40. ɪ to-and-fro movement
41. ɑ supinating rotation (palm up) } rotary action
42. ɒ pronating rotation (palm down)
43. ω twisting movement
44. ŋ nodding or bending action
45. □ opening action (final dez configuration shown in brackets)
46. # closing action (final dez configuration shown in brackets)
47. ᵴ wiggling action of fingers
48. ⊙ circular action
49.)(convergent action, approach } interaction
50. × contactual action, touch
51. ⌘ linking action, grasp
52. † crossing action
53. ⊙ entering action
54. ÷ divergent action, separate
55. " interchanging action

KEY
Tab = location
Dez = handshape
Sig = movement

and Dorothy Casterline, he collected, organized, and described more than 2000 different signs from the language he had begun to call American Sign Language. The dictionary was published in 1965.

We must remember the social and intellectual climate of fifteen years ago: many people were still denying that there was such a thing as a signed *language*. Certainly there was nothing that deserved the elegant title of American Sign Language (displayed in capital letters like that). And whatever kind of language it was, it was certainly nothing like the very large, complicated, and elegant spoken languages that were known in the world. As a matter of fact, some people belittled the language by referring to the dictionary and saying, "Only 2000 signs? This clearly indicates the impoverished, simple nature of Sign Language." What these people forgot is that our scientific knowledge of spoken languages has been developed and refined over several thousand years. By contrast, the scientific study of signed languages has only been progressing for twenty years, if we date it from Stokoe's first publication in 1960. We were only scratching the surface, so far.

Why was the dictionary so important? Surely there were other books that listed signs that deaf people use? But none were like this. A dictionary gives several different kinds of information about the words (or signs) of a language. For each *lexical entry* (separate word or sign), it gives: a coded physical description, telling us how to physically reproduce (pronounce) the word or sign; the meaning of that word or sign, including special nuances; the grammatical functions and properties of that word or sign, telling us how we might use it in a sentence and what variations we might expect depending upon its grammatical form; something of the history of that word or sign, especially a history that relates to other words or items in the language. *The Dictionary of American Sign Language* gave us all that. Previous books had given us only scattered and incomplete (and sometimes misleading) information about signs and Sign Language. Without a writing or transcription system, signs cannot be faithfully reproduced, unless especially clever photos or illustrations are used (and they usually were not).

The Dictionary of American Sign Language was remarkable for another reason: the signs were arranged according to a principle of the language. Just as spoken language dictionaries arrange their words alphabetically (according to the order of the first letter, then the second letter of the word, and so on), Stokoe arranged his sign dictionary according to the parts of the signs that he used for transcription. Thus, this idea that signs are complex objects with parts not only led to a writing system, but also led to a principle of *organizing* all the signs that could be related to each other, depending upon which parts they shared. This is like the way we think of different words as being related if they share the same sounds, particularly at the beginnings of words. This arrangement also shows a lot of *respect* for the language.

Considering the obvious usefulness of Bill's analysis, the reader might expect that he received a lot of support for his work from members of the Deaf community and from professionals in the field of deafness. But this was certainly not the case. Why didn't his ideas catch on more rapidly? Why was there such resistance and even hostility to his ideas about analyzing, transcribing, and describing signs?

There are two interesting reasons for this lack of support that are not usually considered. The first reason concerns the prevailing attitudes among educators of deaf people and deaf people themselves. At that time, you must remember, Sign Language was only accepted if it could be justified as

a contribution to the educational system. Any new idea about Sign Language was discussed as a tool for classroom use. As several stories have it, students and faculty at Gallaudet and at some residential schools mistakenly assumed that they were going to be forced to learn this new transcription system for signs, and that all their books would be written in these complex symbols. Of course, nothing was further from the truth: the transcription system was intended as a scientific tool. But there were enough rumors and feelings going around to prevent anyone from really seeing the transcription system as Bill had intended it.

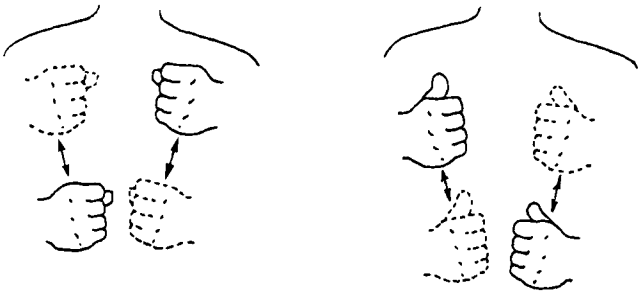
The second reason was a strategic error on Bill's part. Bill gave new technical names to the things he was describing. Perhaps he didn't realize that he was creating resistance to learning when he gave complex names to simple and familiar things. He referred to *dez*, *tab*, and *sig* when he could have simply said *handshape*, *location*, and *movement*. Some people were probably put off by these strange words and had some difficulty learning what they meant and keeping them separate; I certainly did, and I worked hard at it.

Parts of Signs

Comparing, grouping, and classifying signs according to what parts they have in common and what parts they don't is not simply a convenience for organizing dictionaries. Like words, signs must be broken up into parts in order to perceive what they mean. This is especially true of the kinds of complex signs that Ursula Bellugi describes in the next chapter, but it is also true of very simple signs.

Just as we know that the two English words "skim" and "skin" are different words with different meanings, we know that they are *minimally different*. That is, the only difference between these two words is the final sound unit: "m" or "n." Of course we can find thousands of these *minimal pairs* (pairs of words that differ in only one *minimal* way). From them we can determine what types of sound units play an important role in distinguishing meanings in a spoken language. We can do the same with a signed language.

We can find minimal pairs of signs that differ in only one aspect of their production. For the aspect of handshape, there are pairs of signs that are identical except for their handshape. An example is the pair of signs CAR and WHICH (Figure 1). The only difference between them is that CAR has a fist with the thumb closed against the knuckles, while WHICH has a fist with the thumb extended. In the case of location, a minimal pair of CHINESE and SOUR (Figure 2). The



CAR/DRIVE WHICH

Figure 1.

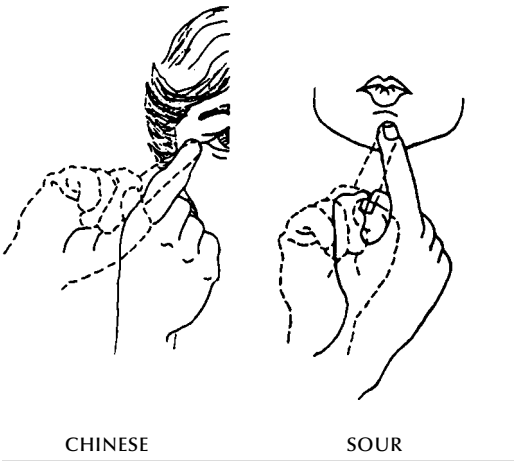


Figure 2.

two signs are identical except that CHINESE is made on the temple or high on the cheek and SOUR is made near the mouth.

A minimal pair for movement is found in NAME and SHORT (Figure 3). NAME is made with simple contact (sometimes repeated), while SHORT is made identically except for its brushing motion of the upper hand. Figure 3 also shows that the *orientation* of the hands might also be a distinctive aspect of signs. The pair of signs NAME and CHAIR differ only by their orientation: in NAME, both palm surfaces point towards the body, but in CHAIR the palm surfaces point downward. These and many other examples of minimal pairs show that there are critical

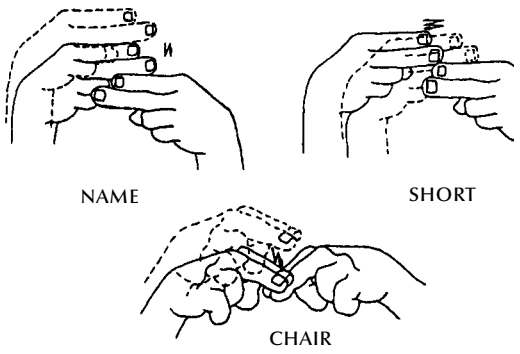


Figure 3.

parts of a sign that allow us to distinguish it from other signs.

There is also reason to think that this is not just a convenient way to speculate about words and signs. This kind of division into parts seems to reflect the way deaf native signers think in signs. Several memory experiments with both spoken and signed languages have shown that the errors people make when trying to recall lists of vocabulary items are frequently related to the other member of a minimal pair. In a spoken experiment, for example, someone who heard "vote" might later recall it as "note;" in a signed experiment, someone might see the sign TREE (with the hand completely open and fingers extended and spread, the entire upright forearm shakes on its axis) but later recall it as the sign NOON (same gesture, without the shaking). The same principles of analysis into parts seem to guide the structure and use of signed languages and spoken languages.

There are several other different types of constructive arguments that are based on an analysis of signs into component parts like the one that Stokoe proposed. If we are trying to argue that signs are not simply random gestures that our bodies just happen to be able to perform, and if we also want to argue that a sign does not have to be a "picture" and does not have to "graphically" represent an idea or an object, then we might look for some other factors or forces that determine how signers use their hands and their bodies to make signs.

From work with spoken languages, it is well known that the individual sounds in a language and the way those sounds can come together to make words in a language are always only a small portion of what humans are able to articulate. Not every possible vocal sound is used in a spoken language. Of the sound units that a language uses, not every possible combination of these

units is used to form syllables or words—many are unlikely or impossible combinations, such as "frtps." This is because sounds and their combinations are governed and limited by psychological and physiological laws relating to the speech organs, and by the way that the ear takes in and processes information.

It is easy to show that the same kinds of principles determine how the different elements of signs—handshapes, locations, and movements—can come together (or *co-occur*) to form complete signs. Of course, some things are quite impossible to do with the hands because of physical limitations. But what about things that are *possible*, but *too complex and unnatural* for the kind of rapid signing that is common in conversation? Are there such things? Linguistic research has shown that there are.

The example I will offer here is from some work I did while studying how signs limit the ways that different parts can occur together. (At that time, I was looking for something parallel to what we call *morpheme structure constraints* in spoken languages.) In ASL, as in all signed languages that we know about, many signs are made with both hands. Logically then, the handshapes could either be the same (for example, two fists), or they could be different (for example, a fist on the left hand and a "V" shape on the right hand). As it turns out for the signs that I studied, there are a number of rules and predictions that you can make on the basis of the handshapes used in signs made with both hands. For example, if the two handshapes are different:

- only one hand will move during the sign—usually the "dominant" hand.
- the hand that does not move will not be just any one of dozens of handshapes—it will be one of the simplest, or most natural, handshapes (the closed fist, the open palm, the open hand with fingers spread, the fist with index finger extended, the "O" hand, or the "C" hand).

This kind of limitation, which is observed in other signed languages as well as in ASL leads to several further observations. First, the limitation is systematic and excludes large numbers of possible hand arrangements; there are only a very few existing signs which break the two "rules" above. Second, there seems to be a physiological reason for the way these "rules" operate: complex and moving things are most often on the dominant hand; simple and static things will most often be on the nondominant hand (the one that is usually not as skilled in doing things). Other reasons may include perceptual factors, such as how many different things the eye and the brain can take in and keep track of when a person watches signs. There is quite a bit of evidence that perceptual limitations play a role in "shaping" possible signs.

There is no need here to continue listing and describing the many different kinds of constraints that people have hypothesized for the structure of signed languages. For the purposes of this paper, the important theoretical point is that these constraints are like those that explain how spoken languages operate: the forms of a language are constrained by physiological and perceptual factors on the production and perception of spoken words and gestural signs.

There are practical observations that are linked to this small set of rules. Consider the problem that faces many professionals who work with signs, especially teachers of young deaf children. Very often teachers will want a sign for a particular word or a concept, but they don't know what that sign is, or even know if it exists. Occasionally, they will appropriately ask several skilled signers to determine what they should sign. Much

more often, they will either fingerspell the word or invent their own sign.

Now, what about all these signs that get invented? Many schools have continuing discussions in committees whose main purpose seems to be to invent signs. But are these invented signs appropriate? Do they fit the natural rules of how signs can be constructed out of parts? The answer is that many of the invented signs, particularly the signs that have been invented to transliterate English words, are unnaturally complex. Many of the signs that have been invented for children, including the names of animals and toys, violate some of the rules that natural signs obey. The results of this situation have been observed by many people in many different places: both children and adults have difficulty learning how to make the signs; both children and adults tend to change the signs, to pronounce them in a little more natural way; and experienced signers often view some of these signs as being unnatural ("they don't fit in"), and in some cases peculiar, silly, or even crude. The lesson is quite clear: we should study how deaf people use signs in a conversational context, and we should pay attention to the detail of how the signs are made. Only then, and only cautiously, should anyone attempt to invent a sign on their own—and only as a last resort.

Extending the Idea that Signs Have Parts

The first summer working in the Linguistics Research Lab was one of exploration and discovery for me. Contrary to what I expected, Bill did not order me to carry out a specific research plan; he didn't order me to transcribe videotapes, and he didn't have me compiling information from dusty books on a hot summer day. He allowed me to think about what I wanted to do, and to take it from there. I kept thinking about breaking signs down into parts and comparing them; I knew that this would be the way to discover all sorts of things about signing, and that this would provide a basis for comparing signs with words. That summer, Lynn Friedman (another summer research assistant) and I began to talk about another level of structure. We knew that it was interesting and useful to think of signs broken down into handshapes, locations, and movements . . . but what was beyond that? What was a handshape? What was a movement, really? These things could also be analyzed into finer parts, and perhaps that division would be useful too. We felt that if we could isolate the different levels of structure of a sign, we might compare them to the different levels of structure of a word. We felt that a word corresponded to a sign pretty well, and the three aspects that Stokoe had discovered might correspond roughly to individual sounds in a spoken word. But we also knew that even individual sounds were composed of finer parts called *distinctive features*, and perhaps we would also find a corresponding level of structure in signs.

Distinctive features in spoken language can refer to many things, but for our purposes here I might say that they refer to different *acts* that the vocal organs (mouth, lips, tongue, etc.) perform in order to make the sounds of language. For example, the feature of *lip rounding* is a distinctive feature of many sounds in many languages. We felt that we might discover a similarity, so we began by breaking down handshapes into features that we called *bent* (if the fingers were *bent*), *crossed* (if some of the fingers crossed each other), *spread* (if the fingers were not touching each other), etc. We eventually came up with a preliminary analysis of features for handshapes, locations, and movements, and we later pursued this track of investigation more thoroughly in our ways.

By now you may be asking yourself, "Why bother breaking down signs into finer and finer details?" The answer is that we were creating a tool for understanding how Sign Language works. Since all of us were continually trying to think of new ways to get valid and meaningful information about signs, it made sense to at least experiment with the very lowest, very finest level of description: how different parts of the body had to arrange themselves and move in order to compose a sign. It was also good practice for learning how to describe signs adequately, and eventually might help us sort out what were the important, as opposed to the unimportant, parts of signs.

The second set of reasons had to do with the general strategy among sign researchers at the time. We were always looking for familiar things that would help alert us to how signs really worked. Since spoken languages had been studied for many centuries, there was a set of traditions (sometimes misleading) and set of theories (sometimes conflicting) about how human beings managed to move their mouths and tongues and make sounds, and how they could listen to those sounds and somehow form the impression that the other person had given them information. There is something magical about it, after all. But for spoken languages, we had at least made a dent in the problem. There are large dictionaries of spoken languages and many scholars who study those languages. Even elementary school children learn something about grammar and composition in their classrooms. More importantly, there is a vocabulary of technical terms for discussing spoken languages. The natural thing to do, although cautiously, was to try to find things in signed languages that looked like, or seemed to act like, familiar things in spoken languages. In this way, we were trying to answer the question: "In what ways are signed languages like spoken languages?" If we kept finding similarities despite their different production mechanisms (the hands and body versus the voice) and despite their different perceptual mechanisms (the eyes versus the ears), then we would feel sure that we were somehow getting closer to discovering ways for producing and perceiving language that all humans share, regardless of whether a given human can hear or not. Any time that a researcher did find a similarity, it might lead that researcher onto a very productive path. This was true of the distinctive feature analysis. As it turns out, allowing us to think about distinctive features of signs allowed us to make a connection to three different kinds of psychological studies that had been done with spoken languages. These offered researchers three new bases for comparing signs and words as people actually used them.

The first kind of study concerned psychological processes like perception and memory. Experiments had showed that the "inner language" of the mind may operate in terms of something like distinctive features. This led to a whole series of investigations by various researchers on the memory and perception of signs.

The second type of study concerned the effects of brain damage on language production and perception. Some of the descriptive work on hearing people who have suffered brain damage used an analysis of distinctive features; this work could now be extended to studies of deaf people (usually elderly) with brain damage.

A third type of study was even more exciting than the other two. People who study "slips of the tongue" (everyday speech errors) have found that these errors help us understand how the brain controls the parts of the body that express speech and language. One of the only ways to describe some of the errors is in terms of distinctive features. This

suggested a new avenue of investigation for sign researchers, who then began to study "slips of the hand," or sign errors.

The point of these little anecdotes is not to inform you about distinctive features. The point is to show the logical progression of ideas leading to further ideas and action.

I think it is very easy to show, for example, that the original idea that signs have parts influences the ways in which we think about the grammar of a signed language. Just to take one point, many writers have said (even into the 1970's) that a signed language has no distinction between nouns, verbs, and adjectives, as spoken languages do. The truth is quite the opposite, as Ursula Bellugi explains [in the original volume]; we just weren't paying attention to the right parts of the sign. Normally, a spoken language will add some additional sounds to a word (a suffix or prefix) to indicate whether it functions as a noun or a verb in the sentence. For example, "claw" can be either a noun or a verb, but "claw*ed*," "claw*ing*," and "*de*-claw" can only be verbs. Anyone who looked for signs that "added on" bits of signs in this way was disappointed, because there weren't any. But as Ted Supalla later noticed, there are systematic differences between nouns and verbs in American Sign Language: they are expressed as different types of movement. Bellugi describes this in greater detail in her chapter. I only raise the point now to show how one observation can build on, and make use of, another. Once movements had been separated (in a sense) from other parts of signs, it became easier to notice different roles that individual movements might play.

Another way that we can use the information about the structure of individual signs is when we try to decide if two different "pronunciations" of a sign make two different signs, or if they are just alternate pronunciations of the same sign. This becomes an issue when we consider what an "idiom" is in American Sign Language. Without discussing it in any great detail, we can show that things that are often called sign "idioms" are often just ordinary signs that are difficult to translate into English (see similar comments in Hansen's paper on Danish Sign Language [in original volume]), or are signs that are confused with other signs. For example, some people claim that the sign SUCCEED has an idiomatic or special meaning, "finally" or "at last." But these two signs are made differently: SUCCEED has two distinctive movements, while the sign that I call AT-LAST has only one sharp movement. If two signs are made differently, and have different meanings, this is good evidence that they are separate signs. So AT-LAST is not an idiom, even though it might historically derive from the sign we call SUCCEED. One of the ways ASL expands its vocabulary is through such changes in movement. Again, we see one more reason for paying attention to the fine details of how signs are formed.

This is just one example of how the term "idiom" has been often misused when it is applied to Sign Language; the effect is often to obscure how the language really works, and to make it seem as if the language is unstructured and simple. Of course, nothing could be further from the truth.

CONCLUSION

In this essay I have described some of the research findings that have come out of the last twenty years of thinking about the structure of signed languages. This description has pointed out a few general principles and a few practical results that have sprung from a very simple idea: signs have parts. The discussion has also shown that when we investigate signed languages, we find many parallels to the structure of spoken languages. I think that this will become a very significant

factor in how we hearing people think about deaf people, and in how deaf people think about themselves. It is becoming harder and harder these days to maintain that Sign Languages are very "simple" and "primitive." On the contrary, they are very rich and complex systems. Future investigations in which signing and speaking are compared will tell us more about the wonderful capacity the mind has to deal in abstract symbols.

In closing, let me say that simple ideas are usually the most valuable ones. The work that Bill Stokoe began more than twenty years ago, and which he continues today, has produced ideas that have generated interest among scholars everywhere. They have led to a re-examination of policies and attitudes towards deaf people; they have contributed to the emergence of deaf people as a cultural group; and they have let all of us, deaf and hearing, come a little bit closer to each other.

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