Advances in the Sign Language Development of Deaf Children

Brenda Schick
Marc Marschark
Patricia Elizabeth Spencer,
Editors

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Preface

A colleague of ours once remarked (paraphrasing to protect the innocent): ''Isn't it amazing how we can all know so much about this and still know so little?'' Even if the comment was not quite as profound as it might appear, in this context, it is dead on. This volume came about because we felt that this is one of the most exciting times in the history of language development research and the *most* exciting with regard to sign language development of deaf children. Yet, for all of the research we have seen on the topic, the pieces of the puzzle still seem to be spread all over the table, in small interlocking clumps, but without revealing the bigger picture.

It is also a time of great changes in the larger field of research concerning deaf children, for a variety of reasons. Over the past couple of years, in our editorial roles for the *Journal of Deaf Studies and Deaf Education*, we have seen some subtle and not so subtle changes in the field. The 800-pound gorilla in this case is the cochlear implant.[1] With regard to spoken language development, the increasing popularity of cochlear implants, particularly in Australia (where approximately 80% of all deaf children now receive implants) and in the United States, is changing the lives of some investigators almost as much as it is changing the lives of deaf children and their parents (Spencer & Marschark, 2003). Research concerning the impact of implants on language

[1] Just in case there is some country that does not have this joke-turned-metaphor: Q: *Where does an 800-pound gorilla sit?* A: *Anywhere it wants!*

development in those children certainly has changed dramatically (see chapters in the companion to this volume, *Advances in the Spoken Language Development of Deaf and Hard-of-Hearing Children*). At the same time, research concerning the influence of cochlear implants on the larger mosaic of deaf children's development seems to be proceeding at a remarkably slow pace, and while we are learning about their effects on social and emotional development, we still know little if anything about their effects on academic achievement, peer interaction, and cognitive development. Most significantly for the present purposes (with the gorilla looming in the wing), research concerning sign language development and its use in deaf children with cochlear implants is just now making some tentative progress after a period of fervent—if unsupported—claims that sign language and implants do not mix. With memories of similar fervent, unsupported claims about sign language and spoken language not mixing still fresh, we leave that issue to others.

There are other changes happening in the field that are not so apparent, some of which are directly related to research on sign language development in deaf and hard-of-hearing children, some indirectly so, and some . . . well, it is still unclear. At the most general level, this is a time of expanded international research interest concerning sign language, Deaf studies, and the development and education of deaf children, with emphasis on sign language and how it influences all other aspects of deaf children's worlds. This change is evident in the increasing numbers of conferences, books, and professional journals devoted to sign language and to deaf children. But while research on the development of sign language in most countries is expanding at an impressive pace, it appears that it is slowing in those countries that are most quickly embracing cochlear implants. Big mistake. We never have been good at educating hard-of-hearing children—and most deaf children with implants are functionally hard of hearing even when their implants are functioning perfectly—and issues of how language is intertwined with literacy, academic achievement, and social-emotional functioning are still largely unresolved. Moreover, many children (and adults) with implants continue to acquire and use sign language, and yet there is little understanding of—and apparently little interest in (but see Hoiting, chapter 7 this volume)—the potential interplay of sign language, implants, development, and Deaf culture. Research is needed on this interplay more than ever.

At another level, as the chapters of this volume indicate, research concerning language development in deaf children is now reaching maturity (or at least puberty) and is leaping ahead with an enthusiasm and synergy that has not been seen previously (see Marschark, Schick, & Spencer, chapter 1 this volume). The field is now leaving behind much of the wishful-thinking simplicity of its youth and gaining

a deeper understanding of the process and content of sign language development in deaf children and, importantly, its symbiotic relationship with all other aspects of deaf children's growth (e.g., Marschark, 2003; Schick, 2004; Shaffer, chapter 12 this volume; Spencer, 2000). As an indicator of that maturity, we are now recognizing ways in which sign language development varies with the context in which it is learned (e.g., Spencer & Harris, chapter 4 this volume; Volterra, Iverson, & Castrataro, chapter 3 this volume), its use in contexts beyond the developmental environment (e.g., G. Morgan, chapter 13 this volume; Singleton & D. Morgan, chapter 14 this volume), and theoretical implications of sign language as a visual-spatial language (e.g., Lillo-Martin & Chen Pichler, chapter 10 this volume; Slobin, chapter 2 this volume).

As our understanding of sign language development improves, so does our appreciation of subtleties we had either not noticed previously or had noticed but were not sure how to handle. For example, we have long recognized that sign languages have the potential for grammatical structures that are impossible or difficult to imagine in a spoken language. Thus, American Sign Language allows multiple layers of meaning to be communicated simultaneously, sometimes with different elements of meaning on different hands. This *simultaneity of expression* also reveals the gestural origins of sign language structure, one of several characteristics that make for interesting contrasts with spoken languages. Given the layering and spatial organization of meanings possible within even literal signing (ignoring, for the moment, the complexities of figurative language, cultural nuances, etc.), one would expect differences in development in signed and spoken modalities that could well affect both social and cognitive development. Development moves from the simple to the complex in both cases, but with a different set of complexities across the two modalities. What about the interactions between the two modes of communication—especially when most deaf children are exposed to both?

Similarly, although several of the contributors to this volume aptly demonstrate the importance of language learning contexts to the nature of development, we are just now coming to appreciate the possibility that relatively small differences in input may have significant effects on language structure and use. As we note in chapter 1, essentially all deaf children are exposed to a diversity of language models (not all of them good), a situation not encountered by hearing children. Approximately 95% of deaf children have hearing parents (Mitchell & Karchmer, 2004), most of whom will not become ideal models of sign language fluency, but even those deaf children who have deaf parents will be exposed to nonfluently signing peers and various adults who, themselves, had hearing parents and learned to sign later and in less-than-ideal circumstances. The long-term effects of learning language under such

conditions—and its specific influence on sign language development in both ontogenetic and linguistic senses—remain to be determined. Recent research on the comprehension of sign language by older deaf children and adults, as well as the apparent ease of deaf people's communication at international gatherings, suggests either remarkable flexibility in sign language fluency or yet another divergence from spoken language. How does exposure to variable sign order influence syntactic development? Does variability in observed morphosyntactic regularity, classifier use (Schick, chapter 5), fingerspelling (Padden, chapter 8), and discourse structure (Morgan, chapter 13) affect children's ultimate sign language fluency—and, if so, for better or worse? Given the special options for incorporation of verb modulations and the apparent centrality of verb syntax in natural signed languages, does acquiring a sign language rather than a spoken language result in a different ''view of the world''?

For the most part, our mention of these considerations pertains to their implications for sign language, but we also raise them at other levels of analysis. As we describe in chapter 1, the unique sociopolitical culture surrounding sign language and deafness not only influences research on sign language and its development but also affects the models and attitudes to which deaf children are exposed. Similarly, although the focus of this volume is on theoretical issues relating to language development in deaf children, we again have to remind ourselves of the potential for application as well as theory, for applied research as well as basic research. It is interesting that while research on spoken language in deaf children tends to focus on practical aspects of language comprehension and production (to the apparent exclusion of understanding the broader implications of having diminished speech intelligibility and comprehension skills), research on sign language in deaf children has been less concerned with the practical. In this volume, Spencer and Harris (chapter 4) discuss the considerable research literature on mother–child communication, and Singleton and D. Morgan (chapter 14) present a new perspective on learning sign language in the classroom. Still lacking, however, are considerations of how the use of sign language might affect classroom learning, how it (rather than school placement) might affect social-emotional development, and how the cognitive differences associated with sign language use (Marschark, 2003) might offer opportunities for improvement of educational methods.

There have been several points in the theoretical and chronological history of sign language research where these kinds of questions have emerged (and re-emerged), even if we have struggled with their answers. For example, early discussions concerning the importance of iconicity for learning a signed language appeared to conclude that, while they might be important for adult second language learners, to

the extent to which signs mirror their referents, there was little effect on vocabulary learning by young children (see Emmorey, 2002). Yet, as several chapters in this volume make clear, the question may not be the existence or nonexistence of such effects as much as the extent and complexity of their impact on other aspects of development.

This situation is reminiscent of a similar debate, one that also seems not to be as simple as we once thought: the question of whether deaf children have the benefit of a *sign advantage*, wherein the first signs can be produced earlier than the first words. The relation of the first signs (and the possible advantage) to early gesture is certainly part of this, but together with the iconicity of both signs and gestures, several chapters in this volume make it clear that the question also bears on social and cognitive development as well as the origins of language (see also Stokoe, 2001). Importantly, the consideration of this issue in several chapters of this volume indicates both advances in our understanding of the nuances of sign language development in different contexts and a mature willingness of the field to revisit questions that we thought had been left behind. At the same time, if discussion of a sign language advantage 20 years ago appeared to dissipate with greater care to methodological issues, the re-emergence of the issue now points up the need to keep methodologically apace with theoretical progress lest we err on the side of either unnecessary conservatism or unrestrained generality.

Methodology, ah, that's the thing! As we note in chapter 1, investigators (and/or readers) in language development frequently forget just how thin our database on sign language development really is. Unlike research on language development in hearing children, the corpora used in even the benchmark studies in our field are not easily accessible (if at all) to other researchers and students of language. In large measure, this reflects the difficulty of trying to code a visual-spatial language with words and symbols on a printed page or computer disk. Underlying that issue, however, is the fact that there is not yet agreement on the mechanics of sign language coding (perhaps a sign of some lingering immaturity) or much cross-laboratory sharing of video-based language samples as there is among investigators of hearing children's language development.

If the existing generalities about sign language development in deaf children are based on relatively limited data, the onus on a maturing field of study is to check out the generalizability of earlier reports, develop alternative and convergent methodologies (see Meier, chapter 9 this volume), and be willing to reconsider conclusions that have been based on restricted samples and (now) questionable assumptions. The goal here is not to second-guess those who made earlier advances in the field, but to recognize that as we move forward, we want to avoid garden paths that fail to lead in the right direction. Our understanding

of signed languages is now so much greater than it was 30 years ago, it seems inconceivable that we have not made some grievous errors along the way, that all of our earlier observations will be reliable, that experimental data are fully without confounds. It seems likely that this situation is a continuous one, and it would serve us well to remember it. For example, we have to wonder whether the fact that many (most?) investigators of sign language development in deaf children use some version of the MacArthur Communication Development Inventory to assess vocabulary and early sign combinations (see, just in this volume, Anderson, chap. 6; Hoiting, chap. 7; Spencer & Harris, chap. 4; Volterra et al., chap. 3) will turn out to be a strength or a weakness when reconsidered 10 or 20 years from now.

One value of volumes like this one is that it makes us think of such things and critically re-examine both our own work and that of others in the field. With a collection of chapters like that presented here and the time to read and reread them—in sharp contrast to a conference, which has both the value and the challenge of simultaneity—one has the time to allow some pieces of the puzzle fall together on their own. Other pieces are more difficult to fit into the picture, and the time and thought required to do so sometimes provide all new insights, either of new configurations that make more sense or the recognition that what made sense before no longer does.

In the case of this book, the chapters are compelling in their urging of investigators to pause for a metaphorical moment, to look for and acknowledge differences, and not just similarities, between signed and spoken languages. Such a re-examination is not just about possible differences in the ways that the same meanings are combined and expressed, but also about the dynamics of language interactions between deaf children and others that influence subsequent aspects of language development. We assume that such consideration will be revealing with regard to other domains of development as well—such is the potential synergy of good research.

At a theoretical level, these chapters—and the picture they reveal—have great value with regard to understanding language at large and the ways in which they appear different depending on how they are studied (a kind of linguistic Heisenberg Principle). Investigators inside and outside of this field need to recognize natural sign languages as a resource for learning about visual languages and about learning language ''through noise.'' We have seen enough now to believe that there are significant differences between signed languages and spoken languages, as well as between users of signed languages and spoken languages. Each of these has an independent reality that is of theoretical interest and utility with regard to work in other areas, but it is still unclear how their unique qualities influence each other in cross-domain interactions.

At both theoretical and methodological levels, we have to remember that much of the research on sign language development in deaf children concerns the earliest stages of development, and the chapters of this book clearly reflect that situation. There have long been laments about the lack of research, in general, on semantic and syntactic development after the preschool years, but the issue is of particular importance with regard to deaf children, because of the diverse and variable language models to which they are exposed. Research involving older deaf children is now emerging, but it is necessarily more speculative at this time, and we are not even close to understanding how variability in early language development will play itself out in the later years. We all act as though the effects of atypical early language environments magically disappear by the time deaf children become adults; we know nothing of the course of that presumed convergence, and there are those among us who doubt its veracity.

To some degree, several of these issues are simply natural consequences of the relative youth of the field. One thing that would improve the situation considerably is the availability of better access to primary data repositories. As we noted above, this is not a trivial issue, as the impact that representation and tools have on research on sign language development can remain unclear for a long time, later requiring backing up and redirection along a different path. Although this may be a valuable experience in itself and yield insights that might have been missed otherwise, having to invent a form of representation or coding for each project one does provides little by way of intellectual advancement. Moreover, it prejudices future work by others who might benefit from having such data available—if only they could figure out the coding scheme.

If such issues appear problematic, the good news is that they are resolvable with current wills and ways. Volumes of this sort have the potential to spur such changes, and we have hope that the excitement generated by the pieces of this puzzle coming together will motivate action to tear down the methodological barriers to greater progress and to fill in the gaps that, for one reason or another, have been of lesser interest or urgency until now. There are, however, some gaps that are more difficult to fill. One of these results from the loss of the renown researcher of child language, Elizabeth Bates, a small part of whose work led to development of the MacArthur Communicative Development Inventory, which is being used (in various forms) in so much research about deaf children. Another gap, even closer to home, is that left by the loss of our colleague, friend, and contributor, David Stewart. David's untimely death at age 50, on June 7, 2004, came as he was putting his finishing touches on a chapter for this volume on language development in the context of sign language use. David's contributions to research on the development and education of deaf children stand

on their own—he was both a capable and insightful investigator and a dedicated and respected teacher. More than that, he was a friend to many in our field and someone who had so much more to give. The gap he left in this book will not be filled, and the many more contributions he would have made to the field are now in want of someone to address. Happily, David's research and teaching inspired many others to follow in his footsteps, and this is perhaps the greatest testament of all.

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Advances in the Sign Language Development of Deaf Children

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1

Understanding Sign Language Development of Deaf Children

Marc Marschark, Brenda Schick, &
Patricia Elizabeth Spencer

As long as we have deaf people on Earth, we will have Sign Language. It is God's noblest gift to the Deaf.

—George W. Veditz, *Preservation of the Sign Language*

Sign language is not new. In fact, some investigators have argued that the first human languages were signed rather than spoken (see Armstrong, 1999; Stokoe, 2001). Discussions about the role of sign language in learning and in deaf education also have been around for a long time (e.g., Bartlett, 1850; Bell, 1898; James, 1893), as have descriptions of its place in the lives of deaf people and their communities (see Baynton, 1996; Woll & Ladd, 2003). Attempts to understand the structure of signed languages as linguistic systems, on the other hand, are relatively recent. At just more than 40 years old (Stokoe, 1960/2005; Stokoe, Casterline, & Croneberg, 1965), sign language linguistics is still quite young given the typical pace of scientific progress. On this time line, research on the sign language of deaf and hearing children acquiring it as a first language is still in its metaphorical childhood (e.g., Boyes Braem 1973/1990; Kantor, 1980; McIntire, 1977; Schlesinger & Meadow, 1972), and our understanding of deaf children's acquisition of specific sign language structures and their use in discourse is a mere babe in arms (see Morgan, chapter 13 this volume).

The earliest discussions of the development of sign language in deaf children, beginning in the mid-nineteenth century, relied primarily on theoretical/philosophical arguments. Over the next 50 years or so, observations of school-age deaf children were added to the argument, based on the dubious assumption that their language repertoires and performance reflected the impact of sign language as a first language (see below) and thus demonstrated its value—or lack thereof, depending on the particular observations cited and the perspective of the

commentator. Today, investigators are examining deaf children's sign language development in both naturalistic contexts and controlled testing situations. Such studies are providing a better understanding of deaf children's language *competence* (their implicit knowledge of language), the course of development, and pragmatic aspects of their conversational interactions with language models.

With increasing breadth and depth in the study of children's sign language acquisition, we are now seeing advances in several domains at once, with evidence of research synergism that reveals generalizations about the nature of how deaf children learn language, the role of sign language in other aspects of development, and language itself. However, the history of signed languages within society and debate about its appropriateness in educating deaf children has influenced research and researchers in this field in ways that are not often obvious but always lurking in the background. The field also has been shaped by the fact that, as a young one, its investigators have come from diverse backgrounds: linguistics and language development to be sure, but also cognitive and developmental psychology, anthropology, communication science, sociology, neuropsychology, deaf education, sign language interpreting, and others. Moreover, in contrast with researchers studying development in most other languages, those involved in research on sign languages (given that they are usually hearing people) are often not native and sometimes are not even fluent users of those languages. Although these researchers are usually guided by deaf assistants and consultants, it is useful to keep in mind that had existing research been driven from within the community of deaf signers, rather than from outside, it might have taken a very different route—and it still may.

HISTORICAL REPORTS OF SIGN LANGUAGE

The use of sign languages is well documented. Historical records from both Western and Middle Eastern cultures indicate that deaf people and Deaf[1] communities that used sign language have existed for at least 7,000 years. In Plato's *Cratylus* (360 B.C.), we see one of the earliest considerations of sign language, as Socrates poses the question, ''Suppose that we had no voice or tongue and wanted to indicate objects to one another. Should we not, like the deaf and dumb, make signs with the hands, head, and the rest of the body?'' In the fifteenth century, the courts of the Ottoman sultans included hundreds of deaf people whose responsibilities included teaching sign language to the rest of the court

[1] In this and the following chapters, ''deaf'' refers to audiological status, whereas ''Deaf'' refers to linguistic-cultural affiliation.

(Woll & Ladd, 2003). In this case the issue was a social-political one, as it was deemed inappropriate to speak in front of the sultan.

One of the best-known historical examples of a signing deaf community is from the North America in the 1600s, in Scituate, Massachusetts, the second oldest town in Plymouth Colony. Members of the large deaf population of Kent, England, had immigrated to Scituate, and their sign language took root in the New World. By the 1690s, many of those families and deaf families from other Massachusetts towns had moved to Martha's Vineyard. There, intermarriage led to an extremely high rate of deafness, and signing was a natural and accepted form of communication long before the first school for the deaf was established (Groce, 1985).

Such reports of communities of persons who signed provide us with some understanding of the lives of deaf people in earlier times. However, other than the occasional observation that a particular child or group used a signed language, there is little to be gleaned from such accounts that suggests any particular interest in sign language as an object of linguistic study or in the sign language development of deaf children. There are few documented accounts of how adults actually produced sign language, and no historic records of children's productions, as opposed to their interpretations, have come down to us.

SIGN LANGUAGE IN THE EDUCATION OF DEAF CHILDREN

Looking to history for early uses of sign language in the education of deaf children, there is relatively little information beyond isolated descriptions of particular individuals and the occasional writings of several educational pioneers. For the most part, it appears that early efforts at deaf education involved a focus on language learning through reading and writing, what later came to be called the *natural* method, rather than either sign or speech. In the late 1400s, for example, the Dutch Humanist Rudolphus Agricola described a deaf person who had been taught to read and write, thus offering one of the first suggestions that deaf individuals could be educated effectively. His work was later elaborated by the Italian mathematician and physician Girolamo Cardano, who, in a 1575 book, advocated for the education of deaf children, citing their ability to ''speak by writing'' and ''hear by reading.'' The Spanish Benedictine monk Pedro Ponce de Leon also is frequently noted as at least a candidate for the title of ''father of deaf education.'' In Spain during the Renaissance, as in ancient Rome, sons could only inherit the wealth and power of aristocratic families if they were literate; thus, it was important that young deaf men acquire literacy skills. Ponce de Leon was highly regarded in this respect, and in his writings he described teaching the congenitally deaf sons of the nobility to read and write in Spanish, Latin, and Greek.

In the middle of the eighteenth century, sign language was used in the world's first government-sponsored school for deaf children, a national institution for deaf-mutes (now, the *Institut National des Jeunes Sourds de Paris*), established in Paris under the guidance of Charles Michel Abbé de l'Epée. Although he was not the first observer to recognize the use of sign language by deaf individuals (see Stokoe, 1960/2005), he developed a system of ''methodical signs'' (*signes methodiques*) by taking the natural sign language in use in the Paris deaf community and extensively modifying it to resemble spoken French. Most notably, de l'Epée added signs to represent various aspects of French grammar, such as tense, mood, articles, and prepositions, some of which are still parts of American Sign Language (ASL; e.g., indications of future and past). Later, Alexander Graham Bell (1898) referred to signing at the school as the ''de l'Epée sign language.'' de l'Epée saw sign language as a natural way for deaf people to communicate and with his successor, Abbé Roch Ambroise Sicard, advocated for its use in education.

Thomas Hopkins Gallaudet, visiting from the United States, was impressed with the sign-language–based curriculum and spent several months at the institute with Sicard. It was there that he recruited Laurent Clerc, a deaf assistant teacher, to bring the curriculum, as well as the concept of methodical signs, to American and establish the Connecticut Asylum for the Deaf and Dumb (now the American School for the Deaf) in 1817. de l'Epée's ''methodological'' approach was not entirely a success in America, however, and Baynton (1996) reports that the ''methodical signs were too unwieldy, slow, confusing, and difficult to remember for teachers and students alike'' (p. 119). Other critics of the methodical signs argued that they were not natural and could not become a part of the language, and they were ''opposed to the genius of the language'' (Baynton, 1996, p. 121). Harvey Peet, a prominent educator of deaf children at the time, thought that while the methodical signs were useful for educational lessons designed to teach English, they would not be adopted into the natural sign language. He believed that in natural sign language, ''syntax was not accidental,'' and that changing it would destroy the language (Peet, 1857, cited in Baynton, 1996, p. 119). By the mid-1800s, the ''de l'Epée sign language'' had only a small following in deaf education.

For Gallaudet, sign language helped solve one of the major problems related to deafness, that of access to the gospel and salvation (Baynton, 1996). Gallaudet believed that education should develop the conscience of a moral and religious human being. He argued that by using sign language ''the deaf-mute can intelligibly conduct his private devotions, and join in social religious exercises with his fellow pupils'' (Gallaudet, 1948, cited in Baynton, 1996, p.18).

Ironically, although sign language was considered a means by which one could address the consciousness and soul—and was thought to be

superior to speech in the expression of emotions—even some of its supporters felt that sign language was inferior to speech in conveying abstract thought. Deaf leaders of the time, in contrast, expressed the value that sign language had in the deaf community. As expressed in the epigraph to this chapter by George W. Veditz, a leader in the Deaf community and a proponent of sign language in deaf education, who signed for one of the first recorded films of sign languages, sign language is ''God's most noble gift to the Deaf.''

Despite scientific observations indicating that spoken language was not necessary for deaf individuals in order to be able to think and reason (e.g., James, 1893), many hearing educators and philosophers still thought otherwise and claimed that deaf children must acquire vocal articulation and spoken language to be able to function cognitively at an abstract level. Adopting Samuel Heinicke's ''oral approach'' to schooling for deaf children, established in Leipzig in 1778, Preyer (1882) advocated education through spoken language only in the United States, arguing that without speech deaf children might understand ''lower order'' concepts and abstractions but not the ''higher abstractions'' required for education.

Among educators and philosophers, the debate about the utility of sign language in educating deaf children continued and is well documented in the *American Annals of the Deaf and Dumb* throughout the second half of the nineteenth century and beyond. Commentators in the *Annals* during this period struggled with how a deaf child could ''naturally'' learn spoken language and, conversely, how sign language could be ''natural'' in a hearing family. For many, sign language was seen as a way to ''unlock'' the deaf child's mind and provide an avenue for education. Bell (1898), for example—recognized as a vocal opponent of sign language for children with any hearing at all—nonetheless recognized that sign language might be useful for deaf children who could not learn language through any other modality. The majority of the educational establishment, meanwhile, saw sign language as dooming deaf children to limited intellectual growth.

Of course, there was ample practical evidence that sign language functioned as a real language within the Deaf community, and throughout the first half of the twentieth century, the Deaf community lamented that sign language had been excluded from the schools. Deaf adults rarely were given any substantial role in the governance of the school, however. Few deaf people served as school principals or superintendents, and probably no deaf person sat on a school governing board (Baynton, 1996). The Deaf community therefore fought back in the only manner available to them: They actively lobbied state legislatures and school boards to adopt sign language, and at each annual convention of the National Association of the Deaf, resolutions were passed that condemned the banishment of sign language from the

schools. Stokoe (1960/2005, p. 9) provided this example of one such resolution:

> Resolved, that the oral method, which withholds from the congenitally and quasi-congenitally deaf the use of the language of signs outside the schoolroom, robs the children of their birthright; that those champions of the oral method, who have been carrying on a warfare, both overt and covert, against the use of the language of signs by the adult, are not friends of the deaf; and that in our opinion, it is the duty of every teacher of the deaf, no matter what method he or she uses, to have a working command of the sign language.

Nevertheless, while sign language continued to flourish in the Deaf community, it remained without a formal role in education as well as not seen as worthy of scientific investigation. As we now know, it eventually would take the civil rights movement in the United States and a new line of linguistic research before schools for the deaf would allow sign language a role in the classroom.

ATTEMPTS AT COMPROMISE

Although each side in the ''war of methods'' clearly has had isolationist supporters, there also have been individuals who sought some middle ground, in order to match each child's abilities and needs. Several times over the past 150 years, there have been attempts to join the ''oral'' and ''manual'' approaches to education into what was originally referred to as ''the combined system.'' These systems typically have come from educators more interested in practical results rather than philosophical orientation (e.g., Westervelt & Peet, 1880), in an effort to promote integration and assimilation into the larger hearing community, as well as to development literacy skills. The combined methods of the nineteenth century lost out to oral education, however, and it was to be almost 100 years before they re-emerged in the 1960s and 1970s. This time, the ''combined'' movement was fueled by a new recognition of the linguistic status of natural sign languages, the marked lack of success in teaching many deaf children spoken language, and, consequently, the need to rethink assumptions of some investigators about deaf children ''lacking language'' (e.g., Furth, 1966). There also were continuing concerns about low levels of literacy and other academic skills attained by most deaf students at a time when schools for the deaf in the United States were overcrowded, as a result of rubella epidemics.

In an attempt to teach deaf children the language that would be used in schools, several manual forms of spoken language were developed, collectively known in North America as manually coded English. These

artificial systems (e.g., signed English, SEE1, SEE2) generally used individual signs from the community's indigenous, naturally developed sign language but followed rules of the spoken vernacular for syntax, word meaning, and morphology in order to allow (at least in theory) simultaneous signed and spoken language production (see Anthony, 1971; Bornstein, 1990; Gustason, Pfetzing, & Zawolkow, 1980). The reincarnation of the ''methodological'' approach largely disappointed again, however, and numerous reports exist of the difficulties faced in these attempts to adapt visual-manual language to grammatical structures of auditory-verbal languages (Gee & Goodhart, 1985; Mounty, 1986). Even today, there is little evidence that these systems increase the overall level of academic performance by deaf students, and they have not proven any more effective for promoting reading and writing than have natural signed languages, despite that being their *raîson d'etre* (Marschark, in press).

The lack of success evidenced by ''combined'' systems now has led us back to a re-emphasis on sign languages that developed naturally, over time, in various Deaf communities. By the late twentieth century, linguistic evidence of the sophistication and formal properties of these ''natural'' sign languages was available. In many countries, increased sensitivity to and valuing of the rights of minority populations led to greater recognition of Deaf people as members of a special group with its own language and, to some extent, cultural values and expectations and ''ways of being.'' It has now been demonstrated that when appropriate language models are available, deaf children acquire these languages efficiently and at least as early as hearing children acquire their community's spoken language.

Some educational programs are beginning to support the development of deaf students as both bilingual—fluent in the sign language of the Deaf community and the language of the larger hearing community, perhaps in written form—and bicultural, with the ability to participate in both Deaf and hearing communities (see LaSasso & Lollis, 2003). There are also an increasing number of other countries who have adopted their Deaf community's natural sign language as the language of instruction (see Ahlgren & Hyltenstam 1994; Hoiting, chapter 7 this volume; Mahshie, 1995). Unfortunately, there are still few evaluations of the extent to which bilingual education has been successful in providing fluency either in language of instruction or in enhancing academic achievement in various content areas. The ''method wars'' thus continue, stronger in some countries than others, and deaf children and their parents continue to face sometimes acrimonious debate and conflicting advice about the type of language system they should use and the most effective means of communication in the classroom.

LINGUISTIC STUDIES OF SIGN LANGUAGE DEVELOPMENT COME OF AGE

Around the time that American Sign Language (ASL)[2] was first recognized as a true language, following the work of Stokoe and his colleagues in the 1960s (e.g., Stokoe et al., 1965), there was rapid growth of research on both the structure and function of language development in hearing children.[2] While supporters of spoken language training for deaf children continued their focus on improving speech articulation in therapeutic settings, those interested in sign language began to examine the use of sign language in mother–child interactions and home settings. The first such studies, appearing in the 1960s and 1970s, usually involved simple vocabulary comparisons between hearing children and deaf children (almost always of hearing parents). Several studies, however, sought to describe the linguistic and communicative aspects of mother–deaf-child interactions. Consistent with the investigations by Snow (1972), Newport (1977), and others focusing on the way that hearing mothers talk to their hearing children, most of that work examined the language of the mothers (i.e., motherese)—and tangentially about the reciprocal language produced by the children (see Volterra & Erting, 1990). These research studies were some of the first to consider Deaf parents as a resource, to help us understand the dynamics of parent–child interaction in a visual language, in comparison with a spoken language.

Several early studies of mother–child communication involving deaf children with hearing mothers suggested that poor maternal communication skills had negative effects on their children's language learning (for discussion, see Beckwith, 1977; Goss, 1970; Schlesinger & Meadow, 1972). Comparisons with dyads in which the mother was deaf, however, demonstrated that early interactions coupled with effective communication had positive effects on language development as well as social-emotional development (e.g., Kantor, 1982; Meadow, Greenberg, Erting, & Carmichael, 1981). In particular, the quality of the mother–child relationship was found to be strongly related to children's communication competence, and mother–child communication was strongly related to positive developmental outcomes in a variety of

[2] Throughout this chapter, ''American Sign Language'' (ASL) and ''English'' are used generically to refer to all signed and spoken English languages. It is noteworthy that most of the research conducted to date on sign language development in deaf children has involved children in North America acquiring ASL. Although it is assumed that the principles underlying the development of ASL in that context are representative of any sign language in any naturalistic context, subtle and not-so-subtle variations due to culture, context, and educational methods suggest the potential for interesting study and erroneous conclusions.

other domains. Findings indicating that gestural systems developed even when mothers and deaf children primarily used spoken language (e.g., Greenberg, Calderon, & Kusché, 1984; see Volterra, Iverson, & Castrataro, chapter 3 this volume) opened new doors of sign language development research, and the nature of this reciprocal communicative-social-linguistic dance has been of interest ever since (see, e.g., Meadow-Orlans, Spencer, & Koester, 2004).

In perhaps the first study of its kind, Schlesinger and Meadow (1972) examined the effects that deaf children's language had on their social interactions with their mothers, rather than the other way around. Their longitudinal study described the language development of four young deaf children (two of whom had deaf parents) acquiring sign language as a first language. Although the children varied greatly, Schlesinger and Meadow reported three consistent findings that were remarkable for the time and are still important today. First, they found that children's use of sign did not interfere with their spoken language development. Rather, spoken language skill increased as the children learned more sign, a finding also reported by Crittenden, Ritterman, and Wilcox (1986; see also Yoshinaga-Itano, in press). Second, Schlesinger and Meadow observed that the language milestones of the four children they studied paralleled those of hearing children (see Newport & Meier, 1985), suggesting innate (Lillo-Martin, 1997) or cognitive-social-environmental (Bates, Benigni, Bretherton, Camaioni, & Volterra, 1977) invariants underlying language acquisition, regardless of its mode. Third, Schlesinger and Meadow found that the availability of sign language in families with deaf children greatly decreased the amount of ''communication frustration'' between children and parents relative to deaf children, a finding that was to lead to many studies of mother–deaf-child dyads in the years following.

All three of these findings led to lines of programmatic research in several laboratories, and the apparent similarity of language development by deaf children with deaf parents and hearing children of hearing parents provided a context in which the study of sign language development in deaf children blossomed in its own right. Not only did such investigations offer pioneering (yet modern) investigations of a new ''kind'' of language development, but the comparisons of spoken and sign language acquisition yielded, and continues to yield, new insights into the nature of language, its origins, and the relation of language to other aspects of development.

Unfortunately, unlike contemporaneous research on the language development of hearing children (e.g., Brown, 1973), the transcripts used in most of the early and more recent sign language studies have not been made available to researchers outside the original teams that conducted the research. This may be, in part, because sign productions are more difficult to represent in writing than spoken productions, but

a great deal is also lost in the written documentation of early spoken language, and investigators found ways to overcome that obstacle via the CHILDES project (see MacWhinney, 2001). Alternatively, this omission may simply reflect the youth of the field and the ongoing search for common methodologies—thus offering a new and exciting challenge (see Slobin, chapter 2 this volume).

THE CONTEMPORARY CONTEXT FOR STUDIES OF SIGN LANGUAGE DEVELOPMENT

Today, ASL and other natural sign languages are again being used in schools, but still without widespread acceptance in the education community, which continues to favor manual versions of spoken language. This time, the use of sign languages found in Deaf communities is accompanied by somewhat greater if still limited efforts to document their appropriateness and utility for educational purposes and subsequent literacy development. In this context, sign language development is not just interesting to those who are motivated by theoretical reasons, but schools, teachers, and families are coming to recognize their need to understand how a visual language develops and how it interacts with other aspects of development.

The available research in this area is not yet sufficient to provide these audiences with a clear roadmap of sign language development. North American researchers do not even agree on what types of signing constitute ASL (see Kuntze, 1990; see also Anderson, chapter 6 this volume), a language that is changing as it is used by a larger community than previously, one with a large number of second-language learners, both hearing and deaf. This is an interesting, natural situation worthy of investigation in its own right, as the great number of linguistic variations within the Deaf community and the diversity in sign systems to which deaf children are exposed reflect the unusual milieu that surrounds deaf children as language learners. In this milieu, classroom teachers often are not fluent in sign language, even when it is the (or a) language of instruction. In the United States, neither national certification of deaf educators nor most teacher training programs in deaf education require any minimum competency in sign language in order to teach. In fact, each of us has heard hearing teachers of deaf children claim that they learned how to sign from the children they taught. Deaf children thus are often faced with language learning environments that few hearing children would ever encounter: For many deaf children, most of their early language models are not fluent users of the language the children are learning. Their parents, like most hearing people, learn sign language as a second language, often through informal coursework and self-instruction without the benefit of using it daily across

various contexts or having fluent models (a challenge then shared by their children).

It is important to keep in mind here that the children we are describing represent approximately 95% of the population of deaf children (Mitchell & Karchmer, 2004). As a result of this situation, most deaf children do not encounter ''good'' examples of a full, rich language until they encounter deaf adults or deaf children from deaf families. Even in those cases, however, because most deaf adults were in a similar situation as children (i.e., with hearing parents), the signing they see from deaf adults as well as deaf peers will be quite variable. Together with the relatively degraded and restricted input they receive from their parents, this added variability in language models typically results in language delays that, in turn, make it all the more difficult to take advantage of fluent language when they are finally exposed to it (Erting, Prezioso, & O'Grady Hynes, 1990; Spencer, 1993a, 1993b).

The complexity of this language learning situation often appears to be missed or ignored. Research on sign language development has focused primarily on generalities, and most studies have involved a small number of children that are not necessarily representative of deaf children at large, and fairly brief language samples (see Tomasello & Stahl, 2004; see also Meier, chapter 9 this volume). All too often, in efforts to interpret data unambiguously and to demonstrate commonalities between deaf and hearing children, researchers have assumed simplistic accounts of development in which deaf children with deaf parents are presumed to be typically developing children. Little interest has been shown in determining the validity of this assumption or how to know whether any particular deaf child has a language disorder (vs. a typical delay). In reality, there is not research on what a language disorder looks like in ASL. In addition, only rarely has the possibility been considered that growing up with sign language might lead to cognitive and social differences worthy of investigation (Marschark, 1993; Stokoe, 2001).

Unfortunately, much of the available research on signed languages, particularly in developmental investigations, has minimized the linguistic diversity within the signing community. Kuntze (1990) thus argued that ''an unfortunate side to the otherwise marvelous wealth of new information about ASL was that the focus of the linguistic analysis was unbalanced'' (p. 76) in that linguistic study has focused on those aspects of ASL that seemed more ASL-like and put aside aspects of signing that seem to be influenced by English. As a Deaf adult and a researcher, Kuntze believes that linguistic inquiry has created artificial definitions of what is inside ASL, versus outside (reminiscent of earlier claims that signed languages were not worthy of study). At least with regard to ASL, the sociopolitical history of sign language alluded to

above thus clearly has influenced what researchers have investigated, a situation not far below the surface in studies of other sign languages as well. Importantly, the pressure in this regard is not all from the ''outside''; influences from within the Deaf community and its supporters are altering the course of language research as well.

Beyond these issues of research theory and methodology, there are a number of more subtle complexities in deaf children's language development that appear worthy of study. For example, those deaf mothers who grew up in hearing families may have very different social histories and parenting resources, as well as communication styles, from deaf mothers from multigenerational deaf families. These potential differences have usually been ignored when the language behaviors of ''deaf mothers'' are described. In addition, variations in the language-learning environments provided to deaf children by hearing parents are often also overlooked. Only more recently have researchers begun to address how deaf children from hearing families can learn natural sign languages as well, enriching our understanding of how children learn visual languages (see Lindert, 2001; see also Hoiting, chapter 7 this volume).

In considering sign language growth in young deaf children, it is also important to keep in mind that language development and language learning are not the same thing. *Language development* typically is used in the sense of a natural or automatic unfolding of language along a regular path, as indicated by universal milestones relevant to language *qua* language. *Language learning*, by comparison, refers to language acquisition that requires some amount of effort on the part of both a learner and teacher(s), that is, intentional rather than naturally occurring activity. Although this distinction is rarely important in studies of hearing children (viz., only when those children have special learning needs), it is not one that can be viewed lightly in studies of the language used by deaf children. Language appears to *develop* relatively naturally among deaf and hearing children of deaf parents (given the above caveats) and among hearing children of hearing parents. Deaf children of hearing parents, meanwhile, typically have been *taught* language from the time they enter early intervention programming through their college careers.

It appears likely that these language differences between deaf and hearing children have a variety of influences on other aspects of development. To the extent that we ignore them, we ignore much of the need for a greater understanding of sign language development in deaf children—the practical need for language in social and educational settings—and risk overly simplistic accounts of children's sign language that are applicable in only a minority of cases. Recognition and understanding of the complexity of this situation require concerted and collaborative efforts on both theoretical and practical fronts. But they

also carry potential for considerable gains with regard to broad issues of language development and the education of deaf children (Marschark, 2002) as well as a greater understanding of the majority of individuals who make up the Deaf community and eventually watch sign language develop in their own children.

In a similar vein, much of the research on sign language development to date has implicitly attempted to show how the development of ASL or other sign languages is no different than the development of any spoken language. One would have thought that the years of study seeking to document the elusive *early sign advantage* would have shown the importance of recognizing variability both in sign language and in deaf children (e.g., Meier & Newport, 1990), but several related issues remain unsettled. Lillo-Martin and Pichler (chapter 10 this volume), for example, appear to accept the full comparability of signed and spoken languages as proven fact, while Spencer and Harris (chapter 4 this volume) and Marschark (in press) question whether the two modalities might have slightly different developmental consequences, as evidenced in a variety of cognitive, neuropsychological, and psycholinguistic studies involving adults. In the broader context, while sociocultural studies have emphasized the uniqueness of Deaf culture, language studies have sought commonality of signed and spoken languages, their underpinnings, and their consequences.[3]

Several of the other chapters in this volume either explicitly (e.g., Slobin, chapter 2) or implicitly (e.g., Reilly, chapter 11; Schick, chapter 5) acknowledge that sign languages, as a group, may have typological differences from spoken languages. Recognition that signed and spoken languages may not be strictly comparable allows us to see what is unique in the development of a visual language and potentially different about the development of deaf children. The benefits to the study of language and language development may be the first to appear, but the implications for other domains of development and for the education of deaf children would not be far behind. To achieve this end, however, the study of signed languages and language development will need to more focus more on individual variation and entail more cross-linguistic comparisons (Kuntze, 1990). As Slobin (chapter 2 this volume) notes, ''In order to make cross-linguistic comparisons—between spoken and signed languages, or between the acquisition of

[3] It is tempting to suggest that this orientation is a symptom of the hearing status of the investigators. However, such ''blinders'' may be less the consequence of a hearing–speaking chauvinism than reflection of many investigators' reaction to such a possibility. All too often, an apparent desire to support Deaf individuals and the Deaf community results in an uncritical embrace of all things Deaf and an advocacy of ''equality'' that denies potentially interesting differences and important variability.

different languages—it is necessary to work in a linguistic framework that is not biased toward languages of a particular type.'' Slobin also notes that we need to be very careful that our tools and terms do not bias us toward making sign language look like spoken languages, lest those tools interfere with that which they are designed to investigate.

Despite the fact that researchers have focused on investigating those parts of the language that have fairly obvious counterparts in spoken language (e.g., phonology, syntax, pronouns, morphology), we have learned much about the different forms in which many of those aspects are expressed in visual versus auditory languages. This includes the use of space, nonmanual markers, or classifiers (see Lindert 2001; Loew, 1982; T. Supalla, 1982) to indicate meanings typically expressed by sequentially ordered bound and free morphemes in spoken languages. Some of these are described elsewhere in this volume (see, e.g., Hoiting, chapter 7; Meier, chapter 9; Reilly, chapter 11; Shaffer, chapter 12; Schick, chapter 5), but many more are to be explored. A better understanding of how visual languages develop will have direct impact on early intervention and educational programming for deaf children, improving opportunities and efficiency. Appreciating the language diversity among deaf children as well as between them and hearing children will allow new insights into both their language learning and the nature of signed languages. Perhaps most important, all of these advances will provide a context in which deaf children can thrive and be understood as individuals as well as members of diverse groups. And if some of them go on to join other investigators conducting research ''from the inside,'' areas of study will emerge that are as new and exciting to them as their language is to us today. What more could one ask for?

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2

Issues of Linguistic Typology in the Study of Sign Language Development of Deaf Children

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This chapter stands outside of the theme of ''advances in the sign language development of deaf children.'' Those advances are admirably documented in the rest of this volume, and the development of sign languages has been illuminated by other recent collections as well (see Baker, van den Bogaerde, & Crasborn, 2003; Chamberlain, Morford, & Mayberry, 2000; Morgan & Woll, 2002). Indeed, this decade has begun with a flowering of crosslinguistic and interdisciplinary attention to signing children and their caregivers. My task in this chapter is twofold: first, to consider some lessons that have been learned from the crosslinguistic study of hearing children and their acquisition of a range of spoken languages (Berman & Slobin, 1994; Slobin, 1985a, 1985b, 1985c, 1992, 1997b, 1997c; Strömqvist & Verhoeven, 2004), and second, to attempt to situate the study of sign languages in a typological framework. My focus is thus on issues of linguistic analysis, with special attention to *typology* (Slobin, 1997e). The languages of the world—spoken and signed—present a kaleidoscopic array of diversity. Although linguists have striven, for centuries, to find an underlying uniformity, it now seems that the most interesting universals are revealed in systematic patterns of constrained variation, rather than in surface deviations from a single preordained formal structure. These universals are a collection of dimensions or parameters, making it possible to classify languages according to their positions on such dimensions, that is, to deal with *types* of languages.[1]

[1] In this chapter I use the term ''dimension,'' rather than ''parameter,'' as principles of constrained variation are central to both principles-and-parameters and functionalist-typological approaches.

Table 2-1: Declensions of English Nominals

Case	Singular	Plural
Nominative	a king	kings
Genitive	king's, of a king	of kings
Dative	to a king	to kings
Accusative	a king	kings
Vocative	ó king!	ó kings!
Ablative	with, from, or by a king	by kings

From da Silva (1809, p. 40).

Crosslinguistic studies of child language seek to compare the acquisition of comparable and contrasting languages in order to discover the mechanisms and processes that drive the course of development in general. A basic problem facing such investigation is to define the appropriate dimensions and comparison sets of languages. Many cautionary tales can be drawn from the history of linguistics and of developmental psycholinguistics. The relatively new field of sign language linguistics can learn from such tales when drawing comparisons between signed and spoken languages.

Perhaps the most elementary problem is to be aware of the presuppositions that the investigator brings from knowledge of a particular language or class of languages. We have learned to ridicule the early attempts of European explorers and missionaries to apply the terms of classical Greek and Latin grammar to the exotic languages they encountered in their new colonies. Even English was submitted to such analyses, as can be seen, for example, in table 2.1, which lists ''declinations'' provided in a Portuguese grammar of English from 1809 (da Silva, 1809).

How far have we come from the use of such traditional molds in the analysis of spoken languages, let alone sign languages? We still use many familiar classical categories in the description of English and other languages, albeit with increasing questioning of the universal applicability even of such time-worn notions as ''noun,'' ''verb,'' and ''subject.''[2] Grammars of sign languages also run the risk of uncritical

[2] Wolfgang Klein, a German linguist, points out somewhere that linguists must be wary of expecting to find familiar grammatical categories in unfamiliar languages. He takes issue with the general assumption of Western linguists that there must be verbs in Chinese, because we are used to languages with verbs. In a telling analogy, he suggests that Germans know that every cuisine includes potatoes, and so it is no surprise to find that the Chinese cuisine also relies on potatoes. It's just that their potatoes come in small grains and grow differently.

recourse to familiar linguistic terms and analyses. But just as English doesn't have a vocative case—even though classical languages did—American Sign Language (ASL), for example, may not have ''pronouns'' or ''agreement'' simply because these are found in descriptions of the language of the surrounding hearing community and the languages studied by English speakers. This is not the place for a detailed critique of linguistic analyses of sign languages; see, for example, Liddell (2003) and Taub (2001) for thoroughgoing and insightful attempts to take a fresh approach to the grammar of ASL, as well as chapters in Emmorey (2003) for concerns about the applicability of the category of ''classifier'' to signed languages.

Here I present some small case studies to demonstrate how child language research over the past decades has been forced to move away from the impulse to take a familiar language—generally English—as representing the child's initial assumptions about the nature of language. These case studies have implications for the description and analysis of children's acquisition of signed languages. The problem, in each instance, is to select an appropriate linguistic exemplar as the starting point for crosslinguistic comparison and generalization. Over time, American investigators have learned that English is not the best starting point for predicting patterns of child language development overall. Rather, English has come to be seen as an exemplar of a particular type of language—or, better, as an exemplar of the interplay of particular points on universal dimensions of variation. With regard to the investigation of sign languages—as suggested later in this chapter—the entire collection of comparison languages has been skewed because the sign languages that have been described differ in fundamental typology from the structures of the surrounding speaking communities in Eurasia and the Americas.

SELECTING APPROPRIATE STARTING POINTS FOR THE PREDICTION OF PATTERNS OF LANGUAGE DEVELOPMENT

Starting Point: The Primacy of Word Order

It is hard to escape the illusion that patterns of native-language thinking for speaking directly reflect the structure of human cognition. In the early years of American psycholinguistics, it was assumed that English subject–verb–object (SVO) word order follows the underlying logic of thought. For example, Osgood and Tanz (1977) proposed: ''Our intuition about the nature of simple cognitions is . . . that they have an SVO structure. . . . Regardless of the dominant order type, in the process of language development in children there is initially a relatively fixed SVO ordering in 'sentence' productions'' (pp. 539–540). And Bruner

(1975) suggested ''that a concept of agent–action–object–recipient at the pre-linguistic level aids the child in grasping the linguistic meaning of appropriately ordered utterances involving such case categories as agentive, action, object, indirect object and so forth'' (p. 17).

These intuitions led to crosslinguistic studies of early word order in children's production and comprehension, with the expectation that early stages of development would be characterized by fixed word order, and that the dominant early order would be SVO. The strategy of such comparative research is to pick languages that contrast on the relevant dimension. For example, in one study (Slobin, 1982; Slobin & Bever, 1982) we selected three SVO languages (English, Italian, Serbo-Croatian) and one SOV language (Turkish). The choice of languages reflected another principle of typologically oriented research—the interaction of several dimensions. The four languages lie on a scale of increasing flexibility in word order, due to the availability of inflectional cues to verb–argument structure, as shown in table 2.2. The English-based expectation was that children in all four languages would begin with reliance on a fixed word order, probably reflecting the dominant order in the input, and that inflectional marking of grammatical relations would be a later development.

Briefly stated, these expectations were not confirmed. Turkish, with its transparent and regular agglutinative inflectional morphology, allows for all six orders of S, V, and O; children as young as 24 months (2;0) had already mastered the case markers, used pragmatically appropriate word-order variation in their production, and comprehended all six orders. Serbo-Croatian has a complex, synthetic, and only partially reliable case-marking system; still, children of 2;0 had extracted the principle of case marking in their speech and correctly comprehended SVO sentences—but only if appropriate case marking

Table 2-2: Grammatical Features of Four Languages

	English	Italian	Serbo-Croatian	Turkish
Basic word order	SVO	SVO	SVO	SOV
Degree of word-order flexibility	Low	Medium	High	Very high
Rich verbal inflection (person/number)	No	Yes	Yes	Yes
Case-inflectional morphology	No	No	Yes (synthetic)	Yes (agglutinative)
Nominal case inflection	No	No	Sometimes	Always

was present.[3] To our surprise, English- and Italian-speaking children did not reliably use word order as a comprehension cue until age 2;6. The message of these findings is that children are sensitive to both word order and affixes on individual words, that perceptually salient affixes attract attention, and that such ''local cues'' (Ammon & Slobin, 1979) can guide sentence interpretation early in development. In brief, young learners are sensitive to many types of devices for encoding meaning.

Starting Point: The Inaccessibility of Passive Constructions

Beginning again with English, it has long been noted that passives are a relatively late acquisition, appearing in speech around age 3;6, and presenting comprehension problems as late as age 5 (Pinker, Lebeaux, & Frost, 1987; Maratsos, Kuczaj, Fox, & Chalkley, 1979). For example, long after children can correctly manipulate toys in response to instructions such as ''the horse kicks the cow,'' they are confused by passive equivalents such as ''the cow is kicked by the horse.'' To account for this phenomenon, nativist theorists proposed that the relevant syntactic principle did not mature until some time after age 3;6 (Borer & Wexler, 1987). However, the picture is quite different in children's acquisition of Sesotho, a Bantu language studied by Demuth (1992). At around age 2;8, Sesotho-speaking children show good control of passives in both production and comprehension. Because it is unlikely that their biological maturation has been speeded up in comparison with American children, it is necessary to seek alternative explanations. Passives are highly frequent in Sesotho because they serve salient discourse functions. Sesotho is a topic-oriented language in which the subject position in a sentence is restricted to topical information, that is, information that is given or old. Therefore, the only way to ask questions is to use a passive or a cleft construction, since it is the function of questions to focus on what is *not* given. Thus, for example, it is ungrammatical to say the equivalent of ''Who wants the food?'' The only option is to ask, ''The food is wanted by who?'' or ''It's who that wants food?'' Accordingly, children are exposed to many passive constructions and must learn them early on in order to carry out basic speech functions. The message of these findings is that one can't generalize across languages on the basis of morphology and syntax alone; rather, one must attend equally

[3] In an agglutinative morphological system, elements of meaning line up with separate elements of form, and are ''glued together'' in a series. For example, the Turkish nominal suffix *-ler* indicates plural: *turist-ler*, ''tourists''; *-i* indicates accusative: *turist-i*, ''tourist''-accusative; in combination: *turist-ler-i*, ''tourists''-accusative. In Serbo-Croatian, each case suffix is a synthetic form that combines case, gender, animacy, and number in a single form: *turist-a*, ''tourist''-accusative:masculine:animate:singular; *turist-e*, ''tourist''-accusative:masculine:animate:plural.

to frequency of occurrence of constructions and to the discourse functions that they serve. These factors influence the accessibility of linguistic forms and construction types.

Starting Point: The Accessibility of General-Purpose Verbs

In many languages, first verbs in children's vocabularies include general-purpose verbs such as ''go,'' ''do,'' ''make,'' and ''put,'' with early uses extended across a range of specific purposes (e.g., Clark, 1978, for English, Finnish, French, Japanese, Korean; Hollebrandse & van Hout, 1984, for Dutch; Ninio, 1999, for Hebrew). For example, when an English-speaking 2-year-old says ''make'' followed by a noun, ''make'' could mean ''write,'' ''draw,'' ''move,'' ''cut out,'' ''build,'' and so on, depending on the noun and the context. We might expect, then, that early lexical acquisition is facilitated by the use of a few verbs with general meanings, leaving the specific meanings to be inferred from the possible or ongoing actions with objects in the situation. Again, however, crosslinguistic comparison is necessary, because there are languages that ''specialize'' in a more ''granular'' analysis of high-frequency semantic domains, that is, languages that have many specific verbs where familiar languages can get along with nonspecific, general-purpose verbs. Such a language, for example, is the Mayan language Tzeltal (Brown, 2001). Tzeltal verbs in many domains remind one of ''classifier verbs'' in sign languages. For example, instead of a general verb meaning ''carry'' or ''hold,'' Tzeltal cares about how something is supported by use of the body, as shown in example 2.1; instead of a general eating verb, Tzeltal cares about what kinds of substances are being eaten and in what way, as shown in example 2.2, and so forth (Brown, 2001, p. 529).

(2.1) Tzeltal verbs of carrying/holding
pet, ''in both arms''
kuch, ''weight on head/back''
k'ech, ''weight across shoulders''
lik, ''in hand, supported from top''
tuch', ''vertically extending from hand''
tzak, ''grasp in hand''

(2.2) Tzeltal verbs of eating
lo', ''bananas, soft thing''
k'ux, ''beans, crunchy things''
we', ''tortillas, bread''
tz'u', ''sugarcane''
uch', ''corn gruel, liquids''

If children begin with nonspecific or general concepts of basic activities, a language like Tzeltal (or ASL) might present problems; perhaps the