



# INDIAN SIGN LANGUAGE

An Analysis  
of Its Grammar

Samar Sinha



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## **A Linguistic Analysis of Its Grammar**

*Samar Sinha*

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## Foreword

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*Madan M. Vasishta*

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It is my great pleasure to write the Foreword for this comprehensive analysis of Indian Sign Language (ISL) by Samar Sinha. Samar got his interest in linguistics early in age and attended the prestigious Jawaharlal Nehru University for his graduate work. His groundbreaking work reaffirms research begun by my colleagues and me about forty years ago. I was exposed to signs in 1961 when I met deaf people in New Delhi. Later, when I came to Gallaudet University, I learned there was another sign language in America. This led me to learn more about the sign language in India. In 1975, I sent out a survey to all the principals of deaf schools in India to find out if they were using sign language in their schools. Almost all of them openly declared that there was no sign language in India. In addition, they mentioned that the signs deaf people used were a collection of gestures and mime, nothing more. This was disheartening since I had used sign language in India for years, but it gave me the impetus needed to go ahead with additional research. In 1977, I returned to India with linguists James Woodward and Kirk Wilson, and we collected and then analyzed the signs deaf people were using in Delhi, Bangalore, Calcutta (now Kolkata), and Bombay (now Mumbai) (Vasishta, Woodward, and Wilson 1978).

The results of our research proved that, indeed, there was a thriving sign language in India, and in 1980, our findings on the language used in Delhi were published in the first dictionary of ISL (Vasishta, Woodward, and DeSantis). However, this was just the beginning; in the following years, we published monographs on the signs we found in Bangalore, Calcutta, and Bombay (1985, 1986, 1987).

Several scholarly works have been published in the last twenty-five years, most notably, Ulrike Zeshan's analysis of ISL grammar and typology (2000), and Melissa Wallang's analysis of ISL linguistics and language education in the northeast region of India (2007). Now, forty years after the initial research on ISL, Samar Sinha has written a treatise that will serve as a milestone in our understanding of ISL. He has also included a



very comprehensive review of literature on sign language research at the international level and in India.

Despite the recognition of ISL by the government of India and the establishment of Indian Sign Language Research and Training Centre in New Delhi in 2015, the role of ISL in education of deaf children is still very limited. This book will also help educators who are interested in implementing bilingual education in schools for the deaf.

This scholarly analysis will be of great help in India for furthering research on ISL. More than that, it will become an important resource for linguists around the world for comparing the linguistic aspects of ISL with other sign languages. In India where the attitude toward sign language is still pre-Stokean, this book will get new scholars interested in research on ISL. I am excited to see the publication of this major addition to ISL research. I have no doubt it will be an important addition to libraries in universities around the world and an invaluable addition to the literature on international sign languages.

I am positive that the readers will find this book very informative and helpful.

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## Preface

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Until recently, very few linguistic studies have focused on Indian Sign Language (ISL). Research on ISL began in the late 1970s and 1980s and concentrated only on lexical variation. One preliminary lexical study (Vasishta, Woodward, and Wilson 1978) suggested that urban ISL demonstrated greater uniformity and that little or no connection exists between ISL and the sign languages of Europe or the United States. Similarly, another study (Vasishta, Woodward, and DeSantis 1987b) dispelled the popular notion that ISL signs derive from hand gestures used in classical Indian dance forms and strongly defended the view that ISL is indigenous. Additional research (Vasishta, Woodward, and DeSantis 1981, 1985, 1986, 1987b) focused on lexical variation in Delhi, Bangalore, Bombay, and Calcutta, respectively. Those findings included diagrammatic representations of signs from these metropolises.

One study (Woodward 1993) established a genetic relationship between ISL and other sign languages of the subcontinent (Nepali and Pakistani) on the basis of lexical similarities and borrowing. Another (Zeshan 1998) reported that these three sign languages have as many as 75 percent of their signs in common. On the other hand, the *Indian Sign Language Dictionary* (2001), which provides an account of regional sign variations (except those used in northeast India, the Andaman and Nicobar Islands, and the Lakshwadeep Islands), shows that 42 percent of signs are shared. The claims of this dictionary, which is organized along semantic domains rather than lexicographic principles, however, need further verification and study, particularly with regard to whether the observed variation is lexical or structural. In pursuit of this aim, other studies (Cross 1977; Gopalkrishnan 1998) have discussed language planning and standardization of ISL.

Two studies of the structural variation and sociolinguistic aspects of sign language in India (Jepson 1991b, 1991c) claim that ISL is indigenous to India and is genetically unrelated to sign languages outside the Indian subcontinent (1991b). Jepson also reports that rural ISL and urban ISL are two different languages and claims that the latter is pan-Indian (*ibid.*, 37). However, her study is based on the signs of an individual signer rather than on those of a community. One theoretical study (Richa 2003)

analyzes possessive reflexives in ISL, while another (Sinha 2003) is both a descriptive and a theoretical account of various structures in ISL. The latter also addresses the issue of empowerment of the Deaf community in India.

The most significant work on the grammar of ISL has been carried out by Zeshan (2000, 2001, 2002), who has published typological studies on a variety of grammatical aspects of ISL. As a result of fieldwork she conducted in Karachi and New Delhi, Zeshan asserts that, despite regional sign variations, Pakistan Sign Language and ISL have a single underlying grammar. Hence, she calls the sign languages of these colonial cousins Indo-Pakistan Sign Language. Zeshan proposes a preliminary inventory of handshapes and discusses the grammatical relevance of sentence types, the nonmanual components of signs, and so on in ISL, but here, too, she indicates a need for further investigation.

Although this book is intended as a linguistic description of ISL encompassing various aspects of the lives of deaf people in Indian society, it also attempts to explain some of the structures and organizations observed in ISL from a theoretical perspective. By presenting comparative and theoretical analyses, which are flagged in the discussion of empirical phenomena, it describes the grammar of ISL. Moreover, the book addresses the need for a wide-ranging and comprehensive research program that examines the grammatical and sociolinguistic properties of the varieties of ISL and considers ways to develop the language. It is my hope that the detailed linguistic study of ISL that this book embodies will provide a basis for the development of pedagogical material in ISL and strengthen the efforts carried out by Deaf activists and researchers. This book is a small contribution to that effort.

The task of describing and explaining the structures was motivated by my decision to study ISL, which came about at a time when sign language was largely regarded not as a natural, human language in India, not even in academia. Although I was not deaf and had no deaf siblings or other deaf persons as close acquaintances, I became interested in sign language as a result of linguistic and social considerations. I was able to study ISL with my friend Richa, under the tutelage of Sibaji Panda, at the Indian Sign Language Cell, Ali Yavar Jung National Institute for the Hearing Handicapped, Mumbai. Thereafter I found I had many more questions about the language. Theoretical linguists need to reflect not only on basic questions but also on scholarly accounts of the plight of the language and its users in India.

Following the theoretical framework of the principles and parameters of Universal Grammar (UG) proposed by Chomsky (1981), which models the innate faculty of language, which underlies human linguistic ability; under the guidance of Prof. Ayesha Kidwai, I began to explore a number of questions. The theory of UG locates the existence of (spoken) language variation in the theory of parameters, a restricted set of options regarding (some of) the principles postulated. A core understanding in the model is that language can be externalized using either the visual-gestural *or* the auditory-oral phonetic performance systems, but, with respect to all other properties, signed and spoken languages are subject to the same UG principles and parameters.

My study of ISL included an examination of the role that modality differences play in defining the architecture and design of UG and a fuller understanding of the nature of parameters. It was motivated by my desire to understand the structure of the categories that are related to the spatial dimension, as well as the various elements that are encoded in a language that employs space and motion. In order to analyze these, I found it essential to provide a detailed grammatical sketch of Indian Sign Language. A descriptive study of ISL is important not only for the discipline of linguistics itself but also for the development of pedagogical material in ISL. The sociolinguistic profile of the varieties, their use, and the specificity of the Deaf community's social and linguistic location is intended to contribute to efforts at empowerment.

On the other hand, my quest to understand the linguistics of ISL led me to provide a detailed description of the un-/underdescribed aspects of ISL first noted by Zeshan. Although I here dispute many of her claims (e.g., that ISL lacks classifier handshapes, temporal inflection, and distinctions in word class), this volume must be seen as a continuation of Vasishta's and Zeshan's projects of describing the grammar of ISL.

These goals determine the content and organization of chapters. The volume begins by addressing the smallest units of linguistic analysis—building blocks via aspects of the ISL lexicon to linguistic structures and operations to a wider locus of grammar—as well as the social location of grammar by examining trends in the popular culture. The description is supplemented by comparative and theoretical analyses of each empirical phenomenon.

The following chapters describe the sublexical structure of ISL, its distinctive features and phonology, semantics, classifier handshapes, morphology and word/sign formation, and the structure of clauses. They also

present a typological account of fingerspelling, pluralization, and classifiers and agreement in plain verbs.

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Sibaji Panda, my sign language teacher, primary informant, and dear friend has remained a driving force behind this exploration. Similarly, Ritu, Dharmesh, Gopal, Hari, Uday, Sharad, Jyoti, Neil, Sujit and his family, and many other friends at ISL Cell, Mumbai; Ramakrishna at Bangalore; Kanta, Kamlesh, Abby, and Debdatta at Delhi; Arun C. Rao, Debra Grossman, Michele Friedner, Monica Punjabi, Kinjal Shah, Vishwajit Nair, and Rahul Garg have helped me at their different capacities in completing this project. As usual suspects, a word of thanks to Binu Sundas, Divya Pradhan, Anil Rajak, Nawang Dorjee, Gurpreet Singh Gill, Dhiraj Mukhia, and Shrijana Rai for putting up with my idiosyncrasies and being my unfailing support system. I am indebted to Late Manu Sinha, my mother, Dr. Gokul Sinha, my father, Bari, Sudha, Prawin, Uma, and Sheila, who have lovingly nurtured my interests and made this publication possible.

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to my analysis of ISL. Also I would like to place on record my special thanks to Gallaudet University Press and its staff Deirdre Mullervy, Ivey Wallace, Angela Leppig, and Valencia Simmons as well as Carol Hoke, my copy editor. I would also like to thank the reviewers for their comments on the earlier draft. Through this publication, I hope to reach a wider audience and make this project really efficacious.

Samar  
Rangbull  
Darjeeling



## Notation Conventions

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IX	indexation
LOC	localization
IPSI	ipsilateral side of the signer
CONTRA	contralateral side of the signer
SELF	signer
FRONT	addressee
IX <sub>IPSI</sub>	index to the ipsilateral side of the signer
IX <sub>CONTRA</sub>	index to the contralateral side of the signer
IX <sub>SELF</sub>	index to the signer
IX <sub>FRONT</sub>	index to the addressee
IX <sub>LOC: IPSI</sub>	localization in the ipsilateral side of the signer
IX <sub>LOC: IPSI-2</sub>	subsequent localization in the ipsilateral side
IX <sub>LOC: CONTRA</sub>	localization in the contralateral side of the signer
IX <sub>LOC: CONTRA-2</sub>	subsequent localization in the contralateral side
IX <sub>LOC: UP</sub>	localization in the space above the signer's face
IX <sub>LOC: DOWN</sub>	localization in the space below the signer's waist
FACE	+ human referent
MASC	MAN
FEM	WOMAN
ARC	indexation carried out in a sweep
ARC <sub>LOC: FRONT TO IPSI</sub>	localization in the addressee to the ipsilateral side
ARC <sub>IPSI-CONTRA</sub>	localization in the ipsilateral to the contralateral side
FACE-ARC	+ human plural referents
POSS	possessive
/V/	signer-addressee; addressee-R-locus; R-locus-signer
ETC	hedging
[ONSET] VERB [OFFSET]	path movement of verb e.g., <sub>IPSI</sub> GO <sub>CONTRA</sub>
=	incorporation e.g., YEAR=TWO
-	fingerspelling e.g., J-O-B
+	compound e.g., POOR + HOUSE
+++	pluralization through triplication e.g., BOOK+++
++	emphasis through reduplication e.g., APPLE++



EMP	emphatic reflexive
CL:	classifier
rb-----	raised brow
bf-----	brow freeze
hf-----	emphatic reflexive
hs-----	headshake
mth-----	mouthing
ht-----	head tilt
adv face-----	adverb face
neg face-----	negative face
q-----	interrogative expression
cond-----	conditional expression
e.g.:	eye gaze
torso:	torso tilt
NEG-IMP	negative imperative
RECP-ASP	reciprocal aspect
H1	dominant hand
H2	nondominant hand

### **Introduction**

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Despite the presence of deaf people at all times and in all societies, a systematized linguistic, political, and theoretical reflection on deafness and deaf people began to emerge only in the mid-twentieth century. In shaping this project—which has changed both the history of humanity and humanity itself—the study of sign language has played a very significant role. Unlike the centuries-old tradition of the study of spoken language, the linguistic study of signed language is just about sixty years old; nevertheless, it has had a tremendous impact on linguistic theory. As the Deaf community strives to achieve its human rights in general and linguistic rights in particular, sign language studies have set off social and political reverberations among its members. In this introductory chapter I explore those effects.

### **THOUGHTS ON DEAFNESS, DEAF EDUCATION, AND SIGN LANGUAGE**

Before 1970, particularly in India, “sign” and “sign language” referred to symbolic gestures used in the theater, dance, secret codes, court etiquette, and so on, as well as those used by deaf people. Although “almost any statement about signs, gestural communication and sign language of deaf people” (Miles 2001b, 3) is strongly debated by different interest groups, these views relate to deafness, deaf education, and signs used by deaf people rather than to linguistic studies.

However, as a result of modern linguistic study of various sign languages, the notion of Indian Sign Language (henceforth, ISL) came to the forefront. This very coinage led to a sense of community formation, solidarity, and linguistic empowerment, and it actuated cultural, political, educational, and artistic movement in India as well. Moreover, with their politicization, deaf people in India subjectively and for the first time confronted the centuries-old notions about themselves and their language and began to strive for their rights as Indian citizens.

## DEAF COMMUNITY AND OTHER CONSTRUCTS

In the early 1960s William C. Stokoe (1919–2000) began looking at the structure and constituent parts of American Sign Language (ASL). His research culminated in a groundbreaking monograph, *Sign Language Structure: An Outline of the Visual Communication System of the American Deaf* (1960). In the monograph, Stokoe proposed that each sign had at least three independent parameters—handshape, location, and movement—that are produced simultaneously in various combinations to form signs.<sup>1</sup> He demonstrated that the parameters are not combined haphazardly but instead follow linguistic rules; moreover, the syntax was every bit as complex and complete as that of spoken language. His pioneering work provided a system for describing sign language for the first time in history.

For the next four decades, Stokoe and his deaf colleagues continued his research on ASL. He, along with Dorothy Casterline and Carl Croneberg, created *The Dictionary of American Sign Language on Linguistic Principles* (1965). In 1972 he founded a journal, *Sign Language Studies*, which later became a vital forum for the dissemination and discussion of sign language and Deaf studies. Coauthored by Stokoe, David Armstrong, and Sherman Wilcox, *Gesture and the Nature of Language* (1995) is still one of the most influential books on linguistic theory.

The significance of Stokoe's work on sign language, however, has been far greater. For it not only gave birth to a new discipline—sign linguistics—but also marked the end of the glottocentric view of language. His argument that “a symbol system by means of which persons carry on all the activities of their ordinary lives is, and ought to be treated as, a language” (1960, 14) served to actuate cultural, political, educational and artistic movements in the United States (Sacks 1987, 148). Sign language was now accorded its deserved recognition as a natural human language; it was recognized as having a “natural” structure and organization; the only difference was that it is expressed in a different modality. This in turn fueled a whole host of new questions about the phylogenesis of human language.

As an outcome of Stokoe's monograph, a sense of linguistic empowerment among deaf people generated a faith in being “different,” which consequently led to the development of a new idiom, that of deafness as a “culture.” However, this construction of deafness as culture is not sufficient to define its membership. Woodward (1975) established the convention of

using an uppercase and lowercase distinction between “Deaf” and “deaf,” where the former refers to people who use sign language as their primary language, identify themselves as members of the Deaf community, and are culturally Deaf; the latter are those who are audilogically deaf and may or not sign. Padden (1980) also distinguishes between Deaf culture and Deaf community. Deaf and hearing people who work to achieve certain goals belong to the latter, and Deaf members of that group are also a part of Deaf culture. Similarly, Napier (2002) argues for the difference between “hearing” and “Hearing” to refer to those who are consumed by the hearing culture and are naïve about the Deaf community and to those hearing people who have internalized Deaf culture, respectively.

The Deaf community is not an ethnic or a religious community with clear-cut boundaries that demarcate its membership according to color, practices and beliefs. Rather, to be a member of the community is to make an individual choice. In other words, the Deaf community is an egalitarian, open-ended group whose membership involves not only audiological deafness but also several factors other than the primordial associations that operate within the hearing society. However, a number of subcommunities are in fact based on primordial factors such as religion, color, ethnicity, and region. The following observations by Baker-Shenk and Cokely (1980, 56) indicate various avenues for membership in the Deaf community:

1. *Audiological:* The audiological avenue does not define membership solely. A large number of deaf and hard of hearing people do not sign for a variety of reasons, and they do not observe Deaf culture and values. On the other hand, a number of hearing people born of deaf parents, or who know sign language, or are activists share the sign language, culture, and values of the Deaf community.
2. *Social:* The social factor is an important criterion in defining membership. It is essential to share and participate in all of the community’s social functions and to have a cordial relationship with the other members of the community.
3. *Linguistic:* Since the Deaf community is primarily defined by the use of sign language, membership depends upon a high level of fluency.
4. *Political:* The ability to advocate for issues that directly affect the Deaf community is another important factor in membership.

Perhaps most important of all is one's identification as a member of the community and one's acceptance by the other members of the community. This is called *attitudinal deafness* (ibid., 55). Thus, attitudinal deafness is the foundation for all such considerations and entails an understanding of, acceptance of, and identification with the culture of Deaf people.

The one criterion that remains constant throughout the different models of Deaf community membership (see Woll and Ladd [2003] for an overview of the different models of Deaf communities) is the knowledge of sign language. It has been the genesis of the formation of the community and its culture, and it shapes the identities of its members. Thus, it is through sign language that deaf people construct their "Deaf world view" and make sense of the world around them (Reagan 1995, 247).

Contemporary constructs of deafness are also defined by two opposing attitudes—one of deafness as a disability versus one of deaf people as a linguistic minority. These contemporary discourses are rooted in the activism and experiences of deaf people. Both constructs are nurtured by the campaign for equality and full participation in all spheres of social life and human rights, and both are given political meaning and power by personal biographies that detail the experience of being deaf in a hearing world.

The physiological (medical) model of disability, based as it is on the characteristics of an able body and its physical and/or cognitive functioning, views persons with an impairment as "abnormal," "disabled," and ultimately "handicapped" in fulfilling social roles.<sup>2</sup> In other words, deafness is categorized as a handicap. The emergence of this view gave rise to professional groups whose livelihoods and existence depend on bestowing "benevolence on *deaf* people defined as in need" (Gusfield 1989, 432; *italics mine*). Therefore, deafness becomes a "need" for intervention. Though the technology and the level of sophistication have changed in the decades that have followed, the core idea has remained the same: The role of such intervention is to make deaf people appear to be hearing. This amounts to a rejection of sign language in favor of spoken language and the adoption of lipreading as a sign of normalization (see Lane 1995, 2002).

The sociocultural model, on the other hand, views disability as a product of complex social structures and processes rather than as the simple and inevitable result of individual differences or biology. It suggests that it is not impairment in itself that causes disability, but the way in which

societies fail to accommodate natural aspects of difference between people. Material and cultural forces play a significant role in creating the collective social experience of disability (Oliver 1990). Disability, therefore, is caused by social, structural forces such as industrial capitalism (Finkelstein 1980), as well as by cultural forces and ideas (Shakespeare 1997) that shape disability labels and social roles.

Both models of disability accept a sense of loss, which is true among other interested groups, such as persons with visual or other physical challenges, and seek social integration with the hearing world through care, service, and assistance. However, the question of loss is contested in the case of deafness: Whereas late deafness and moderate impairment are associated with loss (hence supporting the disability construction), the Deaf community has argued that prelingual deafness is not so easily conceived of as such.<sup>3</sup> The Deaf community views deafness not as a loss but as a gain, in terms of culture, of language, and of values. This is demonstrated in its members' resistance to the construct of a category of "hearing impaired" to include deaf and hard of hearing persons, as it overlooks the linguistic and cultural difference between Deaf and the hard of hearing persons. Individuals who are Deaf/deaf, unlike others who share the hearing culture, experience a different kind of exclusion related to language and culture (Thomas 2002). As Deaf/deaf people cherish their unique identity and seek an honorable integration into the larger social fabric in a manner that upholds the difference of their culture and language, they contest a characterization that suggests they have an impairment and/or a disability.

Such beliefs further establish deafness as a culture that disregards the disabled/nondisabled distinction and does not seek to discipline disability. In opposition to the disability construct, and with the arguments put forward for deafness as a culture, D/deaf people construct an argument in favor of linguistic minority status. Besides the demographic facts, there are several reasons to identify and validate D/deaf people as a minority vis-à-vis the hearing population. It is an acknowledged fact that, in all societies, deaf people have been subject to oppression or discrimination by hearing people with respect to their values, culture, and language. In developing societies, this still continues, and the majority of deaf children do not have access to education. In most cases, the educational ideology pursued for education for deaf persons runs contrary to their right to receive education in their mother tongue of sign language. Inasmuch as their sign language has been subject to oppression and their culture

and values have been suppressed, they qualify as a linguistic minority (Andersson 1994; Lane 1995).

Among the scholars who seek a solution in Sen's capability approach (for details see Sen 1992), which views disability as one aspect of human heterogeneity rather than as an abnormality, Terzi (2004) introduces the concept of "alternative functioning or of doing the same thing in different ways." She cites an example from Martha's Vineyard and argues that the use of sign language by deaf and hearing Vineyarders expanded the capabilities of deaf people. Under such a conceptualization, however, signing is emphasized as an alternative way of functioning rather than the most valued of all the other functionings of the signers. In other words, it still reiterates the audist's view and fails to accommodate sign language within the realm of natural human languages.

### **SIGN AND POWER: SIGN LANGUAGE IS A LINGUISTIC HUMAN RIGHT**

It was necessary to politicize D/deaf people to ensure their participation in the social process. However, it is also a reality that dominant sociopolitical and cultural notions of disability marginalize deaf people, and mere reservations cannot result in a positive change, just as caste discrimination is prevalent despite its prohibition under law in India. For social engineering to be a success, we must recognize the unequal power relations between deaf people and hearing people with regard to the former's use of sign language.

Sign language is subject to unique sociolinguistic factors because membership in a language community is usually not inherited from one's immediate environment. Only a minority of deaf children have deaf parents; the majority are in fact born to hearing parents. Since these parents use spoken language, their deaf child can neither hear nor use it with any facility. In such cases, despite their love and sympathy for the child, communication with the child is limited, often neglected, and the deaf children express themselves through idiosyncratic home signs. Since deaf signers have an individual history of sign language acquisition, depending on the onset of their social contact with other signers through schools and clubs for deaf persons, there exists a continuum of sign use in terms of both lexis and structure even within the same generation.

Martha's Vineyard, an island off the coast of Massachusetts, had a high rate of deafness due to endogamous community practices that resulted in both deaf and hearing siblings in a family. As a result of the high percentage of deaf people on the island, both the deaf and the hearing Vineyarders used to sign what later came to be known as Martha's Vineyard Sign Language, a village sign language. In Martha's Vineyard, the equal power relations in all facets of social, economic, and political life between deaf and hearing residents enabled the development and vitality of this context-independent language from the early eighteenth century to its extinction in 1952. The Vineyarders' sign language became the one of the sources of ASL (Groce 1985).

Sacks (1990) mentions five deaf Mexican siblings who used elaborate home signs, but, in the absence of the right social setting, they neither developed a stable phrase structure nor systematized the meaning of their gestures. In Noya (Guatemala) and on Grand Cayman Island and Providence Island, social marginalization inhibited language formation. As a result, the indigenous sign systems remained static and context dependent, without syntactic structure, for many generations (Ragir 2002). These stories show that merely using signs and/or having a group of signers is not sufficient for the development of sign language.

On the other hand, in Nicaragua in the late 1970s, a school for deaf children provided fertile ground for the development of Nicaraguan Sign Language from the mutually unintelligible, context-dependent home signs (Senghas 1995). Based on her experience with the Nicaraguan Sign Language Project, Kegl et al. (1999) proposes that the critical number of children required to generate a language is about ten, and Ragir (2002) adds that historical continuity is also essential. When the home sign users come together in schools and clubs for deaf persons and start sharing each other's signs, aspirations to social cohesion lead to the formation of a signing system that utilizes the home signs of the signers as its substrate and tends to be distinct from that of the previous users. With successive generations of users, the signing system becomes more stable and developed and is acquired by the signers natively. Thus, it becomes a new sign language (Senghas 1995). It is in these venues that most personal and social information sharing occurs, and close relationships are established. These focal points of the Deaf community are where deaf individuals develop a sense of self that is different from the image they encounter in the hearing world, where they identify as a cultural/linguistic minority.



The acceptance and the use of sign language thus ensure the participation of the community in social processes. For deaf people, its recognition is fundamental to a guarantee of equality, community, and freedom. In other words, sign language is a *linguistic human right*, one that is essential for the sustenance of a dignified life.

Linguistic human rights are implied at two levels: the individual and the collective. Individuals' rights include having an identification with their mother tongue and having that identification respected by others. It necessarily entails the right to learn and to use their mother tongue. Collective rights are the rights of minority groups to exist (i.e., the right to be different). They include the right to enjoy and develop their language, to establish educational institutions, and to have control over the curricula and medium of instruction. It also involves representation in the political affairs of the state, as well as the autonomy to administer matters internal to the groups, at least in the fields of education, religion, culture, information, and social affairs. Any restriction on these rights is considered an infringement of fundamental linguistic human rights.

The linguistic rights of deaf persons are violated at both levels. In some deaf education programs throughout the world, sign language is forbidden, and deaf children are subjected to various methods intended to make them acquire spoken language. This approach is called oralism. Some schools employ signing methods that create manual codes that represent lexical items and the structure of oral language. Such institutional efforts are in violation of Articles 17, 19, 29, 30, and 40 of the United Nations Convention on the Rights of the Child. Even in cases where education is imparted to deaf people in oral and/or manual modes other than sign language, this linguistic human right is violated inasmuch as it subordinates their natural first language, the language of their self-expression. Skutnabb-Kangas (2000), therefore, identifies oralism in formal education as an instance of linguistic genocide. At the collective level, deaf persons constitute a minority community. Skutnabb-Kangas and Phillipson (1994, 107) define a minority as follows:

A group which is smaller in number than the rest of the population of a State, whose members have ethnical, religious or linguistic features different from those of the rest of the population, and are guided, if only implicitly, by the will to safeguard their culture, traditions, religion or language. Any group coming within the terms of this definition

shall be treated as an ethnic, religious or linguistic minority. To belong to a minority shall be a matter of individual choice.

Article 27 of the International Covenant on Civil and Political Rights has far-reaching significance for granting linguistic rights to deaf people, in that it requires countries to minimally recognize deaf persons as a (linguistic) minority, to take steps to protect them against discrimination, and to guarantee them positive language rights.

Despite all of these formulations, however, sign language continues to be suppressed, in violation of the United Nations' Declaration on the Rights of Persons Belonging to National or Ethnic, Religious and Linguistic Minorities. This denial results in a loss not only for deaf individuals and their community but also for the whole society, given that the guarantee of linguistic rights also promotes linguistic and cultural diversity.

In *The Ecology of Language*, Einar Haugen (1972, 325) defines the relationship between language and ecology as "the study of interactions between any given language and its environment." Today, ecological linguistics argues that "empowering languages and making them more competitive by giving them grammars, lexica, writing systems, and school syllabi is a recipe that ignores a basic ecological fact: *what supports one language may not support another*. Each language requires its own ecological system" (Mühlhäusler 2002, 376; italics mine).

Under this conceptualization, an evaluation of sign language provides interesting insights. If one were to carry out a linguistic impact assessment (the analogy to an environmental impact assessment) of sign language, one would discover that sign language is an isolate, the property of only monolinguals in a multilingual world. Therefore, the first and foremost issue that needs to be addressed is the creation of ecological conditions for the societal vitalization of sign language (ibid., 38). The issue here thus is not the *preservation* of a linguistic ecology, but rather the *promotion* of one.

Although ecological linguistics considers "language" that is associated with nation-states and sustained by political entities, educational institutions, information technology, and so on as a cultural artifact (Haugen 1972), it is imperative for a national network of signers to be formed for the development of Deaf communities and sign language, as this in turn will sustain sign language in other aspects of policy, education, diversity, linguistic rights, and so on. Such an effort must take place in the form

of a bicultural program in sign language and speech that brings deaf people and hearing people together yet allows them to be different. Sign language thus needs affirmative action, by which an artificial ecology is constructed wherein sign language can initially flourish so that it may later be assimilated into a natural linguistic ecology.

## **THE INDIAN D/DEAF COMMUNITY**

In 2001 the deaf population in India was estimated at 14 million,<sup>4</sup> thereby comprising 1.4 percent of the total Indian population.<sup>5</sup> It would not be incorrect to say that most of the deaf population, as well as those around them, perceive deafness as a handicap and conceive of themselves as having a disability and of hearing people as “normal.” This identity is, however, governed by the structural and cultural forces acting on the deaf population. However, with the increasing politicization of its members, such constructions are now being challenged. The educated members of the community identify themselves as “Deaf,” a linguistic minority. With a greater involvement with other Deaf communities around the world through the Internet, educated constituents have shaped the Indian Deaf community’s desire for dignity, equality, and justice.

In India, the provisions for deaf persons provided under the Disability Act have failed, as is painfully evident, to ensure their empowerment. The same applies to the claimed minority status (as is evident in the case of the minorities in India). In India, the National Commission for Linguistic Minorities, Ministry of Minority Affairs, identifies linguistic minorities as “any group of people whose mother tongue is different from the principal language of the state.”<sup>6</sup> This criterion encompasses sign language users in India. However, deaf people have not yet gleaned any benefit from this provision. As a matter of fact, D/deaf people’s lack of access to resources has resulted in their inability to build alliances with other groups who experience social discrimination and has in fact become an obstacle in ensuring their participation in the social process.

On the other hand, the most marginalized group of lower castes in the Hindu caste hierarchy, called *dalits*, receive the benefits of the caste-based reservation system, an affirmative-action measure practiced in India. If we draw a parallel based on the social discrimination against the *dalits*, whose growing participation in the social process has been significantly ensured by the reservation policy, it becomes clear that it is imperative to

mobilize D/deaf people with regard to a demand for reservation exclusively for them. This action would be in lieu of pursuing the existing scheme within the rubric of the people with disabilities category, which assumes all forms of disability to be equal rather than prioritizing on the basis of specific disability. In this sense, it is necessary to politicize the Deaf world, so that the Deaf culture and perspective can be acknowledged in a democratic society and deaf people can be guaranteed their rights as citizens (Lane 2002).

The Indian Deaf community is primarily bound together by the use of sign language and Deaf cultural values rather than by a set of primordial values such as region, caste, or religion. Deaf clubs and associations play a fundamental role in shaping Deaf identity by uniting Deaf people from various backgrounds, guiding opinions, and framing activities for the well-being of nonhearing individuals. In other words, these institutions play a pivotal role in making a deaf individual “Deaf.” Although deaf people are found all over the country,<sup>7</sup> the Indian Deaf community is primarily based in the urban areas, where schools, clubs, and other organizations for deaf persons are located. It consists of people from different regional, cultural, ethnic, educational, and religious backgrounds. These members usually remain a part of their parents’ cultural and ethnic communities while maintaining their membership in the Deaf community. Hearing people born of deaf/hearing parents or who know sign language are also members of the Deaf community.

The Indian Deaf community is, however, not a monolingual one that is based exclusively on ISL. The unique sociolinguistic factors typical of sign languages everywhere—by which membership in the sign language community is usually not inherited from one’s immediate environment—holds in India as well.

Since deaf signers have individual histories of sign language acquisition, depending on the onset of their social contact with other signers at schools and clubs for deaf persons, a continuum of sign language use exists in terms of both lexis and structure even within the same generation. At the same time, given the sociocultural, educational, and regional diversity of India, sign variation also exists and is further compounded by borrowed lexical and fingerspelling systems from other sign languages (mostly ASL and British Sign Language). The signing system or language followed by the educational institutions is not uniform throughout the country and instead ranges from contrived systems, such as that employed in Karnataka schools, which is based on the Kannada

language and script, to ASL and BSL and to the different ISL varieties. At the macrolevel, however, one nevertheless finds a continuum of sign language usage that covers home signs, contact signing using the ISL lexicon and English grammatical structures, ASL, and BSL, as well as signs and structures indigenous to ISL.<sup>8</sup>

In recent years, with the greater politicization of the Indian Deaf community within the Deaf world, the concerns for the well-being of Deaf people have shaped many of the community's pursuits. Two of its most significant efforts have been research on and the propagation of ISL, including its use as a medium of education for deaf students. The Indian Deaf community is becoming increasingly aware of its linguistic rights and is demanding the recognition of ISL as a national sign language.

Research on ISL began in 1970s, but until the end of the twentieth century, there was no effort to develop and train human and other resources for its use in education. As early as 2001, Dr. Madan Vasishta, a pioneer in the modern linguistic study of ISL, convinced the then director of the Ali Yavar Jung National Institute for the Hearing Handicapped (NIHH), Mumbai, of the importance of sign language in the education and rehabilitation of deaf persons. Eventually, the institute opened an Indian Sign Language Cell and became a hub for ISL-related activities, including ISL classes and interpreter training, development of curricula and instructional materials, orientation programs on deafness for employers, research on the effectiveness of ISL in teaching deaf students, and Deaf awareness programs. Over the years, the group has developed ISL teaching materials for schools for deaf students and also expanded its reach into the regional centers established by the NIHH (for details see Zeshan, Vasishta, and Sethna 2005). In a short period of time, the ISL group has produced more than 100 deaf people who are qualified to teach ISL. It has also trained 250 hearing people in ISL, including five linguists (the author included) working on ISL.

On the institutional front, the ISL Cell has made a significant impact. Several educational institutes have started providing education via ISL, namely, the Rotary Deaf School, Ichalkaranji, and two schools for deaf children in Indore, Madhya Pradesh, and Gangtok, Sikkim (pers. comm., Dharmesh Kumar, former Indian Sign Language teacher, ISL Cell, NIHH, Kolkata). The National Council for Education, Research, and Training has taken steps to provide education in Indian Sign Language. The University of Delhi has planned to start an ISL Resource Center to provide essential educational services to its deaf students. Similarly,

Jawaharlal Nehru University, New Delhi; the Indian Sign Language Research and Training Center of Indira Gandhi National Open University, New Delhi; Ramakrishna Mission Vivekananda University, Coimbatore, Tamil Nadu; and several nongovernmental organizations and missionaries have taken various steps to provide education to deaf students, utilizing ISL as the medium of instruction, and to undertake research on the regional signs.

## **THE CULTURAL REPRESENTATION OF DEAF PEOPLE**

In India, Hindi cinema is the most popular and culturally validated source of entertainment. Its representation of different persons and communities is therefore of great cultural and political significance, and these often generate political and communal controversies. A few times over the century of its existence, Hindi films have also portrayed deaf characters, not only as stereotypes but also as protagonists.

One of the earliest movies in which deaf characters are protagonists is *Koshish* [An Effort], directed by Gulzar and released in 1972. Starring two iconic actors of the film industry, Sanjeev Kumar and Jaya Bhaduri, the film is a sensitive portrayal of a deaf couple's romance and the struggles and hardships they must face in order to survive with dignity. The characterization and the setting are natural enough to appeal to the audience, even though the director takes the cinematic liberty of using written language as a mode of exchange between the characters (sign language is also used). The film shows both the deaf couple's yearning for a hearing child and the loss of their first child, whose cry they were unable to hear on that fatal night. The most impressive and radical issue the film deals with is the marriage of the protagonist's hearing son and a deaf girl, which counters the prevailing notions of matrimony in Indian society. It is one of the most progressive of films, featuring deaf characters not just as stereotypical individuals who arouse the audience's sympathy but also as an important and equal force in the creation of a more sensitive and modern Indian society.

*Khamoshi* [Silence] (1996), directed by Sanjay Leela Bhansali, is the story of a deaf couple's hearing daughter, who aspires to become a singer. The national award-winning actors Nana Patekar and Seema Biswas portray the deaf couple. The film shows their yearning for, and joy over, a hearing child and how this child becomes the deaf couple's support and

voice in their later life. Though signing is used at various points in the movie, it is not ISL.

In contrast, *Black* (2005), by the same director, is a story set in India in the days before independence. It is the tale of an Anglo-Indian deaf-blind girl and her tutor, starring Rani Mukerjee and Amitabh Bachchan, respectively. The film opens by suggesting that the deaf-blind child is possessed by a spirit. Because of her deafness and blindness, she is unable to make sense of things around her. As the movie goes on, she learns to use tactile sign language (not ISL but rather a number of signs from ASL). The movie ends on a positive note: After many years of study, the young woman graduates from school and achieves some degree of independence. Eventually she takes it upon herself to help her tutor, who is suffering from Alzheimer's disease.

Director Nagesh Kukunoor's *Iqbal* (2005) is about a talented twenty-year-old deaf boy, Iqbal, who comes from a farming village. Iqbal aspires to be a bowler on the Indian national cricket team. The movie shows Iqbal's struggles to fulfill his desire. As his family is unable to send him to a school for deaf children in Mumbai, Iqbal, played by Shreyas Talpade, becomes a school dropout. The social setting of the movie shows that the deaf boy has no friends in his village, and his closest companion is his sister, who signs and interprets for him (although Iqbal can lip-read slow speech). The director successfully integrates sign language and speech into the movie, in that many of the main characters both sign and speak. Interestingly, the signs, a number of which are from ISL, are not limited to gestures. As in *Koshish*, Iqbal is not a character whose sole purpose is to inspire sympathy; rather, it is his talent as a bowler that the film ultimately highlights. Moreover, Iqbal's efforts to play cricket are similar to any young person's defiance of conventional fathers who do not understand or accept their children's aspirations. The story is also about a deaf person's desire to succeed in a sport whose participants are primarily hearing. The movie thus sends a message that, as a sport, cricket in India must value its players' talent (rather than their hearing status), thereby questioning the current reality in the country, which has separate teams for hearing and deaf players.

The latter three films have all had a significant impact on societal attitudes. Most prominently in recent times, *Iqbal* so enthused Indian children that the National Council of Educational Research and Technology now acknowledges sign language as a medium for primary education. The National Curriculum Framework 2005, which endorses childcentric

education, advocates ISL-based instruction of students who have a hearing impairment (Julka and Sabu forthcoming). This notwithstanding, none of these films portrays the existence of a deaf/Deaf community for their protagonists, who are all alone (or at best with their partners) amid a hearing society. Moreover, these films have had little effect in permanently altering attitudes about deafness as social stigma. A case in point is Ashvin Kumar's short film *The Little Terrorist*, which was India's official nominee for an Academy Award in the short-film category in 2005. The film is about a Pakistani boy who crosses into Indian territory while playing. As the story progresses, an Indian family hides him from a patrolling party. In one incident, the boy pretends to be deaf in order to avoid being questioned by the officers. In doing so he brings to the fore all of the stereotypes of deafness, such as social isolation and diminished intelligence.<sup>9</sup>

### **THE STUDY OF ISL: THE NEED**

At the turn of the twentieth century, accounts of various Deaf communities in British India came to light. One that aroused interest especially among sign language linguists had to do with the Angami Nagas. At that time, deaf-mutism among the Angami Nagas in the Naga Hills was eight times higher than the national average (Allen 1905), in which every second person was deaf and/or mute. Further interest was stimulated by Hutton's (1921) account of the use of sign language by both deaf and hearing people in the district of Angam. They used sign language in order to facilitate communication between different villages speaking different languages. Although we now—a hundred years later—have no means of verifying this claim, Miles (1998) suggests that it may have been true, given the prevalence of iodine deficiency disorders, which are often a cause of deafness in the mountainous regions of South Asia.<sup>10</sup>

In contemporary times as well, reports of exclusively deaf villages whose inhabitants use sign language as a medium of communication have occasionally been made. One such account, published in 1991 by Shivananda Kalave, a journalist, is about two tribal villages, Basanavakoppa and Sullali (generally called "silent villages"), which lie in a remote forest tract in the Uttara Kannada district of the state of Karnataka. The population of these villages exceeds 500, about 30 percent of whom were reported to be deaf. After reading this report, a Rotarian, Dr. Rajendra G. Desai, in a campaign to eradicate deafness, launched Project Deaf India



from Mysore in 1999. His work was carried out in collaboration with the Rotary Club of Newport Balboa, District 5320, in California, and Gallaudet University, Washington, DC. It was claimed that, for the inhabitants of these villages, multiple factors (e.g., heredity, personal hygiene, environment, nutrition, cultural and social practices) had for generations been responsible for this high rate of deafness.<sup>11</sup> A macrolevel study found that deaf people there used “gesture and lip reading, a skill passed down along generations all these years” for communication.

To ascertain the facts, I visited Basanavakoppa and Sullali in the spring of 2005. I was accompanied by Debra Grossman from the University of California–Los Angeles, who was making a film on Deaf communities in India, and Ramakrishna, a Deaf ISL teacher and activist. A local resident informed us that the village population comprised both Siddhis and Gaurs. We found that, except for a boy and an elderly woman, both of whom are hard of hearing, none of the villagers was in fact deaf.

Our visits to the village school and other places, as well as our discussion with the teachers and a number of the residents, led us to believe that these communities have no significant deaf population. The residents disputed the report of a high incidence of deafness in their village and suggested that outsiders were conspiring to benefit from such accounts. Moreover, they were aggrieved by the accounts of a genetic factor that caused deafness in their children because such statements made it difficult for them to contract matrimonial alliances. Our discussion with the teachers of additional schools and institutes for deaf children in other parts of the district made it clear to us that the claim was a hoax.<sup>12</sup>

This is not to suggest that all such reports are false. According to reports from Dadkhai (a remote village in the Doda district of Jammu and Kashmir and called by the locals “the cursed village”), deafness has prevailed for more than half a century, reportedly affecting 40 percent of the population.<sup>13</sup> A 2007 report<sup>14</sup> suggests that 24 percent of the village population (including newborns) is deaf. The Central Health and Medical Education Ministry has deputed doctors from the All-India Institute of Medical Sciences to identify the cause; however, little is known about the sign language that the residents use to communicate with each other.

The existence of such populations once again highlights the need for both a survey of the Indian Deaf community and their sign language(s), as very little is known about either one. Even though there are claims that the sign language of the Indian subcontinent is indigenous and

is genetically unrelated to sign languages of other continents (Zeshan 2003b, 113; Jepson 1991a, 1991b, 1991c, 39; Vasishta, Woodward, and Wilson 1978, 72), little is known about its varieties. Moreover, in Delhi, Bombay (now Mumbai), Bangalore, and Calcutta, the lexical similarity is greater than 90 percent (Vasishta, Woodward, and Wilson 1978, 68–69), and “there is only one Indian Sign Language.” Jepson (1991b, 39) claims that Urban Indian Sign Language is pan-Indian, although her study is based on individuals rather than on a community of sign language users. Woodward (1993) establishes the relatedness of the sign languages of India, Pakistan, and Nepal on a lexical basis.

At the beginning of the twenty-first century, there were still few studies on the regional signs of India. The first *Indian Sign Language Dictionary*, brought out by Ramakrishna Mission Vidyalaya and CBM International in 2001, reports that 42 percent of signs are common throughout India. Zeshan (2000) confirms the same underlying grammar for ISL and Pakistani Sign Language and calls the sign language of these countries Indo-Pakistani Sign Language. Wallang (2008) studied signs used by deaf people in Shillong, Meghalaya, while Hidam (2010, 2014) and Kulshreshta (2013) studied signs from Delhi. Panda (2014) studied the sign language used in Alipur, near Bengaluru, Karnataka, which he maintains is distinct from ISL; hence we have Alipur Sign Language. Sinha (2003, 2013) claims that Delhi and Mumbai (formerly, Bombay) show regional variations in lexical items but not in structures. Thus, the Delhi-Bombay variety (rather than varieties as generally assumed on a lexical basis) is one of the sign languages of India under the generic label of ISL. The exploration of other varieties and/or sign languages in India is therefore an area that must be researched.

The dearth of studies on ISL in Indian academia has slowed efforts toward the standardization of ISL, the development of pedagogical materials, a lexicon, cultural studies, and so on. The Indian Sign Language Cell in Mumbai and various other institutions dedicated to teaching ISL and preparing ISL interpreters would also benefit from linguistic expertise. However, due to the paucity of researchers ready to pursue this goal, these dreams of empowerment cannot yet be realized. The involvement of Deaf activists and researchers alone is not enough. Rather, what is needed is the development of a wide-ranging and comprehensive research program to examine the grammatical and sociolinguistic properties of the varieties of ISL, how it may be taught to hearing and deaf people alike, and how to plan for the development of the language.

In the 2010s, several governmental measures are taking place, such as the opening of the Indian Sign Language Research and Training Center and a proposal by the University Grants Commission to found a Department of Indian Sign Language in Indian universities, following a directive of the Supreme Court of India. These efforts, if translated into actual practice, can yield a significant change in the study of ISL and in the life of its users and practitioners.

## **A FINAL NOTE ON METHODOLOGY**

Sociolinguistic and methodological considerations are of crucial importance in the study of sign language. Due to the differences in the visuospatial modality employed in sign language, as well as the individual histories of sign language acquisition, one finds a continuum in sign language use ranging from signs produced in the order of spoken language to a regional or national sign language. In such situations, researchers' knowledge of sign language, the first and foremost condition for sign language research, is vital in defining the continuum of language use within the community.

The corpus for this descriptive grammar was collected through fieldwork with the Deaf associations, schools, and communities of a variety of places at different times during the research period.<sup>15</sup> The methodology employed was deductive, following the research methods for studying sign language as formulated by Branson and Miller (1997) and with an enhanced involvement of the Deaf community. For this purpose, it was essential to carry out observation prior to data collection so as to account for the interference of extralinguistic factors on the data. The criteria for identifying native signer informants (Mathur 2000) are as follows:

- Exposure to sign language by three years of age
- Capability and comfort in judging whether or not a sentence is grammatical
- Daily contact with sign language in a Deaf community (for at least ten years)

The primary informant for this study was a multilingual/bimodal deaf person. Supplementary data were drawn from another deaf person who has working knowledge of English and Hindi. The data from the other informants from various places were also recorded for variation

and other studies. A questionnaire, typed in English, was used for the elicitation of the data (rather than recording discourse). Native signers' judgments were used only to determine grammaticality. The data were verified through reverse interpretation with a bimodal/bilingual consultant. The digitally recorded tapes were converted, edited, and rendered wherever essential and were later exported as QuickTime movies. The videographed data were transcribed into the notation system developed in Sinha (2003). The collected data were corroborated and integrated with observation of discourse and production data.

Another important source of data for this descriptive grammar consisted of observations of signing by the community members from the different sociogeographic settings. These were cross-checked with the primary and/or secondary informant to ensure that the work represented the grammaticality facts, correct glosses, and the encoding of discourse-related features. In the study of the sociolinguistic aspects of the Indian Deaf community, both a participatory approach and formal/informal conversations were utilized with the Deaf activists and the members of the Deaf community during the research period.

Other than data collected from the fieldwork and observations, the following secondary sources were also employed: *Introduction to Indian Sign Language (Focus on Delhi)* (Vasishta, Woodward, and DeSantis 1980); *Indian Sign Language Dictionary* (2001); and CD-ROMs prepared and produced by the Indian Sign Language Cell, Ali Yavar Jung National Institute for the Hearing Handicapped, Mumbai, and Ulrike Zeshan.

## **The Sublexical Structure of ISL**

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Although nonlinguists often assume that sign language and gesture are identical, linguists have demonstrated that it is incorrect to collapse the two notions, as sign language utilizes readily detectable gestural elements that are on a par with gestural elements in spoken language (Duncan 2005; Emmorey 1999). In fact, a careful examination of the structure and function of sign clearly distinguishes it from gesture and provides compelling evidence for the analysis of sign as a natural human language (Petitto 1993).

Gestures are restricted to a small sphere of users who employ them in a highly variable manner, thus forming speech communities (Kegl 2004, 214–15). While gestures are idiosyncratic, sign language is syntactic; whereas we have no evidence of parts of speech in gesture, signing has rule-governed sequences of morphologically complex signs. While gestures typically map a single action gesture onto an entire event, with the gesturer serving as the agent of the action (Morford and Kegl 2000), sign language compositionally builds an event with a sequence of signs. Finally, unlike gestures, signed utterances are not context dependent for their interpretation; as a result, although a single gesture can have different meanings in different contexts, signs have a basic core of meaning constant in all contexts (Kegl 2004, 215).

Further evidence that sign language has its source in the innate human linguistic ability comes from the spontaneous creation of home signs (Goldin-Meadow 1993) by a deaf person who has not been exposed to conventional signing for communication with the hearing members of the household. The most striking feature of home sign is that it resembles sign language in terms of its constituent structure and can be organized into them signs are stable across time and usages. Dasgupta's (1988) study of deaf children in a school for deaf children in Delhi, who had not previously been exposed to sign language, reports that their home signs (her "natural sign language") exhibited considerable diversity in signing and a lexical ambivalence between nouns and verbs.

Home signs as a communication system hold the potential for language genesis, as in the case of Nicaraguan Sign Language (Kegl 2004; Senghas 1995). When the home sign users come together in schools and clubs for deaf persons and start sharing each other's home signs, their desire for social cohesion leads to a formation of a sign pidgin with home sign substrates distinct from those of the previous users. This sign pidgin becomes a sign creole in the following generation and serves as linguistic input for the creation of a new, socially discriminable sign variety (Senghas 1995). Several structures in sign language show the remnants of gesture and/or home sign, as they serve as the precursors to a full-blown sign language. Numerous grammatical phenomena such as "null subject," "role play," "classifier constructions," "verb agreement," "person agreement marker," "aspectual marking," expressions associated with interrogative structures, and information structure inventories in Nicaraguan Sign Language have, as their substrate, elements of the peer-group pidgin, *Lenguaje de Señas Nicaragüense*, which was their predecessor (Kegl 2004).

The fact that home sign is a conventionalization of pantomimic gestures that facilitates the beginning cycle of home sign pidgin to creole to language variety signifies that a process through which gestural elements become a sign is under way. This process, called *lexicalization* in the sign language literature, calls for a model that conceives of signs as a subset of gestures (figure 2.1).

The model conceives of the process of lexicalization as follows: In the absence of conventional lexical signs, a wide range of gestural devices used in communication by deaf persons phonologically lose their free forms and formal variations and eventually become signs. Semantically, the forms come to be associated with particular meanings (and are no longer free forms) and may associate with certain grammatical constructs. Furthermore, in the continuum between gestures and signs we find semi/partially lexicalized/grammaticalized signs.<sup>1</sup>

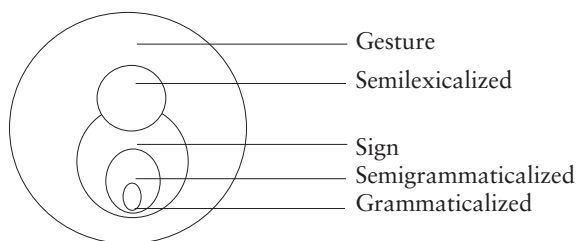


FIGURE 2.1. *Signs as a subset of gestures.*

## Sign Articulation and Its Description

In the sign language literature, the term “sign” is used as an equivalent of “word.” In many sign languages, there are no signs for “word,” “sentence,” and “language,” and the recent ones used in the absence of signs are borrowed from spoken language through initialization. In ISL, WINE is W+DRINK, where w is an initial for wine. In the deaf communities, “sign” has cultural and psychological validity, and “signers talk about signs in very much the same way that spoken language users talk about words” (Zeshan 2002, 154).

Lexical signs (or simply “signs”) follow certain formational rules specific to language and are defined in terms of formational parameters as follows:

A hand or hands in a particular shape/configuration, moving or static in a specified way, with respect to a particular location in the space and/or contact with the specific parts of the signer’s body, and may/may not be accompanied by nonmanual articulation.

Due to differences in the modality, in sign language two manual articulators can be used to articulate two different signs at the same time. The simultaneous articulation of two different signs is treated as a two-word sequence. Nonmanual expressions, which are articulated with the manual sign and the presence of which distinguishes between various signs, are a part of a sign. Morphological inflections do not occur independently and are articulated with a sign: The simultaneous morphology found in all sign languages described thus far are nested into a single verb sign. In other words, a single sign may be a sentence, as in the following:

- CONTRA <sup>GIVE</sup> <sub>IPSI</sub>
- (1) “He gave a book to her.”

Stokoe (1960) identified three formational parameters of signs in American Sign Language (ASL)—handshape, location, and movement—which are produced simultaneously in various combinations to form signs. His work established that the sublexical structure of signs could be described by a finite set of discrete, arbitrary units that are combined linguistically and that signs are organized simultaneously, unlike words of spoken language.

Friedman (1977) and Battison (1978) identified a fourth parameter, palm orientation. Baker (1977), Baker and Padden (1978), and

Liddell (1978) added nonmanual articulation in sign formation as a fifth parameter. Any change in one of these five formational parameters changes the meaning of a sign. In other words, these formational parameters are considered to be phonemic.

One of the formational parameters that has captured the imagination of sign language researchers is location. In Stokoe's system, the signing space is a single, unitary parameter of sign formation, and additional descriptions were provided to identify a specific location such as "near chest," "near eyes," and so on. Klima and Bellugi (1979) have partitioned the neutral signing space (i.e., the space directly in front of the signer's body) into mutually intersecting orthogonal planes—horizontal, vertical, and sagittal—as distinct places of articulation, resulting in four distinct loci. Further, Uyechi (1996), in an attempt to characterize visual phonology as distinct from spoken language phonology, conceives of space as a nesting of spaces. The local signing space is the space occupied by the hand in a lexical sign; the global signing space indicates morphological specifications (e.g., in verb agreement, the spatial path between the arguments and/or adjuncts); and discourse signing space for role-playing, point of view, and so on. For use as a descriptive tool, Mathur (2000, 19) divides signing space into three intersecting planes: midsagittal, vertical, and horizontal, yielding eight distinct loci for describing finer phonetic aspects of the location of signs.

On another front, with the advent of the Hamburg Sign Language Notation System (HamNoSys), a phonetic transcription system in the tradition of Stokoe, the neutral signing space is conceived of as divided into twenty-five distinct loci, of which twenty-four are phonetically plausible articulation sites. Similarly, Sign Language IPA (SLIPA), based on Perlmutter's analysis of ASL phonology, makes analogous claims regarding the neutral signing space.

Under such various conceptualizations of space, recent advances in sublexical study have focused on the relationship between these formational parameters in light of current phonological theories. In the context of the theory of feature geometry, motivated by the physical architecture of the articulators, Sandler (1989) subsumes orientation (a subclass of handshape) and handshape under hand configuration. On the other hand, Mathur (2000, 20) subsumes orientation under movement.

In order to capture generalizations that maintain that there is only one major body area, Sandler (1989) divides the location into two feature classes: place and setting. The former is a major body area, which



includes features such as head, trunk, nondominant hand, arm (the latter refers to the refinement of place and has binary features such as high, low, ipsilateral, contralateral, proximal, distal, contact), following spoken language binary feature theory. Brentari (1990) and van der Hulst (1993) incorporated these two features into their models as well.

However, the two central questions that remain unresolved in any of the phonological models following a place-setting feature composition concern the precise setting of place (e.g., keeping other features constant). A place-setting feature composition of [head] [low, contact] can be either lips or teeth (for RED and WHITE, respectively in ISL). Such finer (phonemic) distinctions are not captured by a place-setting feature composition. Even though one can debate whether these observations amount to a comprehensive critique for languages as well described as ASL and BSL, one cannot doubt that, for languages such as ISL, about whose phonetic and phonemic properties very little is known, a much richer descriptive apparatus is needed. As a consequence, in this book I have followed the Stokoean model in the tradition of HamNoSys and SLIPA.

In the proposed system, ISL handshape, orientation, location, movement, and nonmanual expressions are distinct categories supplemented by a featural analysis. Location is divided into (a) specific part(s) of the body and (b) neutral signing space. The former addresses the issue of feature composition (i.e., loci [teeth] and [lips] for WHITE and RED, respectively, which are characterized as phonemic). Similarly, the neutral signing space is characterized as comprising horizontal, vertical, and lateral planes or cubicles, which I call the three-dimensional rule of thirds (borrowing a term from photography). In the following section, these parameters are discussed in detail with illustrations and examples.

## **SUBLEXICAL INVENTORY OF ISL**

The sign formation parameters in ISL are handshape (HSH), location (LOC), movement (MOV), orientation (ORT), and expression (EXP). The first four pertain to the manual articulators, whereas the fifth involves nonmanual articulation. These five parameters are combined to form a sign. A change in any one of the parameters produces another sign or change in meaning and grammatical function. These manual activities enable users to distinguish between signs.

## Handshape

Handshape is a particular, distinct configuration assumed by the manual articulator(s). It can utilize one hand or two hands. Handshapes are differentiated by the spatial configuration of the hand, resulting from extension, contraction, contact, or divergence, as well as the arrangement of the fingers and the thumb. The digits take various shapes to form a vast array of static configurations permitted by the muscular structure of the hand. Each of these is a distinct handshape, and only a subset of possible handshapes is permitted in a particular sign language. This shows that linguistic constraints on handshape operate apart from motor limitations.

Based on the *Indian Sign Language Dictionary* (2001), which is organized on the principles of semantic domains, the distinct handshapes found in ISL are listed in table 2.1, labeled on the basis of the handshapes provided in the description of ASL. Further, as a formalization of a system of classification and notation, the following prefixal attributes are also used: “x” is used for extended, “t” for twisted, “c” for compact, “s” for small, “sc” for small and curly, “b” for bent, “f” for flat, and so on.

One clarification is essential here. This inventory of ISL handshapes is a list of *phonetically* distinct handshapes; whether they are also phonemic is a topic for further research. Although in certain instances a phonetic distinction may map onto a phonemic one (e.g., TEA and COFFEE, where the former has [handshape: bO], while the latter has [handshape: bC]), and all other formational parameters remain the same, this is not always the case.







Signers are linguistically either left-hand or right-hand dominant, depending on how they typically execute one-handed signs. In the sign language literature, H1 is the active/dominant hand, and H2 is the base/passive/nondominant hand (figures 2.2 and 2.3).

A double-handed sign is articulated with both the dominant and the nondominant hands. Signs are made either with a single hand or with a double hand, an aspect of configuration known as handedness. Some signs (e.g., FINE, WALK, GIVE) are single handed. In other signs (e.g., GIVE, TELL, THREAD), the handshape is static throughout articulation. On the other hand, in certain signs the configuration of the handshape changes with respect to the movement of the hand from the initial to the final articulation of the sign (e.g., HATE, THROW, START). In double-handed signs, handshapes are symmetric (e.g., MILK, RAIN ; figure 2.4, left).

TABLE 2.1. *Handshapes in ISL.*

	<b>A</b> WASH, CAP, KITCHEN, COMB, KEY, UMBRELLA, HORSE, BADMINTON, KITE, WEAVER, ICECREAM, COOK, PROMISE, SKIP, TIE, MUG, REFRIGERATOR, BOX, BAG, JUG, LUGGAGE, BUCKET, DRAWER, CHEST
	<b>xA</b> GOOD, PERFUME, WATER, INDIA, CHRIS- TIAN, EXAMINATION, WIN, PASS/SUCCESS, FAIL, LOSE, DRINK, SCIENCE
	<b>tA</b> SIT, RUN, COUGH, EXERCISE, BOLD, CHAIR, FAT, KANGAROO, SIKH, DUSTER, SPORTS, SCOOTER, GOVERNMENT, POWER, STRIKE, BREAK, LOVE, FIGHT, BEND, DRIVE, SQUEEZE, REGRET/SORRY, OLD, TIGHT, HARD, COLD, COAT, MOBILE PHONE
	<b>B</b> RELATIVE, HEAD, FAITH, THANK, HILL, FLAG, WHEN (DAY), MOUNTAIN, WIND, STORM, HOUSE, TABLE, MIRROR, WOOD, CAMEL, FROG, TREE, PARSI, JAIN, CAS- SETTE, TRAIN, DOSA, CHAPATI, SUGAR, LASSI, KING, BANDH, OATH, FROM, HERE, IN, PROTECT/DEFEND, GO, MEET, WAIT, MARKET, LAME
	<b>xB</b> CHEST, SMELL, PATIENCE, BIRD, BUSY, NEWSPAPER, TOWEL, CAT, CALCUTTA, SING, EDUCATION, EXPLAIN, SAW, BRIDGE, MEAT, BREAD, AFTER/LATER, FAR, ADVISE, STOP, FINISH, CLOSE, REMOVE, SHARE, CLEAN, SERVE, HANDKERCHIEF
	<b>tB</b> GREEN, PEACOCK, LEAF, MUSLIM, PASS/ SEASON TICKET, BISCUIT, DEVELOP, IMPROVE, REMEMBER, RESPONSIBLE, PLASTIC, BORING

TABLE 2.1. (Continued)







	<b>cB</b> BIRTH, LISTEN, HEAR, CONCENTRATE, BEG, WEDDING, FRIEND, AGE, MONKEY, SNAKE, PAPAYA, PUMPKIN, KEEP, SWIM, SMALL, BODY, SICK, CURE, ROOF, WINDOW, KNOWLEDGE, OPEN, WINDOW
	<b>scB</b> CHILDREN, SPHERE, GROUP, EARTH, SUN, COCONUT, KERALA, BALL, COMPACT DISK, FOOTBALL, VOLLEYBALL, MIX, BOWL, MOON
	<b>C</b> SICK, PIG, PIPE, COMMUNICATE, SPILL, BOTTLE, THICK
	<b>bC</b> ENEMY, PERSON, INTEREST, THROAT, COFFEE, PARLIAMENT, COMPLAIN, CAREFUL
	<b>F</b> FINE, GOOD, ORIYA, WHISTLE, SUGAR, SWEET, SPECIAL
	<b>sF</b> DANCE, CAT, SURAT, TELUGU, SOUL, OLYM- PICS, THREAD, MILK, EXPLAIN, CHEMIS- TRY, LOOSE, FRESH

(Continued)

TABLE 2.1. (Continued)

	<b>G</b> BLACK, BLUE, BROWN, YELLOW, RED, CIRCLE, MOUSE, LIZARD, ROUND, POINT, TELL, MOTHER, FACE, TALK, THINK, PROUD, LAZY, WRONG, GUILTY, INSTIGATE, INSULT, ROOM, FAN, TOOTHBRUSH, SHEEP, GRASS, DEER, LIZARD, BRANCH, CREEPER, PLANT, ALWAYS/OFTEN, BIHAR, MYSORE, BHANGRA, TEACHER, DISCUSS, SUB- TRACT, ADD, MULTIPLY, DIVIDE, ROTATE, CHILLY, CORN, FOLLOW, ARGUE, IGNORE, WEAK, FOOLISH, DEAF, SAME, COMMON, ANOTHER/OTHER, LOUD, BANIAN
	<b>hG</b> LIE, FAMOUS
	<b>cG</b> HEN, PARROT, ANT, GUJARAT, DEVIL, GOSSIP, HANG, KNOW, IRON
	<b>H</b> NAME, SPOON, KNIFE, SQUIRREL, RABBIT, DOLLAR, FRANCE, CHINA, NEPAL, DUBAI, RESTAURANT, TICKET, DRUMSTICK, PEAS, CUT, DRAW, LORRY, SNAKE, BUTTER
	<b>xH</b> HORN, DUCK, RAT

TABLE 2.1. (Continued)

	<b>I</b> BAD, GUILTY, YELLOW, ISRAEL, STORY, ACCUSE, CRITICISE, SLIM/THIN
	<b>L</b> COW, FISH, RHINOCEROUS, PICTURE, GUN, ADVERTISEMENT, FOOL
	<b>O</b> GOAT, MUMBAI, MALAYALAM, CYCLE
	<b>fO</b> POISON, BUD, PROFIT, ELECTION, GIVE, EAT, INSULT, RAIN, LIGHT, PUJA, CINEMA, KISS, ECLIPSE, HUNGRY
	<b>bO</b> MEASLES, MATCHBOX, BELL, PENCIL, TEA
	<b>fbO</b> SURPRISE, STAR

(Continued)

TABLE 2.1. (Continued)













	<b>U</b> SAND, CARDBOARD BOX, PACKET
	<b>bU</b> NAME, MAGNET, SWEETS, SMALL POX, SPEAKING
	<b>V</b> SEE, WALK, CHAT, CHEAT, VARANASI, LAWYER, BECOME, CHANGE, INVENT, SEARCH, CUNNING, REPLY, DIFFERENT/ VARIOUS, CORPORAL
	<b>cV</b> BLIND, BELT
	<b>tV</b> KARNATAKA, QUICK
	<b>W</b> CHENNAI, SERGEANT


TABLE 2.1. (Continued)

	<b>Y</b> SIZE, CHENNAI, KRISHNA, TELEPHONE, PLAY
	<b>sY</b> PUPPET SHOW
	<b>3</b> SCISSORS, VEGETABLE
	<b>c3</b> ORANGE, OWL, PLUG, LEMON, HARD, POTATO, CHICKOO, ONION, GINGER, COAL, PLUG, NUT
	<b>f3</b> EGG, BRINJAL
	<b>4</b> COLOR, GATE

(Continued)



TABLE 2.1. (Continued)

	<p>5</p> <p>HAPPY, LIE, FALSE, DRESS, WAVES, EARTH- QUAKE, CLOUD, THINGS, SPIDER, HOLI- DAY, USA, TAMIL, TABLA, WARM, SIGN, TYPIST, SHOP</p>
	<p>c5</p> <p>BITE, LEPROSY, ANGRY, BULB, BARK, FROG, HANUMAN, COMPACT DISC, MACHINE, MOTOR, CURD, BITTER, SOUR, APPLE, FREEZE, CONFUSE/WORRY, JEALOUS, SOLID, HANUMAN, SELFISH</p>
	<p>f5</p> <p>SAD, CONE, ISLAND, KITCHEN, GHOST, GANAPATI, DIRTY, FEAR, BOWL</p>
	<p>x5</p> <p>QUESTION, TIRED</p>
	<p>8</p> <p>BONE, BRAIN, BETWEEN, FEEL, CARROM</p>
	<p>t8</p> <p>DOG, HATE</p>

*Note.* From *Indian Sign Language Dictionary* (2001)



FIGURE 2.2. *Sign articulated with H1 and H2: TEACHER.*



FIGURE 2.3. *Sign articulated with H1: index toward ADDRESSEE.*



FIGURE 2.4. *Left, symmetric H1 and H2: AGAIN; right, asymmetric H1 and H2: STAND.*

In double-handed symmetric handshapes, the configuration changes from the initial to the final articulation (e.g., MAGIC, BRIGHT, DISAPPEAR). In double-handed asymmetric handshapes, the handshape of the dominant hand is different from that of the nondominant hand (e.g., BREAD, MEAT, HELP; figure 2.4, right). In ISL, the asymmetric handshapes are limited to A, B, xB, C, G, L, U, and V.

Following Battison's (1978) typology, the ISL handshapes can be categorized as follows:

1. Type 1: symmetric handshape with/without configuration changes from the initial to the final articulation of the sign.
2. Type 2: symmetric handshape in which H1 can have independent local/path movement and H2 need not have any movement at all.
3. Type 3: asymmetric handshape with different shape and orientation.

## Location

Signs are articulated in the interpersonal space (i.e., on the signer's body or in the neutral signing space in front of the signer) and are formed in contact with specific part(s) of the signer's body and/or in the neutral space.

TABLE 2.2. *The Body Locations in ISL.*

No.	Body Location	Sign
1	Vertex	BRAIN, BIHAR, NURSE, KING, PLEDGE
2	Frontalis	BLACK, HEAD
3	Forehead	YELLOW, SWEAT, SUMMER, SICK, TROUBLE, CHEN- NAI, MYSORE, KING, INDIA
4	Temple	THINK, ANGRY, COW, HORN, RABBIT, VADODARA, KNOWLEDGE, MEMORIZE, REMEMBER, DREAM, FOOLISH, FOOL, DEER
5	Ear	FAMOUS, DEAF
6	Eye Cone	CHINESE
7	Lower Eyelid	CRY
8	Eye	BLIND
9	Eye Brow	FROG
	Ear	HEAR/LISTEN
10	Ear Lobule	BUDDHA, LOUD, KANPUR, GOLD
11	Nose Bridge	COLD, INSULT, BLUE
12	Nose Tip	PROUD, LIE, FALSE, RHINOCEROUS, GANAPATI, NEPALI
13	Nose Groove	BANARAS, MOTHER
14	Cheek Bone	ANGRY
15	Face	FOX
16	Philtral	YELLOW, FATHER
17	Philtral Column	PRIVATE
18	Cheek	SLEEP, SICK, MEASLES, SMALL POX, CURE,
19	Mouth	BANQUET
20	Lips	COLOR, TALK/SPEAK, KRISHNA, RED
21	Teeth	WHITE
22	Chin	PIG, SPEECH THERAPIST, LORRY, OLD, DIRTY, SURAT, BEARD
23	Throat	THROAT, SWEET
24	Neck	NECK, CLEVER
25	Side Neck	BORING, KILL, PAKISTAN
26	Shoulder	RESPONSIBLE, DIFFICULT, RELAX
27	Deltoid	CORPORAL
28	Arm	INJECTION
29	Elbow	POOR

TABLE 2.2. (Continued)

No.	Body Location	Sign
30	Forearm Inner	NAME
31	Forearm Outer	BITE, SOAP
32	Outer Wrist	BONE, TIME, TEACHER, LATE/FINE, DEFEND/PROTECT, WATCH
33	Breast	FAITH, SORRY, REGRET, LIKE
34	Chest	CHEST, HAPPY, GUILTY, FEEL, JEALOUS, TIRED, WANT
35	Stomach	INTEREST, HUNGRY, FUN
36	Inner Wrist	MUSEUM, DOCTOR
37	Hand	BROWN, SKIN, FISH, STONE, GHEE, LATE
38	Palm	OATH, KEEP, PRESS, PROMISE, FRIEND, CLEAN
39	Phalanx (Outer)	FEBRUARY, QUARREL/FIGHT, ACCIDENT
40	Phalanx (Inner)	MARRY
41	Index Side	WORK, TOGETHER
42	Thumb Nail	MAGIC, BRIGHT, LICE
43	Thumb Base	BUTTERFLY
44	Index Base	AGREE
45	Ring	ENGAGEMENT, RING
46	Little	PINKY FINGER
47	Finger Tip/S	BUD, MUMBAI, KISS, GOSSIP, MEET, HOME
48	Finger Base	AMERICA
49	Index-Middle	SANDAL

The former, called *body location* (bLOC), indicates a specific part of the body, and the latter is the *spatial location* (sLOC) or the neutral signing space. In my system, the distinction between bLOC and sLOC is motivated by my attention to articulatory properties. It is quite possible that the [ $\pm$  contact] feature, which many advanced theories of sign language phonology propose, may be a superior characterization of the same. In principle, the system I propose is amenable to being recast within those distinctions.

The neutral signing space (i.e., sLOC), as shown schematically in figure 2.5, is a single locus in Stokoe's system. Klima and Bellugi (1979) partition the neutral space into mutually intersecting orthogonal planes—horizontally, vertically, and sagittally—as distinct places of articulation,



FIGURE 2.5. *Left, vertical; center, horizontal; right, lateral.*



FIGURE 2.6. *Vertical plane of the sLOC.*

resulting four distinct loci. Mathur (2000, 19) dissects space into the three intersecting planes of the articulatory space (i.e., midsagittal, horizontal, vertical), yielding eight distinct loci.

The signs articulated at sLOC, however, are not uniform in height, length, and width with respect to the signing space. In ISL, discourse participants and nonparticipants are articulated in front of the signer's torso and outside the signer's torso, respectively. On this basis, sLOC can be trifurcated vertically [V] into three compartments (figure 2.6).

Discourse participants (namely, the signer and the addressee) and nonparticipants (namely, those present other than the addressee and the signer) are articulated at [v] and [v2] or [v1], respectively, depending on the handedness of the signer.

Similarly, signs are articulated at different heights. Some signs are articulated near the face, others at the chest, and a few below the waist in their citation/basic form. For instance, APPLE and JEALOUS are articulated within [v] but at different heights. Specifically, APPLE is articulated at the face level, and JEALOUS at the chest level. Therefore, along the horizontal plane [H], the sLOC is further compartmentalized as shown in figure 2.7. In addition, APPLE is articulated near the face at [h1], and JEALOUS at the chest, which is [h].



FIGURE 2.7. *Horizontal plane of the sLOC.*



FIGURE 2.8. *Lateral plane of the sLOC.*

COMPLAIN and TELL are distinguished from each other by the lateral extension in the lateral plane. The sLOC is further trifurcated laterally [L] (figure 2.8).

The compartmentalization of the sLOC into the vertical plane [V], the horizontal plane [H], and the lateral plane [L] results in an arbitrary spatial matrix. Each compartment of [V], [H], and [L] forms a cubicle, which is identified with reference to the head position, not the body position, of the signer, marking a possible locus of articulation. In ISL, a subset of cubicles is depicted in table 2.3 (p. 38).

## **Movement**

Movement is the kinetic motion of the hand(s) articulated in the formation of a sign in a single cubicle (or cubicles) or across cubicles. The motion is not a global whole, but varies in shape, size, tempo, direction, and dynamics. It occurs in a single motion, or in a sequence, or simultaneously, or both sequentially and simultaneously within a sign.

The movement of a sign is organized into local movement (lMOV) and path movement (pMOV), according to the locus associated with the movement. Local movement is articulated with the proximal interphalangeal joints (i.e., the joints farther away from the wrist, abbreviated as K1), the metacarpophalangeal joints (i.e., the knuckles closer to the wrist,

TABLE 2.3. *The Cubicles of Spatial Location in ISL.*

No.	Cubicle	Sign
1	v1-h1-l1 = v2-h1-l1	RIGHTS, PRAISE
2	v1-h-l1 = v2-h-l1	WINGS, SKIP
3	v1-h2-l1 = v2-h2-l1	XXXXXXXXXXXXXXXXXXXXXX
4	v-h1-l1	HEARING, ORANGE, LISTEN, SHEEP, KERALA, COCONUT, TELEPHONE, MOBILE PHONE, ONION
5	V-h-l1 = v-h2-l1	XXXXXXXXXXXXXX
6	v1-h1-l = v2-h1-l	STAR, DARK, SUN, SKY, PEACOCK, SQUIRREL, LIZARD, BHANGRA, BRINJAL, THIN
7	v1-h-l = v2-h-l	PERSON, MOUSE, POWER, THROW
8	v1-h2-l = v2-h2-l	SWEEP
9	v-h1-l	RAIN, APPLE, FACE, SEE, CONCENTRATE, EAT, COUGH, CAP, WATER, CLOUD, ROOF, FAN, COMB, SPOON, TOWEL, HEN, DUCK, OWL, PARROT, CINEMA, DUSTER, VOLLEYBALL, VIDEO CAMERA, BUSINESS, BITTER/SOUR, CORN, INVENT, SEARCH, SPEAKING
10	v-h-l (default)	MILK, JEALOUS, BLUE, SIZE, SPHERE, CONE, RELATIVE, FRIEND, NAME, BODY, SIT, RUN, WORK, LEPROSY, BAD, FINE, GOOD, LAZY, MAGNET, ROOM, EARTHQUAKE, MIRROR, HORSE, FISH, KANGAROO, RAT, ANT, BUTTERFLY, SPIDER, GRASS, BUD, OFTEN/ ALWAYS, COUNTRY, STATE, AMERICA, FRANCE, ASSAM, KARNATAKA, VILLAGE, CHENNAI, CITY, MUMBAI, TAMIL, ORIYA, BELL, ART, EXPERIMENT, STUDY, TEACHER, WRITE, COPY, PICTURE, SPORTS, BALL, RUN, PROFIT, RESTAURANT, ADVERTISE- MENT, CYCLE, SCOOTER, TRAIN, SEASON TICKET, CURD, LEMON, PAPAYA, LASSI, LAWYER, BAIL/ FINE, ACCUSE, CRITICISE, BECOME, START, OPEN, CLOSE, DEFEND/PROTECT, HATE, POUR, ACCIDENT, ARRANGE, BEND, BREAK, CATCH, COOK, KISS, GOSSIP, SQUEEZE, SCOLD, SERVE, WAIT, SELFISH, PLASTIC, MARKET, LAME, LOOSE, FRESH, WARM, SPECIAL, BELT, SHOP
11	v-h2-l	CRICKET, PANT, SWEEP, FOOTBALL
12	v1-h1-l2 = v2-h1-l2	
13	v1-h-l2 = v2-h-l2	Discourse non-participant

TABLE 2.3. (Continued)

No.	Cubicle	Sign
14	v1-h2-l2 = v2-h2-l2	
15	v-h1-l2	COMPLAIN
16	v-h-l2	Discourse participant
17	v-h2-l2	

abbreviated as K2), wrist, radioulnar, and elbow, and path movement is articulated with the shoulder as a locus of movement.<sup>2</sup> As with the other formational parameters, the movements that are described in this section are based on articulatory properties, and the phonemic contrast between the movements depends on the other formational parameters. If all of the other formational parameters are held constant in two signs, yet the two signs differ in local movement, then the signs constitute a minimal pair. For example, PASS and FAIL form a minimal pair with regard to the difference in the local movement: [movement: supinate] and [movement: pronate], respectively.

Table 2.4 shows the local movements in ISL.

Local movement may or may not accompany path movement, which varies in direction, shape, size, and dynamics. The direction (DIRN) shows the directional orientation of the path movement. The shape (SHP) refers to the contour of the DIRN (e.g., straight, circular, semicircular, wavy). The size (SIZ) of the DIRN is shown by the length of the SHP (e.g., big, medium, small). The dynamics (DYN) are the kinetic motion of the path movement (e.g., fast, slow, normal). I consider these properties to be the *intrinsic* articulatory properties of path movement (i.e., any instant of path movement will necessarily exhibit values for direction, shape, size, and dynamicity).

### Orientation

The fourth parameter, orientation, is identified as a minimal contrasting unit. Although orientation is dependent on handshape (by virtue of the nature of the articulator), it can be isolated as a minimal contrastive parameter when reference is made to the visibility of the palm with respect to the signer's body and carpal orientation (the direction of the carpal area



TABLE 2.4. *The Local Movements in ISL.*

No.	Local Movement	Sign
1	Supinate	QUESTION, BUTTER, JAM, SPHERE, EARTH, KEY, SPOON, TAMIL, ART, BUTTER, MIXER, BALL, PASS, BREAK, BEND, INVENT, DOUBT
2	Pronate	MOTHER, SURPRISE, GUILTY, ROOM, LEMON, CORN, ALWAYS/OFTEN, OPEN, TIRED, FAIL
3	Twisting	DANCE, TOWEL, BELL, SHARPENER, MACHINE, MOTOR, SCOOTER, OLD, SELFISH
4	Circular	COOK, YELLOW, ROUND, OFTEN/ALWAYS
5	Nodding	PAINTING, WHITE, INTEREST, TROUBLE, CAP, SUN, RAIN, IRON, PLASTIC, BIRD, HEN, VOTE, MIX, PARROT, CAMEL, KANGAROO, MONKEY, LEAF, INDIA, ASSAM, MUSLIM, KNOWLEDGE, KITE, PROFIT, TABLET, BAIL/FINE, REMEMBER, GOSSIP, KNOW, RESPONSIBLE, SWEET
6	Opening	HATE, ANGRY, CARROM, ALLERGY, SURPRISE, BRIGHT
7	Closing	MOSQUITO, ORANGE, CHAT, PERFUME/SCENT, DUCK, DOG
8	Wiggling	OCEAN, COLOR, WALK, LIE, FEAR, EARTHQUAKE, BUTTERFLY, SPIDER, TELUGU, TABLA
9	Crumbling	SOFT, STAR, SCISSORS
10	Waving	BYE-BYE, BLUE, PEACOCK, GOAT, NAGPUR
11	Moving	BLACK, BLACK, YELLOW, BROWN, SAND, ISRAEL, GHEE, PRACTISE, BORING
12	Shaking	QUESTION, FAT, FRIEND, BONE, MIRROR, PAIN, EGG, BARK, PIG, RABBIT, RAT, BIHAR, KERALA, COCONUT, CHENNAI, BHANGRA, CURD, SUGAR, GANAPATI, BRINJAL, PLAY, PRAISE, SOLID, COLD

between the metacarpophalangeal joints, i.e., the knuckles and the wrist). I adopt this parameter with the awareness that doing so may appear to run counter to other approaches in which orientation is a phonological subcategory of handshape and not an independent category—a view that eliminates redundancy and overlap in the description of sign languages. Notable among these approaches (see Sandler 1987; Hulst 1993; Liddell and Johnson 1989) is that of Crasborn and van der Kooij (1997), who

TABLE 2.5. *The Directions of Path Movement in ISL.*

No.	Direction	Sign
1	Up	HAPPY, PROUD, LAZY, UMBRELLA, SQUIRREL, DEER, RHINOCEROUS, SPIDER, LIZARD, FRANCE, NEWSPAPER, LORRY, ENJOY, FEEL, FAMOUS, PICK
2	Down	CONE, BIRTH, PERSON, BODY, NECK, THROAT, SIT, COLD, MEASLES, SMALL POX, BAD, SAD, INTEREST, LIE, DRESS, BANIAN, COAT, HOUSE/HOME, DOLLAR
3	Up-Down Unison	ADVERTISEMENT, ICE CREAM, SWEETS, BHANGRA, MEAT, VOLLEYBALL, CIRCLE, HANDKERCHIEF, MALAYALAM
4	Up-Down Alternative	WEDDING, PATIENCE, RESTAURANT, EXAMINATION, STORY, GRASS, MILK, GOVERNMENT, ACCUSE, BOIL, KITCHEN, ACTIVE, LAME, WARM
5	Out (Default)	SEE, TELL, POISON, WALK, CONCENTRATE, POISON, THANK, ROOF, MATCHBOX, TOILET, BARK, FROG, RAT, ANT, COUNTRY, STATE, CINEMA, INFORM, ASK
6	In	ACCEPT, DEFEND, DRINK, HUNGRY
7	In-Out Alternative	TALK, EAT, CHEAT, WORLD, CALCUTTA, TEACHER, EXPLAIN, DISCUSS, BUSINESS, SHOP, LASSI, CRITICIZE, ARGUE, COMMUNICATE, SIGN, RUN, TRAIN, DOSA
8	In-Out Unison	VARANASI, TALK, TICKET, BREAD, DRUMSTICK, SPECIAL, TEACH, SKIP, SIKH, CYCLE, CONFUSE/WORRY, COOK, SHEEP, AMERICA
9	To Symmetry	WAIST, BITE, BELT, ECLIPSE, WAIST, BELT, DAY, ACCIDENT, CLOSE, SEARCH, FREEZE, CUT, EXCHANGE, MEET, SWEEP, SMALL, DARK, SAME
10	To Lateral	RED, CHILDREN, NAME, FINGER, SWEAT, CURE, WINDOW, GATE, NEWSPAPER, WINDOW, GATE, CAT, DEER, DUBAI, CHENNAI, TELUGU, HANUMAN, MAGIC
11	To Symmetry-Lateral Alternative	SCIENCE, EXPERIMENT, CHEMISTRY, BADMINTON
12	To Symmetry-Lateral Unison	SIZE, BABY, THINK, EXERCISE, INSULT, EARTHQUAKE, SKY, BITTER/SOUR, TOOTHBRUSH, MAGNET, CAT, VILLAGE, DUSTER, STRIKE, QUARREL, SORRY/REGRET, JEALOUS, ORIYA

TABLE 2.6. *The Shapes of Path Movement HP in ISL.*

No.	Shape	Sign
1	Straight (default)	GIVE, EVENING, COLOR, SIZE, RED, CONE, BIRTH, WEDDING, PERSON, NAME, BODY, NECK, THROAT, FINGER, BITE, WALK, SWEAT, SIT, CONCENTRATE, THINK, EAT, COLD, EXERCISE, HAPPY, SAD, PATIENCE, INTEREST, INSULT, CHEAT, DRESS, EARTHQUAKE, KITCHEN, ROOF, NEWSPAPER, UMBRELLA, MATCHBOX, TOOTHBRUSH, TOILET, MAGNET, CAT, BARK, HORN, RAT, SPIDER, GRASS, DUBAI, VILLAGE, CHENNAI, VARANASI, TELUGU, HANUMAN, CINEMA, MAGIC, BHANGRA, EXAMINATION, TEACHER, EXPLAIN, DISCUSS, DUSTER, PICTURE, STORY, BADMINTON, VOLLEYBALL, CASSETTE, THREAD, PLUG, ADVERTISEMENT, LORRY, ACCIDENT, TICKET, MEAT, BREAD, ICE CREAM, SWEETS, BITTER/SOUR, APPLE, MILK, DRUMSTICK, GOVERNMENT, CRITICIZE, STOP, GIVE, CLOSE, DISTRIBUTE, DEFEND, FREEZE, QUARREL, ARGUE, BOIL, COMMUNICATE, CUT, ENJOY, FEEL, MEET, SERVE, SMALL, ACTIVE, FOOL, HUNGRY, PERFECT, SAME, WARM, SPECIAL, HOUSE/HOME, KARNATAKA RESTAURANT, LAME, DIRTY, HATE, SCOLD
2	Semicircle	DAY, BABY, WAIST, SEE, TALK, TELL, CURE, BAD, PROUD, LAZY, LIE, THANK, BANIAN, COAT, BELT, HILL, MOUNTAIN, SKY, ECLIPSE, WINDOW, GATE, TOILET, CAT, POISON, RHINOCEROS, ANT, WORLD, COUNTRY, FRANCE, STATE, CALCUTTA, INFORM, EXPERIMENT, ASK, SCIENCE, CHEMISTRY, BUSINESS, BRIDGE, SHOP, PAPYA, PARLIAMENT, STRIKE, ACCUSE, ADVISE, CHANGE, FINISH, SEARCH, DRINK, EXCHANGE, SWEEP, THROW, BRIGHT, DARK, FRESH, DROP, PICK
3	Wavy	AGAIN, CLOUD, DREAM, MEDICINE, OCEAN, CHILDREN, MEASLES, SMALL POX, SQUIRREL, FROG, DEER, LIZARD, DOLLAR, LADY'S FINGER
4	Circle	SIGN, RUN, SKIP, TEACH, CIRCLE, HANDKERCHIEF, MALAYALAM, SIKH, CYCLE, TRAIN, DOSA, ARRANGE, CONFUSE/ WORRY, COOK, MIX, SORRY/REGRET, JEALOUS, SHEEP, AMERICA, ORIYA

have reinterpreted orientation as that part of the hand that relates to the place of articulation. They reduce the traditional classes of orientation, facing, and point of contact to one class, which they call *relative orientation*. Further, they propose that the features pertaining to relative orientations are specified under hand configuration and are interpreted in relation to handshape and location features. In the main, however, the

TABLE 2.7. *The Sizes of Path Movement in ISL.*

No.	Size	Sign
1	Big	TALL, WEDDING, PERSON, EXERCISE, MOUNTAIN, ECLIPSE, KITCHEN, GATE, NEWSPAPER, BADMINTON, VOLLEYBALL, BUSINESS, SHOP, ACCIDENT, DISAPPEAR, EXCHANGE, FAMOUS, BRIGHT, DARK, GO
2	Medium (default)	FINISH, CHILDREN, BODY, CIRCLE, WAIST, SEE, TALK, TELL, WALK, CONCENTRATE, CURE, BAD, HAPPY, PATIENCE, LAZY, LIE, THANK, BANIAN, COAT, BELT, HILL, SKY, CLOUD, HOUSE/ HOME, ROOF, UMBRELLA, TOILET, SQUIRREL, FROG, DEER, HORN, LIZARD, DOLLAR, WORLD, COUNTRY, FRANCE, CALCUTTA, INFORM, EXPERIMENT, ASK, EXPLAIN, DISCUSS, DUSTER, SCIENCE, CHEMISTRY, STORY, THREAD, BRIDGE, RESTAURANT, ADVERTISEMENT, SIGN, CYCLE, CIRCLE, MILK, PARLIAMENT, STRIKE, LAWYER, ACCUSE, CHANGE, STOP, FINISH, GIVE, CLOSE, DISTRIBUTE, HATE, SEARCH, ARGUE, ARRANGE, BOIL, COMMUNICATE, COOK, DREAM, DRINK, ENJOY, FEEL, MEET, MIX, SCOLD, SERVE, SKIP, SWEEP, THROW, ACTIVE, FOOL, JEALOUS, LAME, PERFECT, DIRTY, FRESH, SAME, WARM
3	Small	CLEAN, COLOR, YELLOW, RED, SIZE, CONE, SMALL, BIRTH, NAME, NECK, THROAT, FINGER, BITE, RUN, SWEAT, SIT, THINK, EAT, COLD, MEASLES, SMALL POX, POISON, PROUD, INTEREST, INSULT, CHEAT, DRESS, HANDKERCHIEF, EARTHQUAKE, WINDOW, MATCHBOX, TOOTHBRUSH, MAGNET, CAT, BARK, SHEEP, RHINOCEROUS, RAT, ANT, SPIDER, GRASS, AMERICA, DUBAI, VILLAGE, CHENNAI, VARANASI, TELUGU, SIKH, HANUMAN, CINEMA, MAGIC, BHANGRA, EXAMINATION, TEACHER, PICTURE, CASSETTE, PLUG, ORIYA, MALAYALAM, SIKH, LORRY, TRAIN, TICKET, MEAT, BREAD, ICECREAM, SWEETS, BITTER/ SOUR, APPLE, PAPAYA, LASSI, DRUMSTICK, LADY'S FINGER, GOVERNMENT, CRITICIZE, ADVISE, TEACH, DEFEND, FREEZE, QUARREL, CONFUSE/ WORRY, CUT, SORRY/REGRET, SMALL, HUNGRY, DOSA

TABLE 2.8. *The Dynamics of Path Movement in ISL.*

No.	Dynamic	Sign
1	Fast	MUST, BREAK, PERFECT
2	Slow	BUT, ANT, BEND, FREEZE
3	Normal	DEFAULT

view of orientation as a distinct parameter, which I adopt for reasons of descriptive richness alone, does not in principle contradict these proposals, as it is to be expected that the phonetic details I provide can be easily accommodated within these more parsimonious models.

In the signs drawn from the *Indian Sign Language Dictionary* (2001), the various types of palm orientation and carpal orientation can be typologized on the basis of their articulatory properties:

The palm orientations are as follows:

1. Front: the palm is visible to the signer.
2. Back: the palm is not visible to the signer.
3. Neutral: neither the front nor the back of the hand.

The carpal orientations are as follows:

1. Against the line of bilateral symmetry
2. Toward the line of bilateral symmetry
3. Toward the addressee
4. Toward the signer
5. Toward the sky
6. Toward the ground

## Expression

Apart from the manual articulators, eye movement, eye gaze, facial expression, lip orification, brow movement, and so on (collectively called *nonmanual articulation* or *expression*) play an important role in sign formation. Six emotions—surprise, fear, disgust, anger, happiness, and sadness—have a universally common or similar facial expression (Ekman and Friesen 1975, 23, as cited in Liddell 1980), and this is also true for the lexical signs in ISL. These expressions are called *emotive expressions* or *affective facial expressions* (Reilly, McIntire, and Bellugi 2002, 131). Apart from the six emotion signs, a number of signs utilize expression as an integral component (e.g., DARK, BRIGHT, FAT, HANUMAN). However, in most other signs, facial expression is neutral or unmarked. As a consequence, facial expression, wherever present, appears to have phonemic status, as evidenced by the following minimal pairs: FAT/STRONG; COLD/DIFFICULT; GOD/ABOVE. In these pairs, the first signs have expression characteristics, and the second have a neutral expression (while all other formational parameters are constant). Furthermore, besides being one of

TABLE 2.9. *The Palm Orientations in ISL.*

No.	Palm Orientation	Carpal Orientation	Sign
1	Front	Toward the line of bilateral symmetry	INVITE, COLOR, RED, NAME, BODY, CHEST, WAIST, SICK, HAPPY, PATIENCE, INTEREST, INSULT, TROUBLE, DRESS, BANIAN, PANT, COAT, WINDOW, GATE, BOWL, SPOON, KNIFE, TOOTHBRUSH, PLASTIC, CAT, MONKEY, ALWAYS/OFTEN, AMERICA, DUBAI, KARNATAKA, CHENNAI, BANGLA, HANUMAN, WHISTLE, EXAMINATION, STORY, SCISSORS, BUSINESS, PROFIT, NURSE, TABLET, RESTAURANT, TELEPHONE, LORRY, DOSA, SWEETS, SUGAR, GOVERNMENT, FLAG, ADVISE, TEACH, DISAPPEAR, LOVE, PASS, FIGHT, CUT, ENJOY, FEEL, MEET, PROMISE, SORRY/REGRET, OLD, FAMOUS, JEALOUS, HUNGRY, TIRED, LOOSE, WARM, BIRD, SPECIAL, SHOP
2	Front	Against the line of bilateral symmetry	
3	Front	Toward the addressee	GIVE, BOLD, BABY, BIRTH, SAND, EGG, DOG, BELL, CASSETTE, TICKET, DEVELOP, IMPROVE, COMPARE, SERVE
4	Front	Toward the signer	FACE, CAP, THROW
5	Front	Toward the sky	BOOK, NECK, SEE, TALK, TELL, EAT, LEPROSY, SAD, GUILTY, THANK, HANDKERCHIEF, ROOM, ROOF, OWL, LEAF, NEWSPAPER, MIRROR, GRASS, COUNT, CHINA, ISRAEL, CHENNAI, GANAPATI, ART, SCHOOL, ASK, DISCUSS, FOOD, CURD, BISCUIT, SUGAR, BITTER/SOUR, APPLE, ACCEPT, ARGUE, COMPLAIN, COOK, BORING, SWEET
6	Front	Toward the ground	LAME, STAND
7	Back	Toward the line of bilateral symmetry	BALCONY, SKIN, BRAIN, PROUD, SWEAT, RAIN, COMB, SHEEP, REPLY, THINK, SPEECH THERAPIST, MUSEUM, LEMON, CORN, CATCH, DREAM, FAT, DANGER, DIFFICULT

(Continued)

TABLE 2.9. (Continued)

No.	Palm Orientation	Carpal Orientation	Sign
8	Back	Against the line of bilateral symmetry	PERSON
9	Back	Towards the addressee	TABLE, CHILDREN, WALK, ELECTION, CHAPPAL, BITE, SIZE, BONE, HILL, MOUNTAIN, WAVES, EARTHQUAKE, GOAT, FROG, KANGAROO, RAT, ANT, MAGIC, PUPPET SHOW, TABLA, PEN, TYPIST, MARKET, CYCLE, SCOOTER, MILK, BREAK, BEND, TAKE, ARRANGE, SQUEEZE
10	Back	Towards the signer	TIRED, CHEAT, SUN, STARS, VOLLEYBALL, DRUMSTICK, LAWYER, PRETEND
11	Back	Toward the sky	EXIST, BLUE, NAME, HEAD, PASS/ SEASON TICKET, HEAR/LISTEN, EXERCISE, FINE, BAD, LAZY, PERFECT, EARTH, SKY, CLOUD, ECLIPSE, HOME/HOUSE, HEN, DUCK, PARROT, PEACOCK, CAMEL, BARK, COW, DONKEY, SQUIRREL, RABBIT, SPIDER, LIZARD, DOLLAR, COUNTRY, VILLAGE, MUMBAI, MYSORE, SURAT, ORIYA, TELUGU, PARSİ, GHOST, BHANGRA, DUSTER, POSTER, HEARING AID, PICTURE, UNDERSTAND, BALL, SCIENCE, THREAD, OFFICE, PAPAYA, ADVERTISEMENT, KING, BANDHI, STRIKE, CLOSE, DEEND/PROTECT, INVENT, HATE, SEARCH, PLAY, PRAISE, SCOLD, SLIM, FOOL, BRIGHT, DIRTY, FRESH
12	Back	Toward the ground	HERE, PIG, FOOTBALL, BRINJAL, COOK
13	Neutral	Toward the addressee	CHAT, RUN, SIT, GOOD, KEY, WOOD, HORSE, FISH, JESUS, EXPERIMENT, CHEMISTRY, RUN, CARROM, GUN, BRIDGE, TRAIN, LASSİ, PLAY, SKIP, SMALL, BELT, SURPRISE
14	Neutral	Toward the signer	I
15	Neutral	Toward the sky	BOTTLE, PAIN, CONCENTRATE, COUGH, MEASLES, SMALL POX, ANGRY, DRINK, FAN, BATH, TOILET, MAGNET, CAT, GOAT, BIHAR, RHINOCEROS, BUD, INDIA, HINDI, MALAYALAM, PRAY, CINEMA, KNOW, TEACHER, EXPLAIN, KITE, COOLIE, ICE CREAM, LADY'S FINGER, ONION, ACCUSE, CRITICIZE, FREEZE, COMMUNICATION, DEAF, CONFUSE/WORRY, DRINK, KNOW, THIN, COLD, DEER, HORN
16	Neutral	Toward the ground	BAT

the formational parameters of ISL signs, nonmanual expressions have various functions associated with information structure, scope, and prosodic structure, including intonation:

- brow freeze
- chin raise
- eye gaze fixation
- head back
- head forward
- head lowering
- head turn to right or left
- headshake
- still and tense torso
- puffed cheek
- pursed lips
- protruded lower lip
- raised brow
- torso movement
- tightened upper lip
- widened eyes

Cross-modal borrowings such as mouthing are often discussed in the sign language literature as a part of the sign rather than as a bimodal articulation. Although the nature and role of mouthing gestures is still not fully understood, they are mostly used to disambiguate signs. At the same time, mouthing cannot be considered to be an integral part of a sign, as other formational parameters are, as the latter vary with the signer. It seems to me that mouthing is not a part of signer's linguistic competence but of performance.

### **Minimal Pairs**

The preceding section has discussed the five formational parameters that combine to form a sign. These parameters are semantically significant, in that any change in one of these parameters yields changes in meaning or grammatical function in ISL. Caution, however, must be exercised in identifying such minimal pairs, as identifying a single parameter is quite difficult, given the dependency of the handshape parameter on orientation, and given that location has a robust association with the semantics of space. In other words, no handshape is independent of orientation or location, as both properties are intrinsic to handshape. Consequently, two



similar handshapes that differ in location only, holding other parameters constant, yield two separate but related meanings. For example, RESEARCH is articulated with [handshape: cV]; [orientation: back, toward the line of bilateral symmetry]; [location: v-h-l]; [movement: nodding], and with the change of [location: v-h1-l1], the semantics associated with [h1] make a sign metaphoric, roughly meaning “research on head.”

Movement, on the other hand, is optional, as signs may or may not utilize movement. Consequently, only these two parameters can reliably be varied so as to determine minimal pairs in the language, based on the citation (basic) form of signs. Tables 2.10 and 2.11 list the minimal pairs based on two broad parameters—handshape orientation and location movement—found in ISL.

TABLE 2.10. *The Minimal Pairs of Handshapes in ISL.*

No.	Sign	Handshape	Sign	Handshape
1	TEA	bO	COFFEE	bC
2	BEG	cB	BOWL	a5
3	CORPORAL	V	SERGEANT	W
4	MOUSE/LIZARD	G	SNAKE/SQUIRREL	H
5	RUN	tA	SIGN	5
6	FLAG	B	BOTTLE	C
7	SORRY	tA	JEALOUS	c5
8	MEASLES	bO	SMALL POX	bU
9	KISS	sO	GOSSIP	cG
10	REMEMBER	tB	KNOW	cG
11	HEAD	B	BRAIN	8
12	ARGUE	G	COMMUNICATE	C
13	BUD	fOlfo	PRAY	BlB
14	SURPRISE	ct3	WHEN (DAY)	B
15	RED	G	COLOR	4
16	STORY	I	MILK	sF
17	PLAY	Y	COLD	A
18	PASS/SEASON TICKET	tB	FINE	F
19	COAT	tA	BANIAN	G
20	RAT	xH	FISH	L

TABLE 2.10. (Continued)

No.	Sign	Handshape	Sign	Handshape
21	EXPLAIN	sF	DISCUSS	G
22	SCIENCE	xA	CHEMISTRY	sF
23	LIZARD	G	SQUIRREL	H
24	EXAMINATION	xA	MILK	sF
25	FINE	F	GOOD	xA
26	HANUMAN	c5 c5	FAT	tAltA
27	COW	L L	DONKEY	5 5
28	LOCK	fAlC	KEY	fAlB
29	STAND	V B	KNEEL	cV B

TABLE 2.11. *The Minimal Pairs of Location in ISL.*

No.	Sign	Direction, Shape, Size	Sign	Direction, Shape, Size
1	DROP	Downward, semicircle, medium	PICK	Upward, semicircle, medium
2	PASS	Supinate	FAIL	Pronate
3	BITTER/ SOUR	Away-toward symmetry unison, straight, small	APPLE	Downward, straight, small
4	CALCUTTA	Away-toward signer alternative, semicircle, medium	BUSINESS	Away-toward signer alternative, semicircle, big
5	ACCUSE	Up-down alternative, semicircle, medium	BAD	Downward, semicircle, medium
6	INVENT	Supinate	SEARCH	Toward symmetry, semicircle, medium
7	TELL	Away-towards signer alternative, semicircle, medium	TALK	Away from signer, semicircle, medium
8	GOOD	-----	PERFUME	Closing
9	DOLLAR	Downward, wavy, medium	SQUIRREL	Upward, wavy, medium
10	MEAT	Up-down unison, straight, small	BREAD	Away-towards signer unison, straight, small
11	BRIGHT	To lateral, semi-circle, medium	ECLIPSE	To symmetry, semi-circle, medium

## **DISTINCTIVE FEATURES**

The previous section demonstrated minimal pairs based on two broad parameters: handshape orientation and location movement. These parameters show differences between the relevant pairs but do not account for those differences. Because a study of unmarked handshapes has yet to be carried out, this section presents a set of binary distinctive features of the four parameters to explain the differences. This notion has been employed in the development of feature matrices for other sign languages (but see Sandler and Lillo-Martin 2006, 160, for further shortcomings of the existing feature matrices). In the absence of such a study for ISL and because signing space is conceptualized differently in this book, the following description employs an articulatory basis for constructing the feature matrices of ISL signs:

1. Handshape features
  - 1.1 Palm features
    - 1.1.1 Compact hand has palm curved at K2, and three or more fingertips touch the palm.
    - 1.1.2 Flat hand has straight palm, and fewer than three fingers are in contact with it.
  - 1.2 Thumb features
    - 1.2.1 Twisted hand has thumb on the palm.
    - 1.2.2 Extent hand has thumb extending beyond the palm.
    - 1.2.3 Arc hand has curly thumb.
    - 1.2.4 Contact hand has thumb in contact with fingertip(s) or K1.
  - 1.3 Finger features
    - 1.3.1 Index hand has a straight index finger.
    - 1.3.2 Concave has a curly index finger.
    - 1.3.3 Ulnar has a straight little finger.
    - 1.3.4 Spread hand has two or more fingers spread out from K2.
    - 1.3.5 Ring finger on the ring hand is straight up.
    - 1.3.6 Medio hand has a bent middle finger at K1 and/or K2.
2. Orientation features
  - 2.1 Palm features
    - 2.1.1 Visible hand has palm visible to the signer horizontally from the top or vertically closer to the signer.

- 2.1.2 Opaque hand has palm not visible to the signer horizontally from the top or vertically closer to the signer.
- 2.2 Carpal feature
  - 2.2.1 Bilateral hand has carpal toward the line of bilateral symmetry.
  - 2.2.2 Ante bilateral hand has carpal against the line of bilateral symmetry.
  - 2.2.3 Addressee has carpal toward the addressee.
  - 2.2.4 Signer has carpal toward the signer.
  - 2.2.5 Signer has carpal toward the sky.
- 3. Location features
  - 3.1 Ipsi hand is on the ipsilateral side of the signer.
  - 3.2 Contra hand is on the contralateral side of the signer.
  - 3.3 High hand is in h1.
  - 3.4 Low hand is in h2.
  - 3.5 Close hand is in l1.
  - 3.6 Full hand is in l2.
- 4. Movement features
  - 4.1 Direction features
    - 4.1.1 Vertical movement is along V.
    - 4.1.2 Horizontal movement is along H.
    - 4.1.3 To-and-fro movement is between the initial and the final point of movement and vice versa.
    - 4.1.4 Vector movement is toward the signer or the sky or toward the line of bilateral symmetry.
    - 4.1.5 Symmetric movement is double handed and nonrhythmic.
  - 4.2 Contour features
    - 4.2.1 Straight contour has movement with a straight contour.
    - 4.2.2 Circle has circular movement.
    - 4.2.3 Semicircle has semicircular movement.
  - 4.3 Dynamic features
    - 4.3.1 Slow movement has movement slower than normal.
    - 4.3.2 Fast movement has movement faster than normal.

The following tables show the distinctive features of the inventory of the formational parameters in ISL.

The feature matrix (shown earlier) of the inventory is illustrated with ISL signs in tables 2.18 and 2.19 (see p. 38).

## **SIGN STRUCTURE**

Stokoe (1960) deconstructed the structure of signs into handshape, movement, and location and held that they are simultaneously executed (later known as the simultaneous model). Although Stokoe, Casterline, and Croneberg (1965) mentioned sequential signs in their notation system, signs were analyzed as simultaneous until Supalla and Newport (1978) showed that ASL nouns and verbs that are related in form and meaning share the same handshape, location, and movement (shape) but differ from one another by systematic changes in directionality, manner, and frequency of movement. They postulated an abstract, underlying phonological form, from which nouns and verbs are derived through the application of morphophonemic rules. Thereafter, beginning with Newkirk (1981), phonologists began noticing sequential structure in signs. Liddell (1984) proposed an alternative model based on movement sequences (later known as the sequential model).

### **Features: Dynamic and Static**

In sign language, handshape and orientation are not independent of each other, and one cannot occur in the absence of the other. In signs, they are fused. In certain ISL signs, (e.g., THANK, FINISH), the handshape remains constant, but the orientation changes according to local or path movement or to the path movement and local movements. In other signs, orientation remains constant, but handshape changes (e.g., SAD, THROW) despite path movement.

In the case of location, the body locations constitute minimal pairs as the signs associated with them are semantically different, largely due to a cognitive semantics associated with the body. On the other hand, minimal pairs in spatial location are rarely found as the location around the signer is associated with the semantics of space.

A sign also cannot be conceived of as independent of location. A static sign (e.g., GOOD, PASS/SEASON TICKET, FINE) is articulated at the cubicle [location: v-h-l]. The local movement in CORN, ORANGE, and INVENT is cubicle internal. Similarly, path movement can be both cubicle internal

TABLE 2.12. *The Distinctive Features of Handshapes.*

Handshape Features													
No.	Handshape	Palm		Thumb				Finger					
		Compact	Flat	Twisted	Extent	Arc	Contact	Index	Concave	Ulnar	Spread	Ring	Medio
1	tA	+	-	+	-	+	+	-	-	-	-	-	+
2	G	+	-	+	-	+	+	+	-	-	-	-	+
3	cG	+	-	+	-	+	+	-	+	-	-	-	+
4	I	+	-	+	-	+	+	-	-	+	-	-	+
5	xA	+	-	-	+	-	-	-	-	-	-	-	+
6	L	+	-	-	+	-	-	+	-	-	-	-	+
7	Y	+	-	-	+	-	-	-	-	+	+	-	+
8	A	+	-	-	-	+	-	-	-	-	-	-	+
9	bC	+	-	-	-	+	-	-	+	-	-	-	+
10	bO	+	-	-	-	+	+	-	+	-	-	-	+
11	fbO	+	-	-	-	-	+	+	-	-	-	-	+
12	bU	+	-	-	-	-	-	+	-	+	-	+	-
13	tV	-	+	+	-	-	-	+	-	-	+	-	-
14	tB	-	+	+	-	-	-	+	-	+	-	+	-
15	t8	-	+	+	-	+	+	+	-	+	+	+	+
16	H	-	+	+	-	+	+	+	-	-	-	-	-
17	V	-	+	+	-	+	+	+	-	-	+	-	-
18	W	-	+	+	-	+	+	+	-	-	+	+	-
19	cV	-	+	+	-	+	+	-	+	-	+	-	+
20	4	-	+	+	-	+	-	+	-	+	+	+	-
21	c3	-	+	-	+	+	-	-	+	-	+	-	+
22	c5	-	+	-	+	+	-	-	+	-	+	+	+
23	xH	-	+	-	+	-	-	+	-	+	+	+	+
24	5	-	+	-	+	-	-	+	-	+	+	+	-
25	x5	-	+	-	+	-	-	+	-	+	-	+	-
26	8	-	+	-	+	-	-	+	-	-	+	+	-
27	3	-	+	-	+	-	-	+	-	-	+	-	-
28	xB	-	+	-	+	-	-	+	-	-	-	-	-
29	F	-	+	-	-	+	+	-	+	+	-	+	-

(Continued)

TABLE 2.12. (Continued)

		Handshape Features											
No.	Handshape	Palm		Thumb			Finger						
		Compact	Flat	Twisted	Extent	Arc	Contact	Index	Concave	Ulnar	Spread	Ring	Medio
30	sF	-	+	-	-	+	+	-	+	+	+	+	-
31	B	-	+	-	-	-	-	+	-	+	-	+	-
32	hG	-	-	+	-	+	+	+	-	-	-	-	+
33	U	-	-	-	-	-	-	+	-	+	-	+	-
34	f3	-	-	-	-	-	-	+	-	-	+	-	-
35	f5	-	-	-	-	-	-	+	-	-	+	+	-
36	fO	-	-	-	-	-	+	+	-	-	-	-	+
37	scB	-	-	-	-	+	-	-	+	-	+	+	+
38	C	-	-	-	-	+	-	-	+	-	-	-	+
39	O	-	-	-	-	+	+	-	+	-	-	-	+
40	sY	-	-	-	+	-	-	+	-	+	+	-	+
41	cB	-	-	-	+	+	-	-	-	-	-	+	+

(e.g., SAD, MILK, SIGN) and between cubicles (e.g., FINISH, FAMOUS, BRIGHT). In other words, the movement is not independent of location.

Signs (e.g., GOOD, KING, PASS/SEASON TICKET) can be static (i.e., without movement). Further, a sign can have local movement but no path movement (e.g., MOTHER, CORN, ORANGE). Certain signs have path movement only (e.g., GIVE, HELP, FLY). On the other hand, other signs have both local and path movement (e.g., HATE, THROW, DISAPPEAR).

Local movements can result in changes in handshape. SURPRISE has two local [movements: pronate; opening]. In the articulation of SURPRISE, the handshape changes from [handshape: fbO] to [handshape: f3] due to the local movement. Similarly, in BRIGHT, along with the path movement, the [handshape: O] changes to [handshape: sB] due to the local [movement: opening].

Hayes (1993) makes a crucial distinction between static and dynamic features in oral phonological features. The former refer to a position of articulators, and the latter have reference to time or motion. Channon (2002, 22) argues that dynamic features are required for sign language, but not for spoken language. In sign language phonology, the static features are the handshape orientation and the location parameters, whose

TABLE 2.13. *The Distinctive Features of Orientation.*

Orientation Features									
No.	Palm	Carpal Orientation	Palm Feature		Carpal Feature				
			Visible	Opaque	Bilateral	Ante Bilateral	Addressee	Signer	Sky
1	Front	Toward the line of bilateral symmetry	+	-	+	-	-	-	-
2	Front	Against the line of bilateral symmetry	+	-	-	+	-	-	-
3	Front	Toward the addressee	+	-	-	-	+	-	-
4	Front	Toward the signer	+	-	-	-	-	+	-
5	Front	Toward the sky	+	-	-	-	-	-	+
6	Front	Toward the ground	+	-	-	-	-	-	-
7	Back	Toward the line of bilateral symmetry	-	+	+	-	-	-	-
8	Back	Against the line of bilateral symmetry	-	+	-	+	-	-	-
9	Back	Toward the addressee	-	+	-	-	+	-	-
10	Back	Toward the signer	-	+	-	-	-	+	-
11	Back	Toward the sky	-	+	-	-	-	-	+
12	Back	Toward the ground	-	+	-	-	-	-	-
13	Neutral	Toward the addressee	-	-	-	-	+	-	-
14	Neutral	Toward the signer	-	-	-	-	-	+	-
15	Neutral	Toward the sky	-	-	-	-	-	-	+
16	Neutral	Toward the ground	-	-	-	-	-	-	-

description does not require reference to motion. Dynamic features refer to the movement parameter. A sequence in sign language is not longer than two elements (Battison 1978). In ISL, a sequence can consist of two handshapes (e.g., *SAD*) and/or two locations (e.g., *THROW*). The two-element sequence is a result of movement, which can be local, and/or path movement. In other words, though dynamic features are optional in sign formation in ISL, they sequence static features. *MORNING* is articulated in a sequence. The initial [handshape: *fO*] and the [location: *v-h-l*]



TABLE 2.14. *The Distinctive Features of Spatial Location.*

Location Features							
No.	Cubicles	Ipsi	Contra	High	Low	Close	Full
1	v1-h1-l1, v2-h1-l1	+	-	+	-	+	-
2	v1-h-l1, v2-h-l1	+	-	-	-	+	-
3	v-h1-l1	-	-	+	-	+	-
4	v1-h1-l, v2-h1-l	+	-	+	-	-	-
5	v1-h-l, v2-h-l	+	-	-	-	-	-
6	v1-h2-l, v2-h2-l	+	-	-	+	-	-
7	v-h1-l	-	-	+	-	-	-
8	v-h-l	-	-	-	-	-	-
9	v-h2-l	-	-	-	+	-	-
10	v1-h1-l2, v2-h1-l2	+	-	+	-	-	+
11	v1-h-l2, v2-h-l2	+	-	-	-	-	+
12	v1-h2-l2, v2-h2-l2	+	-	-	+	-	+
13	v-h1-l2	-	-	+	-	-	+
14	v-h-l2	-	-	-	-	-	+
15	v-h2-l2	-	-	-	+	-	+

TABLE 2.15. *The Distinctive Features of Directions of Movement.*

Movement Features							
No.	Direction	Direction					
		Vertical	Horizontal	To-Fro	Vector	Symmetric	
1	To-away sky unison	+	-	+	-	+	
2	To-away sky alternative	+	-	+	-	-	
3	Against sky	+	-	-	-	+	
4	To sky	+	-	-	+	+	
5	Away-toward signer unison	-	-	+	-	+	
6	Away-toward signer alternative	-	-	+	-	-	
7	Away from signer	-	-	-	-	+	
8	Toward signer	-	-	-	+	+	
9	Away-toward symmetry unison	-	+	+	-	+	
10	Away-toward symmetry alternative	-	+	+	-	-	
11	Away from symmetry	-	+	-	-	+	
12	Toward symmetry	-	+	-	+	+	

TABLE 2.16. *The Distinctive Features of Shapes of Movement.*

Contour Features				
No.	Shape	Straight	Circle	Semicircle
1	Straight	+	-	-
2	Circle	-	+	-
3	Semicircle	-	-	+
4	Wavy	-	-	-

TABLE 2.17. *The Distinctive Features of Dynamics of Movement.*




Dynamic Features			
No.	Size	Small	Large
1	Small	+	-
2	Large	-	+
3	Medium	-	-

(figure 2.9, left) are different from the final [handshape: 5] and the final [location: v1-h1-l1] (figure 2.9, right). The change in the location and the handshape are due to the path [movement: up, straight, medium] and the local [movement: opening], respectively. Thus, MORNING has two sequences of handshape and location initiated by the local and the path movements, respectively.

Certain sequences in ISL demonstrate no change of handshape, orientation, or location. These signs are either preceded or followed by movement. LIKE is formed with the [handshape: F] at the [location: breast]. The contact is necessary since the same handshape is used at the [location: v-h-l] to mean FINE. However, the articulation of the sign employs a [movement: out] to a [location: v-h-l]. Thus, it utilizes a sequence of location change from the [location: breast] to the [location: v-h-l] (figure 2.10).

Similarly, movement precedes contact. HUNGRY (figure 2.11) is articulated with the [handshape: fO], with a necessary contact at the [location: stomach]. The handshape, when directed toward the stomach but without contact at the [location: v-h-l], is a nonexistent sign in ISL, but the [handshape: fO] is formed prior to the contact from the normal neutral position of the hands. Moreover, the formation of the specific handshape (i.e., [handshape: fO] at the [location: v-h-l] is followed by the

TABLE 2.18. *The Distinctive Features of Signs from ISL.*

Parameters	Features		Yesterday			
	Palm					
Handshape	Palm	Compact	+	+	+	-
		Flat	-	-	-	+
	Thumb	Twisted	+	-	+	-
		Extent	-	+	-	+
		Arc	+	-	+	-
		Contact	+	-	+	-
	Finger	Index	-	-	-	+
		Concave	-	-	-	-
		Ulnar	+	-	+	+
		Spread	-	-	-	+
		Ring	-	-	-	+
		Medio	+	+	+	-

Orientation	Palm	Visible	-	-	-	-	-
	Carpal	Opaque	+	+	-	-	+
		Bilateral	-	-	-	-	-
		Antibilateral	-	-	-	-	-
		Addressee	-	+	+	-	-
		Signer	+	-	-	-	-
Location	Ipsi	Sky	-	-	-	-	+
			-	-	-	-	+
	Contra		-	-	-	-	-
			-	-	-	-	-
	High		+	-	-	-	+
	Low		-	-	-	-	-
	Close		+	-	-	-	-
	Full		-	-	-	+	-

(Continued)

TABLE 2.18. (Continued)




Parameters	Features		Yesterday	Fingerspelling A	Discourse Non-Participant	Ten
	Direction					
Movement	Direction	Vertical	-			
		Horizontal	-			
		To-fro	-			
		Vector	+			
		Symmetric				
	Contour	Straight	-			
		Circle	-			
		Semicircle	+			
	Size	Small	+			
		Large	-			

TABLE 2.19. The Distinctive Features of Signs from ISL.

Parameters									
	Features			Want			Meet		
Handshape	Palm	Compact	-		+		-		-
		Flat	+		-		+		+
		Twisted	-		-		-		-
	Thumb	Extent	+		-		-		-
		Arc	+		+		-		-
		Contact	-		-		-		-
	Finger	Index	-		-		+		+
		Concave	+		-		-		-
		Ulnar	-		-		+		+
		Spread	+		-		-		-
		Ring	+		-		+		+
		Medio	+		+		-		-

(Continued)

TABLE 2.19. (Continued)

Parameters						
	Features		Want		Meet	
Orientation	Palm	Visible	+	+	+	+
		Opaque	-	-	-	-
	Carpal	Bilateral	-	-	-	-
		Antibilateral	-	-	-	-
		Addressee	-	+	+	+
	Sky	Signer	-	-	-	-
		Sky	+	-	-	-
Location	Ipsi		-	-	+	-
	Contra		-	-	-	-
	High		+	-	-	-
	Low		-	-	-	-
	Close		-	-	-	-
	Full		-	-	-	-



Movement			
Direction	Vertical	-	+
	Horizontal	+	-
	To-Fro	-	-
	Vector	-	+
	Symmetric	*	+
Contour	Straight	+	+
	Circle	-	-
	Semicircle	-	-
	Small	-	-
Size	Large	-	-



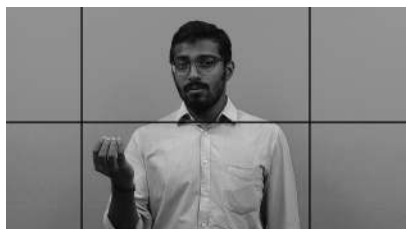


FIGURE 2.9. MORNING.



FIGURE 2.10. LIKE.



FIGURE 2.11. HUNGRY.



FIGURE 2.12. *BOTTLE*.

[movement: straight, in, small] to the [location: breast]. *HUNGRY* shows a sequence of movement and contact.

Figure 2.12 illustrates *BOTTLE*, a double-handed sign. *BOTTLE* is made by the contact of the nondominant hand at the elbow associated with the dominant hand rather than by the movement involved in the sign formation. Therefore, it is a static sign as there is no movement involved in its articulation.

Similar to *BOTTLE*, *AIRPLANE* is articulated with the handshape: [Y] at the [location: v-h-l]. With the path [movement: out, straight], the sign would mean *FLY*. Therefore, *FLY* has a dynamic feature, while *AIRPLANE* has a static feature.

To summarize, a sequence in ISL can consist of (1) a dynamic feature between two static features or (2) a static feature preceded or followed by (a) a dynamic feature, (b) a static feature, or (c) a dynamic feature.

### **Syllable Structure**

In spoken language, the syllable relies on phonetic factors that are organized according to the relative sonority of segments. MacNeilage (1998) has argued that the basic shape of the syllable in spoken language is determined by the oscillation of the mandible (jaw). Sign language, however, employs no single, predominant oscillator. Thus, from a physical point of view, no commonality exists between a syllable in spoken language and a syllable in sign language. This in turn entails that the phonological generalizations that are the result of the physical modalities are not the same (Sandler and Lillo-Martin 2006, 235). The notion of

“syllable” must be thus metaphorically extended if it is to be an organizing principle of all languages regardless of modality.

The status of the syllable in sign language has long been debated (Carstairs-McCarthy 1999, 2001; Uriagereka 2001; Channon 2002). The earliest discussion on the issue can be traced back to the test-and-transfer approach, which draws possible similarities between signed and spoken language (Kegl and Wilbur 1976) based on segmental structure. The notion of syllable in sign language, from its foundation, is based on the analogy that movement is what vowels are in spoken language. With the passage of time, the notion of “syllable” was established to be sensitive to dynamic information along the scale of sonority. The notion is strengthened with further linguistic evidence of the syllabification of signs based on handshape change (Brentari 1990) and, further, secondary (local) movements (Perlmutter 1992), with Corina (1990) adding orientation change and location change.

On the issue of syllable in sign language and speech, Perlmutter (1992, 419) writes, “Is there a more abstract notion of sonority, with a less direct relation to phonetics, that can subsume both oral language sonority and the analogous property in sign languages? The relevant notion may be something such as ‘perspicuity’: in sign language movements are more perspicuous than segments in which hands remain in a single position.” He (*ibid.*, 419n12) cites Brentari’s proposal (1990) (see also Coulter 1985) that “sign language sonority is correlated with [a] relatively unrestrained manner of movement and high visual salience.” However, as he finds these proposals to “illustrate the difficulties inherent in attempts to characterize sonority, he chooses to concentrate on distributional arguments. In this book I explore the notion of “movement as perspicuous,” expanding on Perlmutter’s remark that “if future research brings to light a sonority hierarchy for sign languages that *distinguishes many more degrees of relative sonority*, the parallel between sign and oral languages in this domain will be greater than what is shown here” (1992, 418n11; *italics mine*). This approach fits in well with the articulation-driven fine compartmentalization of signing space that I have proposed, as it provides a rich enough description for describing movements in terms of their relative sonority. This in turn makes a study of sonority in sign language and ISL in particular distinct from the previous studies.

In ISL, UNDERSTAND, GO, and WALK have local, path, local and path movements, respectively. UNDERSTAND is articulated with the initial

[handshape: bO] (see figure 2.13). The local [movement: opening] changes the initial handshape to the final [handshape: G] without changing the orientation and the location (figure 2.13). The sequence of handshape change is initiated by the local movement.

In signs such as GO, local movement is not articulated, but path movement obtains. The path [movement: out, semicircle, big] is from the [location: v-h-l] to the [location: v-h1-l] and finally to the [location: v-h-l2] (figure 2.14). The path movement changes location, but not handshape and orientation. In such signs, the sequence of location is a result of path movement.

WALK (figure 2.15) has both path and local movements. The local [movement: wiggling] does not result in a change in handshape or orientation. Such local movement is labeled *nonresultative local movement*. It is the path movement that brings a change in location from the [location: v-h-l] (figure 2.15, left) to the [location: v-h-l2] (figure 2.15, right). Note

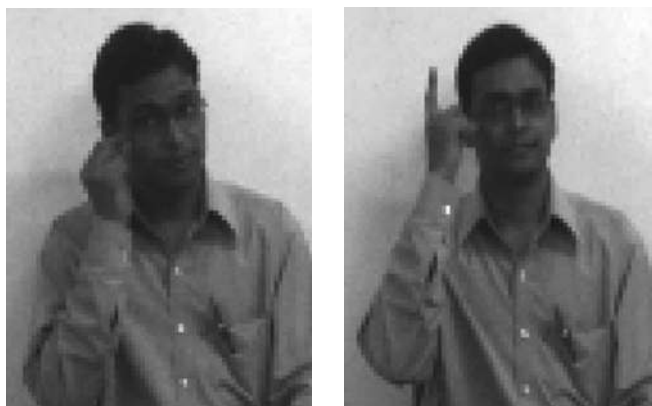


FIGURE 2.13. UNDERSTAND.



FIGURE 2.14. GO.

that WALK has local and path movements and that the former is within the latter.

COLD has nonresultative local movement as it is articulated with a local [movement: shaking]. INFORMATION (figure 2.16) has both path and local movements. The path movement changes the [location: lips] to the [location: v-h-l2], and the local [movement: pronation, opening] changes the orientation and the [handshape: F] to the [handshape: 5], respectively.

TWO-DAY<sup>3</sup> has a local [movement: pronation], which results from a change of orientation from the [orientation: front, toward the addressee] to the [orientation: back, toward the addressee] without changing the handshape.

On the other hand, DOUBT has two local movements. The initial local [movement: supination] changes the [handshape: V] at the [location: v1-h-l] to the [handshape: G] and the [orientation: front, toward the sky] to the [orientation: back, toward the sky]. The second local [movement: pronation] reverts to the initial formational parameters.



FIGURE 2.15. WALK.



FIGURE 2.16. INFORMATION.

SAY is articulated with the [handshape: G] with a path [movement: out, semicircle, medium] from the [location: lips] to the [location: v-h-l]. There is no local movement, yet there is a change in orientation from the [orientation: front, toward the sky] to the [orientation: front, toward the addressee]. The path movement thus brings a change in orientation (figure 2.17).

To summarize, local movement may either bring about changes in handshape and orientation or produce no change in either one. Path movement, on the other hand, accounts for changes in location. Both of these movements can combine in a sign. However, not all of the changes are uniform, as one or all may be absent. Table 2.20 shows the changes.



FIGURE 2.17. SAY.

TABLE 2.20. *The Changes in ISL.*

No.	Signs	Location	Orientation	Handshape	Non-Resultative
1	INFORMATION	+	+	+	
2	SAY	+	+	-	
3	MORNING	+	-	+	
4	WALK	+	-	-	+
5	GO	+	-	-	
6	DOUBT	-	+	+	
7	TWO-DAY	-	+	-	
8	UNDERSTAND	-	-	+	
9	COLD	-	-	-	+
10	BOTTLE	-	-	-	

TABLE 2.21. *The Sonority Hierarchy in ISL.*

Sonority Scale		
Path Movement >	Local Movement Orientation Change > Handshape Change > Non -Resultative Change	
		Static Feature

The central idea of “syllable” in sign language is based on dynamic information sensitive along some scale of sonority. With respect to sensitivity to dynamic hierarchies, the movement feature is ranked above the static feature on the sonority scale. However, both path and local movements are dynamic. On a sonority scale, a hierarchy can be stated in terms of the joints (see Brentari 1998) that are associated with movement. A sign articulated with the shoulder is more visually salient than a sign articulated with the wrist or the knuckles (see Brentari 1998; Mauk 2000; Crasborn 2001).

Path movement, as mentioned earlier, is articulated with the shoulder and results in a change of location. This leads us to conclude that path movement is more sonorous than local movement, which is articulated with interphalangeal joints, metacarpophalangeal joints, wrist, radioulnar, and elbow. However, local movement results in handshape changes, orientation changes, and nonresultative changes.

The hierarchy among these changes produced by local movement can be again formulated on the basis of the articulators involved. Therefore, orientation change is more sonorous than handshape change. Similarly, handshape change is more sonorous than nonresultative change, which in turn is more sonorous than a static feature. Table 2.21 illustrates the sonority hierarchy in ISL as based on visual salience.

### Segment and Syllabic Template

Perlmutter (1992) presents a multisegmental analysis of ASL signs and assumes that movement (M) and position (P) are the two basic segments

that indicate dynamic and static feature complexes, respectively. He distinguishes between path movement and local movement (his secondary movement)<sup>4</sup> on their distributional basis and observes that “an M can always have secondary movement, regardless of its environment. A P, on the other hand, cannot have secondary movement if it is adjacent to an M” (ibid., 414). He does not account for secondary movement as an instance of a dynamic feature, as his distinction is based on M as [+path] and P as [-path] feature (ibid., 425n16): “[T]here are no well-formed lexical items in ASL that consist of just a P without either secondary movement or a handshape change or orientation change” (ibid., 434).

Perlmutter further states that an M is always a syllable nucleus, secondary movement features can occur only on the nucleus of a syllable, and a P can be the nucleus of a syllable only if it is not adjacent to an M. He uses a moraic model, in which the handshape is linked to the prosodic domain of a mora, which controls how long an element is held, rather than directly with a syllable. Since a mora is a timing unit, it predicts handshape change.

Following Perlmutter (1992), let us take M and P to be the two basic segments in ISL signs that represent two distinct features specifying the formational components of a sign. The organization of P and M in ISL is based on the stasis of the hand for a brief moment and the dynamic feature (i.e., local or path movement, respectively).<sup>5</sup> Unlike Perlmutter’s treatment, consider local movement to be an M segment, as it has a dynamic feature. Moreover, in ISL we also find P both with local movement, as in UNDERSTAND, and without it, as in BOTTLE. On the other hand, a change in the static feature due to local movement is an instance of M, which forms a syllabic nucleus.

Although signs are simultaneously articulated, they are internally sequenced as P and M, where P is a static feature (i.e., handshape orientation and location), along with the associated expression. Expressions are tied up with a particular segment (e.g., DARK has two different expressions, each associated with P, where the initial expression differs from the final). Thus, P is a feature bundle of handshape, orientation, location, and expression, and M is movement.

On the other hand, in certain signs, a pause occurs before the completion of movement, lengthening, or repetition of the sign, as in the case of inchoative and frequentative (or iterative) aspects, respectively. To capture this phonological behavior of movement, it is essential to posit a timing tier that relates to such behavior. Following Perlmutter’s





FIGURE 2.18. *The syllabic template.*

moraic model (1991), in which the mora is the timing tier that accounts for the length of the hold, the proposed syllabic template for ISL is shown in figure 2.18. In this proposed template, given the simultaneous nature of signs, the structure of onset, nucleus, and coda is conceived as flat.

In the proposed syllabic template, \$ is a sign and ó is a morpheme. σ (syllable) dominates μ (mora, a timing unit), which further dominates segments (P and M). A P is a “bundle” of static features: [handshape], [orientation], [hand arrangement], [location], and [expression]. A P can occupy a syllabic nucleus, provided there is no M, which is a feature bundle of [movement].

The following segments in a monosyllabic template are possible in ISL:

PMP  
MP  
PM  
M  
P

## Morphophonemic Structure

Significant structural diversity in the lexicon can be seen in terms of syllables and morphemes per sign. The preferred morphophonemic structure in sign language (although there are no hard and fast conventions here) is multimorphemic-monosyllabic. This structure is reported for ASL (Supalla 1982), Italian Sign Language (Corazza 1990), Swedish Sign Language (Wallin 1990), New Zealand Sign Language (Collins-Ahlgren 1989) (as cited in Brentari 1995, 632). However, in addition to

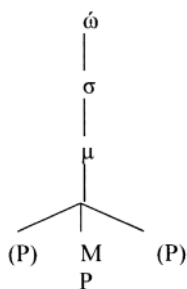


FIGURE 2.19.  
*Monomorphemic-monosyllabic.*

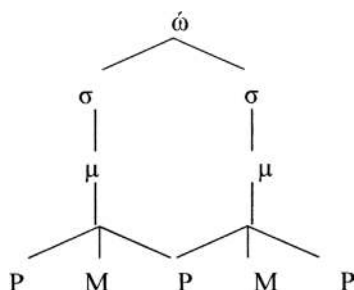


FIGURE 2.20.  
*Monomorphemic-multisyllabic.*

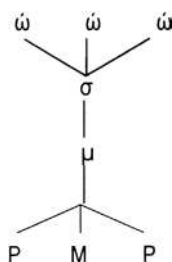


FIGURE 2.21.  
*Multimorphemic-monosyllabic.*

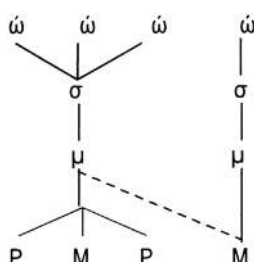


FIGURE 2.22.  
*Multimorphemic-multisyllabic.*

the preferred morphophonemic structure, certain signs are monomorphemic-monosyllabic, multimorphemic-multisyllabic, and monomorphemic-multisyllabic. In ISL, the following structures are observed:

Monomorphemic-monosyllabic: BOOK, UNDERSTAND, LIKE, and so on  
 Monomorphemic-multisyllabic: BANANA, TABLE, CHRISTIAN, and so on  
 Multimorphemic-monosyllabic: PARTY (FOOD + DISTRIBUTE), and so on  
 Multimorphemic-multisyllabic: These signs include additional morphological modification, such as aspectual morphology, which is nested in a multimorphemic-monosyllabic sign.

## PHONOLOGICAL RULES

### Symmetry Condition and Dominance Condition

In the ISL lexicon, signs are specified for their handedness and symmetry. The nondominant handshapes in asymmetric handshapes are limited to a narrow set of handshapes: A, B, xB, C, G, L, U, and V. In the symmetric handshapes, the nondominant handshapes are open to all handshapes.

Battison (1978) captures several aspects of the interdependence between the two hands. These later came to be known as the following:

i. Symmetry Condition (1)

If both hands of a sign move independently, then both hands must be specified for the same handshape, the same location, the same movement (whether performed simultaneously or in alternation), and the specification for orientation must be either symmetrical or identical.

ii. Dominance Condition

If the hands of a two-handed sign do not share the same handshape, one hand must be passive, while the other hand articulates the movement, and the base hand is restricted to a small set of handshapes (A, B, xB, C, G, L, U, and V in ISL).

The symmetry condition is primarily motivated to capture the idea that, in the double-handed symmetric handshapes, H2 copies the formational features of H1. However, in ISL, this economy condition is partially violated with respect to location and orientation.

Consider signs such as DANCE (figure 2.23), which are articulated with the symmetric [handshape: sF] and the same local [movement: twisting], whereas the location and orientation of the H1 and the H2 vary. The symmetry condition must therefore be reformulated as follows:

iii. Symmetry Condition (2)

If both hands of a sign have independent movement, either simultaneously or in alternation, the handshapes must be the same.



FIGURE 2.23. DANCE.

## **Economy Condition**

On the other hand, the base hand in the dominance condition is static, unlike H1, which can have both a local movement (as in *KEY*) and a different orientation. Therefore, H1 and H2 can differ in handshape, orientation, and local movement. In *HELP*, on the other hand, H2 copies the path movement of H1, despite a different handshape and orientation. This shows that a sign with asymmetric handshapes can have the same path movement, which involves essentially copying the path movement of H1, in violation of the dominance condition. As this economy condition is operational in ISL (the copying of H1's path movement by H2), the symmetry condition as stated earlier no longer holds. Yet, the primary motivation to ensure economy persists. Thus I state this economy condition as follows:

### **iv. Economy Condition**

If a double-handed handshape sign has path movement, then both hands have the same path movement.

The violation of the symmetry and the dominance conditions in ISL shows that handshape, orientation, handedness, and location are autonomous and that they work together as a feature in copying the other formational features of movement. This also establishes the segmentation of signs into P and M. In other words, it supports the conception of a sign as a feature bundle articulated simultaneously with internal segments. Napoli and Wu (2003) make similar observations on symmetry conditions in ASL with respect to two-handed signs. They propose that there are four types of symmetry transformations in ASL. They further state that the conditions might be a result of morpheme structure constraints or physiological limitations.

## **Weak Drop**

It is commonly observed in many sign languages that the signs that are specified for symmetric handshape, orientation, location, and movement in the lexicon may also appear to be articulated only with the H1, while the H2 is static. This phenomenon is called the weak drop (see Padden and Perlmutter 1987, 350). In the weak drop, H2 does not copy the movement feature of H1.

In ISL, FLOWER, GIVE, and so on are specified in the lexicon as double-handed symmetric signs that are subject to weak drop, in contrast to SIGN, MILK, and so on, which are similarly specified in the lexicon but do not undergo weak drop. The crucial distinction here is that, despite similarities with respect to symmetricity in terms of handshape, orientation, handedness, and location, the signs differ in movement. The signs that undergo weak drop have a unison movement, whereas those that do not have an alternating one. The weak drop rule can be formulated as follows:

- v. weak drop:  

$$[+symmetric\ H2] \rightarrow \emptyset / \text{_____} [+symmetric\ H1]$$

### Handedness Rule

However, not all ISL signs that are [+symmetric] undergo weak drop. In the case of the perfect aspect, FINISH cliticizes to verb. The articulation of the aspectual marker either as a single hand or a double hand depends on the handedness of the host to which it attaches, attesting therefore the following handedness rule:

- vi. Handedness Rule:  

$$\emptyset \rightarrow \begin{matrix} \{[\alpha\ \text{single hand}]\} / \#\# \text{_____} \\ \{[\beta\ \text{double hand}]\} \end{matrix} \begin{matrix} \{[\alpha\ \text{single hand}]\} \\ \{[\beta\ \text{double hand}]\} \end{matrix}$$

### Weak Freeze

In a number of signs, the H2 has the same handshape, location, and orientation of H1, but movement is absent. In the sign language literature, this phenomenon is known as the weak freeze (see Padden and Perlmutter 1987, 356; Hulst and Sandler 1994), and it differs from the weak drop in that H2 here assumes the formational parameter of H1. Signs that undergo weak freeze (e.g., DISTRIBUTE) normally show two variants: with and without the weak freeze.

### Thumb Constraint

A change in handshape, a dynamic feature, occurs with respect to onset and offset of local movement. In ISL, handshape changes can be brought

about with or without path movement merely by opening and closing the finger(s). MORNING, HATE, THROW, BANQUET, ANGRY, and so on have a closing onset and an opening offset, whereas EVENING, UNDERSTAND, BORROW, NOISE, and so on have an opening onset and a closing offset. Though the change is visible on all of the fingers, it is constrained by the phonological feature of the thumb of the handshake (i.e., the distinctive features of the thumb). The rule for such a constraint can be formulated as the following:

Thumb constraint

$$\begin{array}{l} \{[+\alpha \text{ thumb features}]\} \rightarrow \{[-\alpha \text{ thumb features}]\} / \text{_____} \\ \{[+\beta \text{ finger features}]\} \quad \{[-\beta \text{ finger features}]\} \quad [\text{local movement}] \end{array}$$

### **Numeral Incorporation Rule**

In ISL, numerals incorporate into single-handed signs, as well as into the H1 of double-handed asymmetric signs. Signs such as LATER and BEFORE are articulated with the [handshape: B]. Numeral incorporation changes the handshape from [handshape: B] to the numerals (up to 3), while the other formational parameters remain the same.

Numeral incorporation rule

$$\emptyset \rightarrow \{+ \text{twisted}, + \text{arc}, -\text{concave}, +\text{spread}, -\text{medio}\} / \text{_____} \\ [-\text{compact}]$$

### **Assimilation**

When a compound is established, the two signs blend, and eventually the compound looks like only one sign, leaving the signer with no clue as to its origin. The duration in the articulation of the compound is reduced (as compared to the phrase) as it is subjected to the phonological processes of assimilation and reduction. This temporal dynamic of the compound distinguishes it from the phrase. Progressive and regressive assimilation take place in compounding with respect to handshape, orientation, location, movement, and handedness. Certain components of the sign, such as movement, are eliminated in compounding.

In NEIGHBOR, which is a compound of HOUSE and OTHER, the non-dominant hand of HOUSE regressively assimilates to OTHER, a single-handed sign.

MATRICULATE is a compound of a numeral (10), a sequence of 1 and 0, and PASS. In the compound, the numeral 10 is articulated at

the [location: v-h1-l] but with no sequence, as in the numeral. PASS is articulated at the [location: v-h1-l] rather than at the [location: v-h-l] of its citation form. The compound shows the progressive assimilation with respect to the location.

The compound sign EMAIL is formed out of the fingerspelling E and the sign MAIL, which is articulated with the [handshape: BlB], [orientation: back, toward the addressee: front, toward the line of bilateral symmetry]. The H1 has a [movement: away from the signer, straight, small], with the contact at the [location: palm] with the [location: index side] of the H2.

Progressive assimilation of the handshape takes place, as does orientation. The fingerspelling E assimilates to the handshape and the orientation of the H2 of MAIL. The H1 contacts the [location: index finger tip] of the H2, which shows regressive assimilation of the body location, as in the articulation of the fingerspelling E, while the movement and the contact of MAIL remain the same. Further, the compound EMAIL can be inflected for plural and aspect.

GARDEN is made up of FLOWER and the classifier handshape: flat surface. FLOWER is a double-handed symmetric sign with the [handshape: fOlfo], [orientation: front, toward the signer], and the [movement: opening] at the [location: v-h1-l], approaching the [location: nose]. The resulting handshape and orientation change to [handshape: 5] and [orientation: front, toward the addressee], respectively. In the compound, the classifier handshape assimilates to the handshape, the location, and the orientation of FLOWER. The path movement of the classifier handshape changes from the [movement: to lateral, straight] to the [movement: toward the addressee, semicircle] with the [movement: opening] of FLOWER and the resultant handshape change.

The compound BEAUTIFUL has two roots: FACE and FINE. FACE is articulated with the [handshape: G], [orientation: front, toward the signer] at the [location: v-h1-l], with the [movement: circular] around the [location: face]. In its citation form, FINE has the [handshape: F], [orientation: back, toward the sky] at the [location: v-h-l], with the [expression: raised brow] but with no movement. In the compound, progressive assimilation of the location can be seen: FINE is articulated at the location of FACE, and the regressive assimilation of the expression of FINE is seen in the articulation of FACE.

PARTY is a compound: FOOD+DISTRIBUTE. FOOD is articulated with the [handshape: fO], [orientation: front, toward the sky], at the [location: v-h1-l], with the [movement: in-out alternative, straight, small] toward the [location: mouth]. DISTRIBUTE is articulated with the

[handshape: fOlfo], [orientation: front, toward the addressee], with the [movement: away-toward signer unison, straight, large] between the [location: v-h-l] to the [location: v1/2-h-l2], with the final [handshape: 5|5] due to the [movement: opening]. The compound sign FOOD shows regressive assimilation of handedness and the deletion of the [movement: in-out alternative, small], while the other articulation remains the same.

On the other hand, DISTRIBUTE shows progressive assimilation with respect to the location. It is articulated from the [location: v-h1-l] rather than from the [location: v-h-l], while the other remains the same. In figure 2.24, the strikethrough shows the deletion in the compound form, as compared to the citation form of the sign.

### Mora Shortening

It is also observed that in ISL, a final sign in conditional clauses, as well as the verb sign in inchoative aspect, is *in pausa* (i.e., the sign is not articulated to its completion as in its citation form). In inchoative GO, the movement of the sign is partially realized, with shortening in the length. This phonological aspect is related to the timing tier (i.e.,  $\mu$ ) rather than to the overt morpheme. In other words, it is an internal change in the sign, analogous to the spoken *bring-brought*, where we posit buy+past tense. In the case of *in pausa*, the  $\mu$  is not realized completely, as is the  $\mu$  in the citation form of the sign. This is a case of mora shortening, as schematized in figure 2.25 with a convention that the mora to the left of the mora of the citation form is shortened.

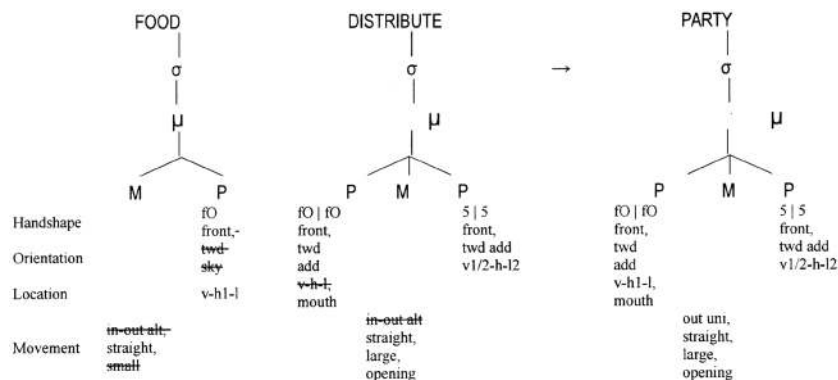


FIGURE 2.24. The roots of the compound PARTY and the compound.



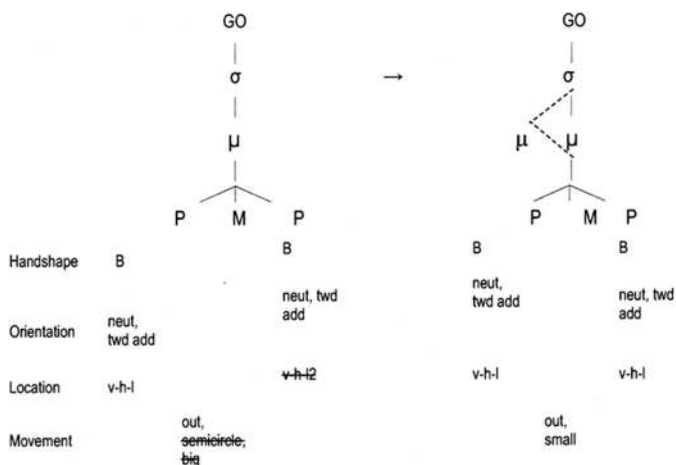


FIGURE 2.25. *The inchoative GO.*

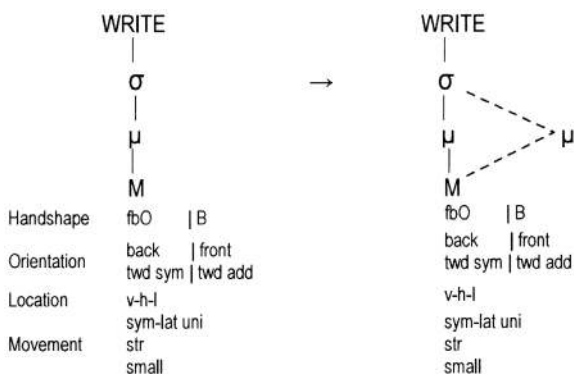


FIGURE 2.26. *The continuative WRITE.*

## Mora Lengthening

Mora lengthening also occurs in ISL. It is primarily observed in the continuative aspect, where the movement of a sign is lengthened to show the continuation of the activity. Similar to mora shortening, it is sign internal and hence related to the mora. Mora lengthening is schematized in figure 2.26, with a convention in which a syllable gets a mora to the right of the mora of the citation form.

## Sign Formation Processes

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The sign language literature reports that signs that share one formational parameter also share a constant semantic field. The term “sign family” is used for such relatedness of signs and for the phenomenon known as generalized, “meaningful parameter values” (Klima and Bellugi 1979, 81; Woll 1983, 40), or, as I refer to it, a “generalized articulatory-semantic locus.” The literature finds the relevant formational parameters to be handshape and/or location.

### **ARTICULATORY-SEMANTIC LOCUS: LOCATION**

Signers use the location in and around themselves as a semantic locus for signs that share a semantic field. Body location is the most widely used articulatory-semantic locus for signs that are related to sensory-perception, cognitive, emotional and communicative processes, strength, and so on. In order to form a sign belonging to the same semantic field, signs that belong to respective sign families are articulated in contact with specific body parts or are compounded using the semantics associated with body parts. In ISL, the skin, hair, teeth, and lips are also used to denote color terms. The sign families in table 3.1 show the relatedness associated with specific body parts and semantic domains in ISL.

In other signs and constructions, space is used as a semantic locus. Similar to body location, spatial location is meaningful in sign language. In the citation form of a sign, a particular cubicle is used (table 3.2). The signs that can be articulated in a cubicle other than the citation cubicle are associated with deictic or other meanings. In ISL, the citation forms of signs that share a subset of cubicles also share a semantic field (table 3.2).

The spatial location with reference to the signer’s body is further used as a time line, which may express time relative to the time of the speech act (p. 106).

TABLE 3.1. *Body Location of Sign Family in ISL.*

No.	Body Location	Semantic Field	Sign
1	Temple	Cognition	SURPRISE, IDEA, KNOW, LEARN, MEMORISE, FOOL, UNDERSTAND, REMEMBER, FORGET, THINK, ANGRY, DREAM, INTELLIGENT, SLY, TRUST, WORRY, TENSION, PROBLEM
2	Ear	Audition	HEAR, NOISE, LISTEN, DEAF
3	Eye	Vision	SEE, SPECTACLES, CRY, BLIND
4	Mouth	Communication	ANSWER, TELL, SAY, EXPLAIN, ARGUE, TALK, SPEAK, ORDER, TRUE, FALSE, SING, DISCUSS, REPLY, WHISTLE, FOOD, EAT, INFORMATION, DRINK
5	Chest	Emotion	WISH, LIKE, LOVE, WANT, HABIT, SAD, HAPPY, BODY, PAIN, JEALOUS, SORRY, INTEREST, GUILTY, FAITH, HOT, SOUL
6	Arm	Strength	POWER, STRONG, FAT, COLD, BRAVE, BOLD

TABLE 3.2. *Spatial Location of Sign Family in ISL.*

No.	Cubicle	Semantic Field	Sign
1	v/v1/v2-h1-l/l1/l2	Zenith	STAR, SUN, MOON, SKY, CLOUDS, NOON, LIGHTNING, RAIN, ECLIPSE, ROOF
2	v/v1/v2-h2-l/l1/l2	Nadir	CRICKET, SWEEP, FLOOR

One model of lexical relatedness in ASL (similar to that suggested by Faltz 1999, 2000) for Navajo, a spoken language of North America, proposes that signs are built of “ion-morphs” by unification (Fernald and Napoli 2000). In that model’s deconstruction, an ion-morph is a triplet consisting of a physical form, a meaning, and a restriction on the form/meaning association. Fernald and Napoli suggest that no single morphological component of the sign is more central to its formation than any other. In their approach, for example, ASL classifiers are simply

ion-morphs in which only the hand configuration is specified, and relatedness among signs is shown without specifying which of the formational parameters is central to the meaning. For example, while an approach utilizing a generalized, articulatory-semantic locus would consider the temple as the central semantic locus for SURPRISE, IDEA, KNOW, LEARN, MEMORIZE, FOOL, UNDERSTAND, REMEMBER, FORGET, THINK, ANGRY, DREAM, INTELLIGENT, SLY, TRUST, WORRY, TENSION, and PROBLEM, in Fernald and Napoli's analysis, these signs would show relatedness, but not because of a specific parameter.

### **Antonyms**

Other than body location and spatial location, change of movement and/or orientation may form a "sign family," and this change is used to derive antonyms in ISL. With a change in the movement and/or orientation of a marked sign, antonyms such as equipollent, overlapping, reversives, and converses (Cruse 2000, 162–63) become the (semantically) unmarked form. Signs such as HAPPY and SAD are formed with the same handshape, orientation, and location but differ from one another in the direction of the movement. The former sign has [movement: up, straight], and the latter has [movement: down, straight]. The initial and final handshapes are just opposite, and the forms are equipollent antonyms. Similarly, PASS and FAIL differ in the [local movement: supinate] and [local movement: pronate], respectively. GOOD and BAD are also formed with a change in the orientation, while other formational parameters are the same. BUY and SELL; TAKE and GIVE; MORNING and EVENING; BRIGHT and DARK; INCREASE and DECREASE, and so on all form a sign family of antonyms on the basis of movement and/or orientation in their articulation.

### **Classifier Handshapes**

All of the sign languages investigated so far employ handshapes in a variety of lexical items that belong to a semantic class. In the sign language literature, these are known variously as polymorphemic predicates, classifier predicates, and depicting verbs (see Schembri 2003 for further details). Most often, these handshapes are called classifier handshapes, following the widely accepted definition: morphemes that classify nouns according to semantic criteria (see Senft 2000).

Interestingly, the visuospatial property of the referents that classifier handshapes represent is based on the handshape of the most prototypical exemplar of the category the referent belongs to. Thus, the handshape shown in figure 3.1 is used for signs such as REFRIGERATOR, BOX, BAG, JUG, LUGGAGE, MUG, BUCKET, DRAWER, and CHEST (furniture).

ISL employs fourteen classifiers, of which twelve refer to physical properties of the referent (Lyons 1977, 463, sortal classifiers) and vary according to size, shape, and textural appearance of the referents (see table 3.3). Such classifiers, which vary according to size and shape, are called size and shape specifiers (SASS) in the sign language literature.

### CLASSIFIER SQUARE

WINDOW PANES, PILLOW, TELEVISION, COMPUTER, WARDROBE, CHART, MAP, POSTER, CERTIFICATE, BLACKBOARD, MONITOR SCREEN, and so on are articulated with the double-handed G handshape. In these signs, the handshape traces the shape of the object at the [location: v-h1-l], forming the perimeter of the referent with [movement: straight] and [orientation: back, toward the sky]. The classifier takes the three dimensions of length, breadth, and shape of the referents into account.<sup>1</sup> However, to carry out adjectival modification, the same classifier handshape is used with changes in the movement and size specific to the modification. Therefore, the movement is an integral part of sign, and the orientation is constant.

### CLASSIFIER RECTANGULAR

PHOTOGRAPH, CHOCOLATE, BRICK, GREETING CARD, BUTTER, CURRENCY NOTE, CHECK, SENTENCE, and so on are articulated with the double-handed bC handshape. In these signs, the tracing of the referent's length and/or its perimeter, the orientation, and the location vary with no modification of its



FIGURE 3.1.

reference. The handshape forms a semantic class based on the shape and the size of the object, abstracting away other properties of the referent.

#### CLASSIFIER ROUND

The scB handshape is used in the articulation of SUN, MOON, BOWL, ISLAND, COMPACT DISK, and so forth. In these, the orientation, location, and movement vary. The semantic basis for considering scB as a classifier handshape is that it classifies referents on the basis of a referent's round shape, which need not be geometrically perfect.

#### CLASSIFIER FLAT SURFACE

Signs such as TABLE, BED, GARDEN, MAT, BENCH, DESK, STAGE, and FLOOR are articulated with the double-handed B handshape. In its citation form, TABLE has [orientation: back, toward the addressee] in the [location: v-h-l] with the [movement: to lateral, down]. Other formational parameters such as movement, location, and orientation<sup>2</sup> are an integral part of these signs. In them, the classifier handshape takes two dimensions of the referents, namely, length and flatness.

#### CLASSIFIER HOLLOW

This classifier is articulated with the double-handed scB handshape and additional formational parameters, as in PURI, BHATURA (Indian fried bread), COCONUT, TIFFIN BOX (lunch box), and so on. This classifier sharply contrasts with the classifier ROUND as it adds a dimension: hollowness of the referent, which is marked in the use of handedness.

#### CLASSIFIER SHEET

The B handshape is used in the articulation of BOOK, MIRROR, GLASS (pane), PAPAD (popular Indian fried/roasted cuisine), APPLICATION LETTER, WAVE, SKY, FLOPPY DISK, CASSETTE TAPE, PLASTIC (sheet), VEHICLES, and so forth. These signs have different orientations, locations, and movement. The classifier SHEET signifies a sheetlike flatness of the referent, leaving aside other dimensional attributes. This classifier contrasts with the classifiers FLAT SURFACE and BROAD FLAT THICK in handedness.

#### CLASSIFIER FLAT THICK

BOOK, CARDBOARD BOX, PACKET, and so on are articulated with the double-handed U handshape. This classifier handshape reflects the two dimensions of the referent (i.e., flatness and thickness). It is interesting

to note that BOOK is articulated with the classifier handshape: double-handed B, but the classifier handshape: double-handed U is used when BOOK is an argument of a verb of motion and location.

#### CLASSIFIER SMALL ROUNDISH

Signs such as ORANGE, OWL, PLUG, LEMON, POTATO, CHICKOO (a sapodilla or mud apple), ONION, GINGER, COAL, NUT (tool), and so forth are articulated with the C3 handshape. The handshape takes the smallness of the round referents, irrespective of the other material and consumable qualities.

#### CLASSIFIER CYLINDRICAL

GLASS (dishes), BOTTLE, VASE, CAN, and so forth are articulated with the C handshape, which signifies a cylindrical shape and a container that has no handle. The classifier CYLINDRICAL differs from the classifier HANDLE in that the latter represents only one of the aspects of the referent: the handle.

#### CLASSIFIER HANDLE

Apart from classifiers showing the physical interaction, a function classifier, HANDLE, is articulated with the single-handed A handshape. Signs such as REFRIGERATOR, BOX, BAG, JUG, LUGGAGE, MUG, BUCKET, DRAWER, CHEST (furniture), and so on are articulated with this handshape in different orientations and locations. This classifier is used with signs that both have a handle and are containers. Despite sharing a physical attribute with some of the referents (containers), it differs from the classifier CYLINDRICAL on the basis of handle.






#### CLASSIFIER LIQUID

A physical classifier, but not an SASS, referring to the textural appearance of signs such as WATER, RUM, WHISKY, GIN, PEPSI (and other soft drink brands), JUICE, OIL, and so on is articulated with the [handshape: xA]. The signs articulated with this handshape are liquid; hence, a classifier, LIQUID.

#### CLASSIFIER VEHICLE

This classifier is articulated with the [handshape: B] with the [orientation: back, toward the addressee]. It is used for cars, buses, motorbikes, and the like.

TABLE 3.3. *Classifier Handshape and Its Semantics.*

Handshape	Classifier	Semantics	Sign
 double handed G handshape	Square	Square shape	PILLOW, TELEVISION, WINDOW PANES, COMPUTER, WARDROBE, CHART, MAP, POSTER, CERTIFICATE, BLACKBOARD, MONITOR SCREEN
 double-handed bC handshape	Rectangular	Shape and size	PHOTOGRAPH, BRICK, CHECK, CHOCOLATE, GREETING CARD, BUTTER, CURRENCY NOTE, SENTENCE
 scB handshape	Round	Roundness	SUN, MOON, BOWL, ISLAND, COMPACT DISK
 double-handed B handshape	Flat surface	Length and flatness	TABLE, BED, GARDEN, MAT, BENCH, DESK, STAGE, FLOOR
 double-handed scB handshape	Hollow	Hollowness and roundness	PURI, BHATURA, COCONUT, TIFFIN BOX

(Continued)



TABLE 3.3. (Continued)








	Sheet	Flatness	BOOK, MIRROR, GLASS (PANE), PAPAD, APPLICATION LETTER, WAVE, SKY, FLOPPY DISK, CASSETTE TAPE, PLASTIC, PRINTER
	Flat thick	Flatness and Thickness	BOOK, CARD BOARD BOX, PACKET
	Small roundish	Smallness	ORANGE, OWL, PLUG, LEMON, POTATO, CHICKOO, ONION, GINGER, COAL, PLUG, NUT
	Cylindrical	Cylindrical shape and handle-less	GLASS, BOTTLE, VASE, CAN
	Handle	Container with handle	REFRIGERATOR, BOX, BAG, JUG, LUGGAGE, MUG, BUCKET, DRAWER, CHEST
	Liquid	Liquid	WATER, RUM, WHISKY, GIN, PEPSI, JUICE, OIL

TABLE 3.3. (Continued)

	Vehicle	Mechanized movable entity	CAR, BUS, LORRY, MOTORBIKE
B handshape			

### Semantics of Space in Sign Language

Sign languages make use of space for various phenomena beyond its use as an articulatory-semantic locus. The mental representation of space is not based on its perception of space, but rather its conception, which Tversky, Kim, and Cohen (1999) argue, is constructed out of the referents in space. In all sign languages, including ISL, space is viewed from the perspective of the signer. This egocentric view/perspective takes the spatiotemporal dimension of the signer in relation to the referent into account. This has two effects: indexation and localization.

In the sign language literature, *index* is a type of pointing gesture that a signer uses to point to someone or something manually and/or nonmanually with eye gaze or body orientation. It is used to draw the addressee's attention toward an object, referents, spatial location, or events around the signer and the addressee in a common observable space, which is referred to as the "real reference frame." In other words, if a signer wants to refer to a referent located in the real reference frame, there is no need to articulate a sign for the referent. Rather, an index to the particular referent suffices. Thus, an index stands in lieu of a sign for a particular referent. If, in such a situation, the signer chose not to use an index but rather articulated a sign, the communicative intent would be of generic rather than specific reference to an entity located in the real reference frame.

However, in the absence of an appropriate referent in the real reference frame, the signer articulates the sign for the referent and assigns it a distinct, specific locus in the signer's signing through indexing a termed R(eferential) locus (see Lillo-Martin and Klima 1990; Meir 2002). The articulation of the sign and the assignment of a particular R-locus to it together constitute what sign language literature calls *localization*. Localization can be effected on either the ipsilateral or the contralateral side of the signer, a bipartite division of space arrived at by using the left and right body axes. This symmetric axis, as conceived under the spatial



Once called up, however, discourse-relevant referents are treated alike in both the real and the abstract reference frames, as there is no fundamental syntactic distinction between referents that have been introduced by the speaker because they are present in the real situation or because the speaker has “thought them up.”

This basic unity is shown by the dynamicity inherent in both reference frames, where referents may change discourse space-time. Consider the following examples, concentrating on how the referent, MONKEY, is treated (see the notation conventions on pp. xv):

- (1) b. MONKEY <sup>LOC: IPSI</sup> BIG  
“A monkey is big.”
- (2) TREE <sup>LOC: CONTRA</sup> <sup>IPSI</sup> CLIMB <sup>CONTRA</sup>  
“(The monkey) climbs a tree.”
- (3) IX <sup>CONTRA</sup> APPLE=EAT  
“The monkey eats an apple (in the treetop).”

In example 1b, MONKEY is localized through manual means at the ipsilateral side of the signer at the [location: v1-h-1], thereby identifying the frame to the abstract reference one. In example 2, TREE is localized by articulating the sign at the contralateral side of the signer at the [location: v2-h-h1-1]. Also in example 2, CLIMB has a path movement that has its onset at the ipsilateral R-locus at the [location: v1-h-1] and the offset at the [location: v2-h2-1]. MONKEY is neither signed nor indexed; the onset of the path movement suffices to refer to the MONKEY. In example 3, MONKEY is not indexed where it is localized but at the treetop at the [location: v2-h1-1].

These examples indicate that, even in the abstract reference frame—and just as in the real reference frame—R-loci *decay* as events/situations unfold and cease to be linguistically significant. This is exactly as would have been the case in the so-called real reference frame for an identical sentence, except that instead of signing MONKEY in example 1, the speaker would have merely pointed to the real-time referent, MONKEY.

In view of this discussion, I adopt a terminology neutral to the real/abstract distinction, using instead the term “linguistic reference frame” in the rest of the book. In conclusion, consider one final effect of the egocentric perspective in ISL—in the area of place names. A place name in which the ego is situated at the moment of signing is localized differently from the place name in which the ego is not situated (figure 3.2).

- rb-----
- (4) YEAR=TWO FUT R-A-M IX <sup>LOC:IPSI</sup> BOMBAY IX <sup>LOC:DOWN</sup> DELHI IX <sup>LOC:UP</sup>  
<sup>DOWN</sup> GO <sup>UP</sup>  
 “Ram will go to Delhi from Bombay after two years.”
- (5) IX <sup>SELF</sup> DELHI IX <sup>LOC: DOWN</sup> J-O-B <sup>FRONT</sup> GET <sup>SELF</sup>  
 “I got a job in Delhi.”

The localizations of BOMBAY and DELHI (example 3) are shown in figure 3.2 (left and center, respectively). In the former, the signer is in Bombay, so the sign is localized close to the signer; in the latter, localization shows the spatiotemporal distance between the signer and the place localized (i.e., Delhi).<sup>4</sup> Contrast this with figure 3.2 (right) (from example 4),<sup>5</sup> the signer’s spatiotemporal situation (i.e., Delhi is localized closed to the signer, unlike in example 3).

Other uses of space in ISL for various processes and phenomena are described elsewhere in the book. In chapter 4 (p. 98) I return to the syntactic and semantic consequences of indexing and localization. However, in all of its uses, the linguistic reference frame is the foundation.

### Sign Formation Processes

The ISL lexicon consists of two parts: the frozen lexicon and the productive lexicon. The former contains lexemes with features that are signs (as described on p. 22), as well as signs that are nonnative (borrowed from other sources). The productive lexicon is based on the gestural component. In the absence of frozen signs, all sign languages employ the productive lexicon. In the course of time, productive signs become signs after the attrition of both a frozen set of features and certain formational elements. Thus, we can see a continuum between gestural and



FIGURE 3.2.

lexical signs in the nature of a gradient between the productive and the frozen lexicons.

FINGERSPELLING

Fingerspelling, also called *dactylogogy*, is a system artificially created to gesturally represent the orthography of a spoken language, whether alphabetic or ideographic. Each letter of the alphabet is associated with a particular handshape, a particular orientation, and, in a few instances, a particular movement. All of these handshapes together are known as the manual alphabet. Though it presupposes knowledge and mastery of the alphabet, it allows the words of spoken language to be incorporated into sign language. It is often viewed as code-switching, as it switches between signs and words of spoken language.

Although fingerspelling is based on the words of a spoken language as linguistic borrowings from another modality, fingerspelling has undergone nativization (see Miller 2001). It has taken on the structural properties of sign language, particularly the phonological properties, and yields signs, thereby masking its origins in spoken language (see Wilcox 1992 for the linguistic analysis of fingerspelling). It is one of the most productive word-formation strategies in sign language, and it has various defined linguistic functions and uses:

1. It is used to introduce words from spoken language for which sign language has no sign equivalent.
2. It is used to introduce spoken language acronyms, abbreviations, clippings, and so on.
3. It is used to introduce words for new concepts in sign language.
4. It is used in the explanation and clarification of signs.
5. It introduces signs that the signer does not know.

TABLE 3.4. *ISL Fingerspelling Typology.*

Type	Fingerspelling
Amphicheric	A, B, D, E, F, G, H, J, K, M, N, P, Q, R, S, T, W, X, Y, Z
Monocheric	C, I, L, O, U, V
Amphicheric	O, U
Monocheric	W
Mixed	I

The ISL fingerspelling system is based on the English alphabet rather than on the Devanagari script, the most commonly used script for many languages of the Indian subcontinent. Moreover, the borrowed lexical items are from English rather than from other Indian languages. Following Stokoe's (1974) classification of fingerspelling, the fingerspelling system of ISL is [+script], [+alphabetic] (as opposed to ideographic, as in Chinese Sign Language). It is articulated with one hand, as well as with two hands. Therefore, fingerspelling in ISL is both [+monocheric] (one handed) and [+amphicheric] (two handed). In addition, there is a fingerspelling that is articulated with body contact, which I classify as a mixed fingerspelling.

Apart from H and J, which involve the movement of H1, all of the other letters are static.<sup>6</sup> However, variations exist in the fingerspelling, especially with the vowels. In addition, a set of vowel handshapes is digit based, starting from the thumb as A and ending with the little finger as U, articulated with two hands, where H1 points to the digit of H2.

Fingerspelling is most commonly employed in introducing technical vocabulary and concepts, proper names, place names, and so on for which ISL may not have a sign equivalent. The strategies employed are as follows:

1. Complete fingerspelling: A signer articulates a complete word alphabetically in a linear sequence (e.g., R-A-M, S-I-T-A). Spelling mistakes are common, and repeated letters are often deleted. In many instances the complete word is idiosyncratically truncated after its concept has been established in the discourse.
2. Abbreviated fingerspelling: Signers often use abbreviations to stand for a whole word (e.g., P.M. for "prime minister," U.P. for "Uttar Pradesh").
3. Initialized fingerspelling: Initialized fingerspellings are sometimes used in lieu of complete fingerspellings. The signer articulates the initial letter of a word to represent that word (e.g., R from R-A-M; L from L-A-K-H; C from C-R-O-R-E).

In the case of two different words, the context determines the intended word. This initialized fingerspelling typically becomes lexicalized. For example, while the initialized fingerspelling for Delhi is D, the ISL sign DELHI is a reduplicated sign: D-D. Similarly, B-B was coined for Bombay, and this is used even today despite the fact that, in the spoken language, the city's name has changed to Mumbai. This reduplicated B sign is

therefore a lexicalized sign; if it were based on fingerspelling, the sign would have changed according to the new spelling.

In ISL, COFFEE is another example of the lexicalization of initialized fingerspelling. Here, lexicalization involves the attribution of local movement, by which the initial c is articulated with the [handshape: bC] at the [location: v-h1-l] with the [movement: pronate]. This addition of local movement adds a degree of visual salience that serves to distinguish the sign from the initialized fingerspelling.

### COINAGES

In the Indian Deaf community, a personal name sign is given to each individual. This is frequently an initialized fingerspelling of the person's spoken language name. In general, however, the name sign is based on a person's physical or individual attributes and appearance, especially in terms of the person's use of eyeglasses, distinctive hairstyles, and so on. Name signs may be taken from the established lexicon or may simply be coined. For example, the name signs for some of my informants are as follows: Arun Rao is HAPPY (because he always seems to be happy). Sibaji and Ritu, have the names SPECTACLE (eyeglasses) and SMILE, respectively, as Ritu seems to smile most of the time, and Sibaji wears eyeglasses. However, Dharmesh's name sign is not an established sign, as it represents his special hair style. My own name sign is an example of how indirect such naming can be, as my name is the sign for SUMMER, which is based on its phonological similarity to the spoken language word.

Apart from names, resources for other coinages may be everyday icons, logos, trademarks, symbols associated with concepts (e.g., INTERNET,<sup>7</sup> DOLLAR, DANGER, PERCENTAGE), and so forth. When the Internet initially came into the public domain in India, the ISL sign for INTERNET was articulated with the interlocking double-handed [handshape: C], representing the logo of Internet Explorer. Later on, the sign was limited to signify Internet Explorer as a web browser, and the sign for Internet was replaced by a compound of fingerspelling I and WIRE.

DOLLAR is articulated with the [handshape: H] representing the symbol for "dollar." The same is true for PERCENTAGE, which is articulated with the [handshape: G], representing the symbol. In ISL, DANGER is articulated with crossed forearms near the face and the signer showing his or her teeth, as in the icon for "danger" that we see posted on electric poles and at power installations. Though these signs have iconic origins, they are articulated in accordance with the sublexical structure of ISL;



otherwise, they are fingerspelled. In ASL, similar facts are observed by Brentari and Padden (2002), which show that, although ASL has borrowings from English, they are nonetheless constrained, systematic, and expressed within the grammar of ASL.

### **Grammaticalization in ISL**

Grammaticalization, as a historical process, is essentially defined as the development of functional categories from lexical categories. As a dynamic process, a lexical category undergoes phonetic and semantic changes at various stages such as the following:

1. Layering: New and old forms coexist.
2. Divergence: An original meaning is retained in a new form with a different functionality.
3. Persistence: Only a part of the original meaning is retained by the new form.
4. Specialization: The new form has restricted choice.
5. Decategorization: A change of class results (Hopper 1991).

Though historical records are not available in sign language, the sign language literature notes that, in more than a hundred years of ASL, grammaticalization has yielded the birth of functional categories from lexical categories. The synchronic study of various sign languages has observed processes of layering, as well as phonetic and semantic attrition of lexical categories, showing that a dynamic process of grammaticalization is in operation (see Sexton 1999; Pfau and Steinbach 2006b; Steinbach and Pfau 2007).

The development of aspectual morphology from verbs and adverbs is the most common observation of grammaticalization in various sign languages. In ISL as well, the development of perfect and iterative aspect markers can be traced to grammaticalization processes. The perfect aspect marker in ISL has developed from the lexical verb *FINISH*, which continues to exist in the language. Grammaticalized *FINISH* shows phonetic attrition: Its articulation has shortened (condensation), it cliticizes onto the main verb (coalescence), and it has a fixed postverbal position in the linear order (fixation).<sup>8</sup> The form has also undergone specialization, as it occurs only with the past tense (paradigmatization).<sup>9</sup> Semantically, it is restricted to an event that happened in the recent past rather than the more distant past.<sup>10</sup>

Similarly, the iterative aspect marker has developed from AGAIN, which exists in synchronic ISL as an adverb. In its new form as an aspect marker, it means “again and again.” Since it incorporates into the movement of the verb, the phonetic attrition of the handshape can be attested. However, the movement parameter is maintained in its new form as a verb, into which it incorporates and undergoes movement for aspect marking, such as that of AGAIN (i.e., a triplicated, tense, straight movement with a hold at the end of the thrust, followed by a receding, concave arc).

## **Morphology and Morphosyntax**

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Recent research on sign language morphology shows that sign languages exhibit a complex morphology in two flavors: simultaneous and sequential. “[T]hese two types of morphology differ from one another with respect to the phonological means they employ, the grammatical categories they encode, their productivity, and their diachronic development” (Aronoff, Meir, and Sandler 2005, 309). Sequential morphology is usually affixal and derivational in character and has limited productivity. Such sequential morphology is found in ASL and Israeli Sign Language but has a very limited distribution in both sign languages. ISL lacks sequential morphology altogether.

In simultaneous morphology, different morphemes are simultaneously nested over each other by altering the direction, rhythm, or path movement of the citation form of a sign rather than by sequencing new phonological segments to it. The morphologically complex structures (labeled in the literature as verb agreement, classifier constructions, and verbal aspects) are inflectional and productive. There are deep-seated, cross-linguistic similarities in the grammatical categories these forms encode, as well as the form they take in their morphological structure. Simultaneous morphology is found in all sign languages studied so far (i.e., it is a sign language universal; Emmorey 2002), constituting a language type under which no known spoken language falls (Sandler and Lillo-Martin 2001).

### **PHI FEATURES IN ISL**

#### **Person**

The grammatical category of “person” is defined with respect to the participant roles in the discourse. Person is a deictic, discourse category that handles the orientational features relative to time and place. It refers to distinctions among the narrative participant-referents of the pronoun. First and second persons always express the discourse roles

of speaker and addressee, respectively. Moreover, in spoken language, *he* refers to a feature complex [masculine, human, singular, nominative] and differs from *Chandan* (a boy's name) by its lack of a (potentially) unique reference in a particular discursive context. The variability of pronoun reference is constrained/determined by the principles of the binding theory in domains that correspond to syntactic categories such as IP and  $\nu$ P.

In the sign language literature, the existence of person is a very controversial issue. To prove that sign language is indeed a natural human language in another modality, early linguistic research treated sign language as instantiating analogues of spoken language categories. One such phenomenon was argued to be that of “person reference” or “personal pronouns.”<sup>1</sup>

Some sign linguists assume that person in sign languages is indicated by indexing: An index to the locus of the signer and the addressee is analyzed as first and second person, respectively, and an index to the actual referent and/or to the R-loci is analyzed as third person. In other words, the signing space is analyzed as bifurcated for person, as the signer is the point relevant to setting up the reference frame. The second person is in the signer's direct line of sight; outside the direct line of sight of the signer and the addressee is the third person. In this bifurcated space, an index is analyzed as a pronoun.<sup>2</sup>

Although handshapes may differ, most sign languages exhibit a three-way distinction in pronouns. In ASL, however, the distinction is primarily a binary one—between first and nonfirst person, as the second person is determined by the referent to whom the discourse is addressed and the location for third person cannot be specified (Meier 1990; Lillo-Martin and Klima 1990). A similar view is maintained for Danish Sign Language (Engberg-Pedersen 1993). In contrast to this proposal, studies on Croatian Sign Language suggest that nonmanual expressions (such as eye gaze) may distinguish second and third person (Berenice 2002; Alibašić Ciciliani and Wilbur 2006).

Neidle et al. (2000, 31) claim that the use of “spatial locations constitutes an overt instantiation of  $\Phi$ -features (specifically, person features) and that “nonfirst person can be further subclassified into many distinct person values.” Similar to Meier (1990), Lillo-Martin and Klima (1990) agree that a first-person pronoun is listed in the lexicon, but they do not accept the possibility of an unlimited number of pronoun signs in sign languages. They list only one pronoun in the lexicon and a referential

TABLE 4.1. *Zeshan's (2003b) Analysis of ISL Pronoun System.*

Number	Handshape	Characteristics
Transnumeral	G or B	No difference between singular and plural form
Dual	v	1-2/3, 2/3, 3/3
Nonspecific Plural	ARC, G/B	Semi-circle horizontal arc; index to several locations
Iconic Plural	Numeral incorporation	A direct mapping of the plural morphemes to the number of referents above one.

index. They propose that the referential index is assigned to every noun phrase and is used to indicate interpretation and to check adherence to the binding theory constraints for pronominal anaphora. They claim that spoken language pronouns also bear a referential index and are subject to the same constraints as in sign language. In contrast to pronouns in spoken language, sign language pronouns, due to a specific effect of the modality, overtly realize the referential index.

Similar observations have been made about the use of space in ISL. Zeshan (2000, 106) mentions that when an index is used anaphorically, it corresponds closely to the pronouns of spoken language. Zeshan (2003b) makes a two-way distinction between first-person and nonfirst-person pronouns in ISL; however, her two-way distinction is based on the localization of the addressee in the absence of the latter in reported speech. She argues that the ISL lexicon contains only one pronoun and that it is unspecified for location. The index to the signer is first person, and the index, according to its location, defines the nonfirst persons. She further maintains that ISL makes a number distinction as summarized in table 4.1.

Several authors contest the claim that indexing has a pronominal function (Mühlhäusler and Harré 1990, 278; Walgreen 1990; Burner 2002; Mathew and Sinha 2005). In fact, Walgreen (1990) argues that Swedish Sign Language indexes are essentially demonstratives. Burner (2002, 365) claims that, in sign language, “the coding of participant roles is accomplished not through abstract categories of person, but rather through gestural tests.” She attributes such difference in spoken and sign language to modality dissimilarities. Mathew and Sinha (2005) suggest that an index

to the R-locus is not an invariant pronominal form in ISL. To see this, consider these three examples from the preceding chapter:

- (1) a. MONKEY <sup>LOC: IPSI</sup>IX <sup>CONTRA</sup>BIG  
 “A monkey is big.”
- (2) TREE <sup>LOC: CONTRA</sup> <sup>IPSI</sup>IX <sup>CONTRA</sup>CLIMB  
 “(The monkey) climbs a tree.”
- (3) IX <sup>CONTRA</sup>APPLE=EAT  
 “The monkey eats an apple (in the treetop).”

Recall that, here, indexing to MONKEY is not indexing to the R-locus associated with MONKEY but rather to its eventual positioning at the top of the tree. Mathew and Sinha (2005) and Sinha (2006) argue that the index to the R-locus traces the movement of the referent in the spatiotemporal dimension of the linguistic reference frame, indicating where the referent is at that point during the discourse. This, they maintain, distinguishes it from pronominal forms in spoken language; if it were a pronoun, the signer would have indexed to a unique, assigned R-locus in the partitioned space. In their analysis, an index to the R-locus in the partitioned signing space is not a pronoun, but an R-expression, thereby involving reference of the *Chandan* type rather than the *he* type. This is also the view in Sinha (2003, 2006), who claims that an index does not have phi features, on the basis of which pronouns can be identified and distinguished from nouns. Every instance of index (in the linguistic reference frame) is a noun (i.e., an R-expression), and there does not exist a syntactic realization of person other than the pragmatic/discourse roles (*ibid.*). Pronouns as an independent word class do not exist in the ISL lexicon.<sup>3</sup>

In this regard, the binding facts support the argument that an index is a noun rather than a pronoun. Consider example 4:

- (4) RAM <sup>LOC: IPSI</sup>IX <sup>IPSI</sup>IX <sup>CONTRA</sup>LIKE.  
 “Ram<sub>i</sub> likes him<sub>i</sub>.” (lit., “Ram<sub>i</sub> likes Ram<sub>i</sub>.”)

In example 4, the R-locus associated with the ipsilateral localized referent denotes the same referent (i.e., Ram). If the index were indeed a pronominal, then Principle B of the binding theory is violated. However, the example is grammatical, suggesting that Principle B does not apply at all. Principle C, which prohibits coreference from holding between R-expressions, applies in a modified form in ISL, by which c-commanded

R-expressions are treated as epithets in spoken language as shown in example 5:

- (5) [John]<sub>i</sub> hired a secretary that hates [the idiot]<sub>i</sub>.

Reflexives also do not exist in ISL as a word class<sup>4</sup> although an emphatic reflexive, in which an index with the [movement: pronate] at the R-locus of the referent, does exist. This is shown and transcribed as EMP in figure 4.1 and example 6, respectively:

- rb----- bf-----rb----- bf-----  
 (6) FEM- S-I-T-A IX<sup>LOC:IPSI</sup> ROOM IX<sup>\*LOC: FRONT</sup> COME<sup>IPSI FRONT.</sup> IX<sup>IPSI</sup> SHOE  
 POLISH EMP<sup>IPSI</sup>  
 “Sita came to the room. She polished shoes herself.”

In example 6, EMP emphasizes the referent associated with it. As the index is an R-expression, it seems that EMP is also an R-expression, albeit with an emphatic function.

In ISL, reciprocity is articulated with a single hand or with double hands, with a repeated, alternating movement of the [handshape: V], which is shown and transcribed as RECP in figure 4.2 and example 7, respectively:<sup>5</sup>

- (7) RAM S-I-T-A TALK RECP  
 “Ram and Sita talk to each other.”

To summarize the discussion, I have claimed that the index is an R-expression, that the word-class pronoun and anaphora do not exist in ISL, and that Principle C holds in a modified way in ISL. These radical claims have been made before (e.g., in Friedman 1975), but they have raised questions about the universality of the binding theory. In my



FIGURE 4.1. EMP.



FIGURE 4.2. *Reciprocal.*

current understanding, however, it is important to recognize that claims about this universality have been stated with regard to the phenomena found in *spoken* language. I suggest that the issue of modality is central to the discussion about referential (in)dependence and that languages that are articulated in a spatiotemporal medium may not need to employ the same signals of referential (in)dependence as spoken language does. However, we leave this issue for further research.

## Number

The basic number distinction in ISL is singular vs. plural, and singular is morphologically unmarked. Pluralization is carried out via different strategies in ISL. The most common strategy is reduplication, which is morphologically visible on nouns and/or verbs in ISL.<sup>6</sup> A noun sign is reduplicated three times (but this does not mean that the noun is quantified for three), with a slight change of the location within the same cubicle, to signify the indefinite plural of the noun.<sup>7</sup>

- (8) BOOK<sup>+++</sup> IX<sup>LOC: CONTRA</sup> MASC-IX<sup>LOC: CONTRA-2</sup> S-I-T-A FEM-IX<sup>LOC: IPSI</sup>  
 HELP<sup>IPSI</sup> CONTRA-2

“He helped Sita with books.”

- (9) b. SCHOOL+CHILD<sup>+++</sup> FACE-ARC<sup>LOC: FRONT TO IPSI</sup> HOME GO<sup>[individuated]</sup>

“Students are going home.”

In body-anchored nouns such as NECKLACE, NAME, BODY, and SOAP and in nouns with path movement, such as ADVERTISEMENT, RAT, TEACHER, and EXPERIMENT, pluralization is indicated by zero marking.

To articulate plurality, ISL employs two other strategies, which can be considered as encoding a “distributive plural” (meaning “to all but not necessarily to each”) and an “exhaustive plural” (“to each”) one. The former is articulated with complete verbal reduplication, and each reduplicand is articulated along an arcing movement path (ARC) that encompasses the loci of the referents (or by changing the signer’s body position with respect to the loci, in the case of body-contact signs). When an eventuality is a single instance composed of several similar eventualities, the movement of the verb is accelerated (GET in figure 4.3).

- (10) TEACHER FACE-ARC<sup>LOC:FRONT-IPSI</sup> IX<sup>SELF</sup> STORY+ETC<sup>IPSI, IPSI-2, IPSI-3, FRONT,</sup>  
 CONTRA GET<sup>SELF</sup> [distributive]

“I got data from the teachers (not necessarily from each).”





FIGURE 4.3. *GET in distributive plural.*



FIGURE 4.4. *SEND in exhaustive plural.*

In the exhaustive plural, a verb sign is reduplicated, shifting to each individual referent along a path, but without retracting to the onset of the sign in its citation form. With the body-contact signs, it is articulated with the changing body position, while eye fixation takes place at the individual referent.

- (11) JYOTI IX<sup>LOC:IPSI</sup> POSS<sup>IPSI</sup> FRIEND<sup>LOC:CONTRA</sup> FRIEND<sup>LOC:CONTRA-2</sup>  
 FRIEND<sup>LOC:IPSI-2</sup> LETTER<sub>SELF</sub> SEND<sub>CONTRA,CONTRA-2,IPSI-2</sub> [individuated]  
 “Jyoti sends letters to her friends.”

In example 11, FRIEND is pluralized by means of multiple localizations. With the reduplication of the verb SEND over localized referents, the individuated aspect is articulated (figure 4.4).

In the event of numeral incorporation into the noun sign, the noun sign is not triplicated (see example 12). When plurality is indicated by the modifier numeral, the noun sign is reduplicated as in example 13):

- hf-----  
 rb----- rb-----  
 (12) MASC IX<sup>LOC:IPSI</sup> DAY=TWO PAST SURPRISE  
 “He was surprised two days ago.”

- (13) IX<sup>SELF</sup> CHILD<sup>+++</sup> FIVE HAVE  
 “I have five children.”

With quantifiers such as *SOME*, as in example 14, the noun sign is pluralized via triplication. With quantifiers such as *MANY*, on the other hand, reduplication is blocked, and the noun sign is in its singular form, as in examples 15 and 16:

- bf-----  
 (14) SCHOOL+ CHILD<sup>+++</sup> SOME MONEY MORE  
 “Some students are rich.”
- (15) FEM-S-I-T-A IX<sup>LOC: IPSI</sup> RAM IX<sup>LOC: CONTRA</sup> BOOK MANY<sub>IPSI</sub> GIVE<sub>CONTRA</sub>  
 “Sita gave many books to Ram.”
- (16) MASC IX<sup>LOC: IPSI</sup> BOOK MANY READ  
 “He reads many books.”

Reduplication in order to emphasize a modified noun occurs with a numeral and a quantifier, as in examples 17 and 18, respectively:

- (17) FEM-S-I-T-A IX<sup>LOC: IPSI</sup> RAM IX<sup>LOC: CONTRA</sup> BOOK<sup>++</sup> THREE<sub>IPSI</sub> GIVE<sub>CONTRA</sub>  
 “Sita gave three books to Ram.”
- (18) IX<sup>FRONT</sup> FACE-ARC<sup>LOC: CONTRA</sup> STORY<sup>++</sup> MANY TELL<sub>CONTRA</sub>  
 “You told many stories to them.”

As one of the pluralization strategies in ISL, to mean different nouns (e.g., “different clubs”), *CLUB* is articulated once, but either multiple localization takes place, or *CLUB* is articulated several times, and each articulation is spatially distributed by distinct localizations.<sup>8</sup>

## Gender

American Sign Language (ASL) marks natural gender, which is articulated at the side of the face. A sign marked above the level of the ear is read as male and below that level as female. Similarly, in Japanese Sign Language, the upright thumb is used for a male, and the little finger is for a female. However, it is important to note that gender in ASL is marked in only a few signs, chiefly kinship terms. It is not productive in ASL. Similarly, gender marking in Japanese Sign Language is mostly constrained to lexical items, perhaps more so than ASL, but still not productive.<sup>9</sup>

In ISL as well, gender differences are encoded for animate humans. The animate usually has FACE when the nouns MAN and WOMAN (abbreviated in text as MASC. and FEM.) are not articulated.<sup>10</sup> MASC and FEM.<sup>11</sup> are articulated with the [handshape: G] at the [location: philtral column] and [location: nose groove], respectively. These lexical markers for gender in ISL are obligatory for nondiscourse participants and may be localized; in addition, They may optionally precede fingerspelled signs. Since ISL lacks pronouns as a word class, these expressions stand for MAN and WOMAN, respectively, as instances of compounding.<sup>12</sup>

- hf-----  
rb-----
- (19) FEM-IX <sup>LOC: IPSI</sup> PAST CRY+++  
“She cried yesterday.” (lit., “A woman cried yesterday.”)
- (20) MASC- IX <sup>LOC: IPSI</sup> DELHI IX <sup>LOC: CONTRA</sup> <sup>IPSI</sup> GO <sup>CONTRA</sup>  
“He came to Delhi.” (lit.. “A man came to Delhi.”)
- rb----- bf-----
- (21) MASC- IX <sup>LOC: IPSI</sup> FEM-S-I-T-A IX <sup>LOC: CONTRA</sup> ADVISE <sup>CONTRA</sup>  
“He advised Sita, a woman.” (lit., “A man advised Sita, a woman.”)

TENSE AND ASPECT

Tense

As mentioned earlier (p. 81), a spatial location with reference to a signer’s body (front and back) is used as a time line (also called time indicators) to express time relative to the time of a speech act. In ISL, the surface manifestation of time rests fundamentally on the visual time line (figure 4.5).

The time line has specific spatial indices for time reference (table 4.2).



FIGURE 4.5. *Time line in ISL.*

Present tense in ISL is unmarked. A sentence or discourse without overt temporal reference is interpreted as present tense, as shown in example 22. Example 23 shows that the present tense used for emphasis or contrast is articulated with the [handshape: G]:

- hf----- rb----- torso: CONTRA  
 (22) IX<sup>SELF++</sup> IX<sup>FRONT</sup> LIKE  
 “I like you.”

- hf----- torso: CONTRA  
 (23) PRES IX<sup>SELF++</sup> IX<sup>FRONT</sup> LIKE  
 “I like you. (lit., “I do like you.”)

Past and future are articulated with the same [handshape: xB] (figure 4.6) but with different formational parameters to indicate the past and the future reference while the former (see example 24) has [orientation: back, toward the signer], and the latter (see example 25) has [orientation: front, toward the line of bilateral symmetry], as well as [movement: supinate] apart from differences in the location:

- (24) PAST IX<sup>SELF</sup> ANGRY  
 “I was angry.”

- (25) FUT FEM<sup>++</sup> S-I-T-A IX<sup>LOC: IPSI</sup> DELHI IX<sup>LOC: CONTRA</sup> ARRIVE<sub>CONTRA</sub>  
 She will arrive in Delhi.

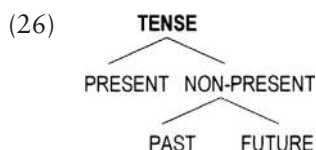
TABLE 4.2. *Spatial Indices for Time Reference.*

No.	Cubicle	Tense
1	v-h1-l1	Past
2	v-h-l2	Future
3	v-h-l	Present



FIGURE 4.6. *Left, PAST; right, FUTURE.*

On the basis of this discussion, the tense distinction in ISL can be schematized as in example 26:



As the preceding examples illustrate, these tense distinctions are not marked on the ISL verb. Instead, the signer establishes temporal reference by employing lexical tense markers and NP adverbs of time. In the text I label these PAST and FUT.

To refer to quantifiable units of time such as days, minutes, weeks, and so on, number incorporation into the lexical tense markers yields adverbial time reference. The [handshapes: G, V, W, 4 or tB] are used for one, two, three, and four, respectively, and when these numerals are incorporated into lexical tense markers, a sense of how many days of the counts prior or subsequent to the speech time is engendered. For example, the [handshape: G] denotes “yesterday” or “tomorrow,” respectively (although it is not modified by DAY):

- (27) YESTERDAY IX<sup>LOC: IPSI</sup> EAT+H IX<sup>LOC: CONTRA</sup> CL: SHEET(CHAPATTI) EAT  
 “He ate chapatti in a hotel yesterday.”

For past reference beyond one (see examples 28 and 29), calendar units such as DAY, WEEK, MONTH, and YEAR are used; however, for a future reference, this is not required for units up to four. The numerals incorporate into such units, and the lexical tense marker indicates past alone (see example 30). In all such instances of incorporation, the lexical tense markers must follow the NP adverb.<sup>13</sup>

- (28) DAY.AFTER.TOMORROW MASC-IX<sup>LOC: IPSI</sup> GO<sub>IPSI</sub>  
 “He will go the day after tomorrow.”

rb-----

- (29) DAY=TWO PAST MASC-IX<sup>LOC: IPSI</sup> PARTY IX<sup>LOC: CONTRA</sup> UNCORK+CL:  
 LIQUID=DRINK  
 “He drank cold drinks at the party two days ago.”

- (30) FACE-ARC<sup>LOC: IPSI</sup> WEEK<sup>++</sup> TWO PAST<sub>IPSI</sub> GO  
 “They went two weeks ago.”

(31) FACE-ARC<sup>LOC: IPSI</sup> WEEK<sup>++</sup> TWO FUT<sup>IPSI</sup> GO  
 “They will go in two weeks.”

In ISL, perfect aspect is also used to indicate recent past. Ancient past is marked with the [handshape: xB], but with a different orientation and movement at the onset and the offset of the sign (figure 4.7).

ISL makes a further distinction of reference to the current day. The remove vs. remote distinction is made in the past and the future tenses but does not hold equally in both. It is a distinction based on the use of NP adverbs of time with respect to numeral incorporation. The remote is found only with the future but not with the past (see examples 28 and 29). In the past, further, recent, and ancient past are distinguished from other forms of past marking (table 4.3).

In ISL discourse, the signer establishes the time reference, and all discourse refers to that period of time until a new time reference is established. This holds not only for that sentence but also for all

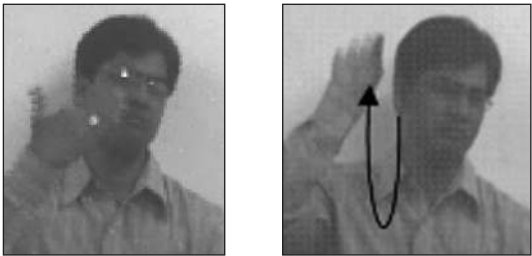


FIGURE 4.7. *Left, onset of REMOTE PAST; right, offset of REMOTE PAST.*

TABLE 4.3. *Hodiernal System of Tense Marking in ISL.*

Metrical System	Handshape		
	Past	Future	Present
Past	xB		
Removed	G		
Remote	-----	v, w, 4 or tB	Unmarked
Ancient	xB		G (emphatic)
Recent	Perfect aspect		

subsequent sentences. Thus, temporal reference can be made relative to the established reference time without creating a new time reference. In other words, the present tense is neutralized.<sup>14</sup> Having established a focal temporal reference as prior to the time of the speech act, the time of the new speech act becomes irrelevant to the discourse. In addition, tense is always preverbal and usually occupies the clause initial position, although it can, under certain discourse conditions, surface as ordered after scrambled arguments.

## Aspect

Aspect stands in contrast to tense, which functions to locate eventuality (E) relative to speech time (S), as it refers to the intrinsic properties of eventualities (states and events) and the way in which their temporal unfolding may be presented linguistically.

In ISL, aspect is marked on the verb by modulating one of its formational parameters (i.e., movement in terms of dynamics, shape, size, or tenseness). The following aspects are observed in ISL.

### I. ZERO MARKING

In ISL, verbs such as EAT, LIKE, SING, WALK, and DANCE are articulated as in their citation form and are morphologically unmarked. In the sign language literature, the aspect in which a verb is in its citation form is labeled “uninflected” (Klima and Bellugi 1979, 265). Anderson (1982) revises the terminology to (derived) stative and states that not all aspectual marking needs to involve modulation, labeling this as “unmarked with normal movement.” The following examples instantiate the zero-marking aspect of ISL.

- (32) IX<sup>SELF</sup> FEM-S-I-T-A IX<sup>LOC: IPSI</sup> BOOK<sub>IPSI</sub> GIVE<sub>SELF</sub>  
 “Sita gives a book to me.”

rb----- hb-----

- (33) YESTERDAY MASC-IX<sup>LOC: IPSI</sup> EAT+COOK+HOUSE=IN MILK DRINK  
 “He drank milk in the kitchen yesterday.”

e.g.: IPSI

- (34) FUT IX<sup>SELF</sup> TABLE<sup>LOC:IPSI</sup> MAKE  
 “I will make a table.”

## II. CONTINUATIVE ASPECT

In ISL, the uninterrupted continuity of an eventuality over a period of time is expressed by lengthening the movement of verb's movement through triplication of either the movement with no other formational changes, as in CRY, or the verb itself with no other formational changes, as in STUDY.<sup>15</sup>

(35) SCHOOL IX<sup>LOC: IPSI</sup> YEAR=TWO PAST IX<sup>SELF</sup> ENGLISH STUDY<sup>[continuative]</sup>  
 “I was studying English at school two years ago.”

(36) FEM-IX<sup>LOC: IPSI</sup> YESTERDAY CRY<sup>[continuative]</sup>  
 “She was crying yesterday.”

STUDY is a double-handed sign that has no independent path movement. In continuative aspect, STUDY is triplicated with no formational changes to mean continuity of the eventuality. On the other hand, CRY is articulated with the [handshape: V] near signer's eye with [movement: DOWN]. In the continuative aspect, rather than forming CRY (i.e., from the normally neutral position of the hand) again, the movement parameter of the sign is triplicated with no additional change in other formational parameters, thereby constituting a case of partial reduplication.<sup>16</sup> Other verbs include WALK, SLEEP, EAT, RUN, DRINK, and so on.

## III. PERFECT ASPECT

As mentioned in chapter 3 (p. 96), perfect aspect is grammaticalized from FINISH (see figure 4.8). It is articulated after a verb sign, and it often cliticizes to the verb (e.g., EAT, DRINK, CRY, WALK, LAUGH). It is articulated as a single- or double-handed [handshape: B], depending on the handedness of



FIGURE 4.8. Aspects: *left*, FINISH; *right*, PERFECT.





FIGURE 4.9. *AGAIN*.

the host to which it attaches, with the [movement: pronate], and indicates that the eventuality has recently been completed. It is compatible with tense neutralized or past sentences only, not with overt future and past markers.

- (37) IX<sup>FRONT</sup> LAUGH<sup>[perfect]</sup>  
 “You have laughed (just now).”

#### IV. ITERATIVE ASPECT

In ISL, the adverb *AGAIN* (figure 4.9) is a double-handed sign with [movement: in-out alternative, circle]. It undergoes weak drop, in which it is articulated with the dominant hand. Subsequently, it often cliticizes to other signs (e.g., *GIVE*, *SEND*, *THROW*, *JUMP*, *INVITE*) in their movement parameter. In its noncliticized version, it is a postverbal sign repeated after a brief pause to make the eventuality, as shown in example 38.

- (38) RAM IX<sup>LOC: IPS1</sup> S-I-T-A IX<sup>LOC: IPS1-2</sup> BOOK<sub>IPS1</sub> GIVE<sub>IPS1-2</sub> AGAIN<sup>++</sup>  
 “Ram gives a book to Sita again and again.”

In ISL, the iterative aspect is grammaticalized from cliticized *AGAIN*. It is articulated with the repetition of a tense, straight movement with a hold at the end of a thrust and is followed by a receding, concave arc (figure 4.10). The onset and the offset of the movement are uniform throughout the articulation of the inflected verb sign, and as an inflection on a verb, it means “again and again.” The triplication of the movement is observed normally for aspectual modification; however, iterations of more than three times are also observed.

- (39) RAM IX<sup>LOC: IPS1</sup> S-I-T-A IX<sup>LOC: IPS1-2</sup> BOOK<sub>IPS1</sub> GIVE<sub>IPS1-2</sub><sup>[iterative]</sup>  
 “Ram gives a book to Sita (again and again).”



FIGURE 4.10. *Iterative aspect.*



FIGURE 4.11. *Frequentative aspect.*

## V. FREQUENTATIVE ASPECT

The frequentative aspect differs from the iterative aspect in both form and meaning. It is articulated by lengthening with a single bigger, slower, triplicated concave movement of the verb sign with rounded thrust at the end and means “for a prolonged period of time.” For example, verbs such as WALK, HELP, HIT, TELL, and SEND undergo modulation for frequentative aspect. Figure 4.11 shows the articulation of this aspect; also see example 40.



FIGURE 4.12. *Break in inchoative aspect.*

- (40) RAM IX<sup>LOC: IPSI</sup> S-I-T-A IX<sup>LOC: IPSI-2</sup> HELP<sup>IPSI</sup> [frequentative]  
 “Sita helps Ram (for a prolonged period of time).”

## VI. INCHOATIVE ASPECT

The inchoative aspect is formed by reducing the complete articulation of the verb to an abrupt hold in order to give the sense of “about to.”<sup>17</sup> In example 41, the articulation of SHOOT is not complete. RUN, SEE, WASH, CRY, KILL, and so on undergo the inchoative aspect. Figure 4.12 shows BREAK in inchoative aspect.

- (41) PAST DHARMESH IX<sup>LOC: IPSI</sup> UDAY IX<sup>LOC: IPSI-2</sup> SHOOT<sup>IPSI</sup> [inchoative].  
 SIBAJI CATCH<sup>IPSI-2</sup>.  
 “Udall was about to shoot Dharmesh, [but] Sibaji caught him.”

## Reduplication

Reduplication is the reiteration of a part of a sign or a complete sign itself, in which the reduplicated part expresses a semantic notion that is different from the base sign. It is one of the productive sign formation processes in ISL, in which both partial and complete reduplication can be found.

### I. MORPHOLOGICAL REDUPLICATION

Morphological reduplication refers to the minimally meaningful and segmentally indivisible morphemes that comprise iterated syllables (Abbi 1992). ISL expressives have a reduplicated structure and constitute a

single lexical category. Apart from the sense of smell and taste, expressives abound in evoking other sensory perceptions, such as sight, audition, and the tactile senses.

- a. Sight: STAR is articulated with the [handshape: fbO] at the [location: v1/2-h1-l] with the [movement: crumbling]. Though the movement is reduplicated, it is a single lexical sign in its citation form.
- b. Noise: The signs related to audition (e.g., HEARING, TALK, LAUGH) are articulated with a reduplication of the local movement of the sign. In HEARING, the [movement: opening] is reduplicated twice while all other formational parameters of [handshape: O], [location: v-h1-l1], and [orientation: neutral, toward the sky] are constant. Similarly, LAUGH is articulated with the [handshape: bC] in contact with the [location: philtral column], with a reduplicated local movement in its citation form.
- c. Tactile: STICKY, SMOOTH, and so on, which is related to the sense of touch, have a reduplicated structure in their citation form. STICKY has the [handshape: fbO] with a reduplicated [movement: closing].

ISL signs of the manner and the state of action also have a reduplicated structure in their citation forms. Manner adverbs such as ALWAYS, ROUGHLY, and SLOWLY have reduplicated local movement in the path movement (e.g., the onset of ALWAYS has the [movement: circular] at the [location: v-h-l], which iterates with the [movement: out] at the offset at the [location: v-h-l2]).

Phonologically, expressives are monomorphemic-monosyllabic signs in which reduplication is of the local movement rather than the path movement. Reduplication here is not of a segment, but within a segment; in other words, it is dynamic.

In the sign language literature, such reduplicated structures are called “repetition,” which is considered to be lexical; hence, they are distinct from “reduplication” (see Wilbur 2005). However, data from ISL suggest a contrary view. In ISL, the fingerspelling for Delhi is D-E-L-H-I, which undergoes initialization and becomes D, which is not a lexical sign but a fingerspelling. In the process of attaining lexemic status, it gains reduplication as D-D. In this new sign, neither the base nor the reduplicated part is meaningful by itself. But as a reduplicated structure, D-D, it signifies “Delhi.” In other words, such reduplication is not

inherent in the sign, but reduplication is necessary for it to become a lexical item in ISL. This leads us to conclude that repetition is not a derivational process.

## II. LEXICAL REDUPLICATION

Unlike morphological reduplication, lexical reduplication is the repetition of any sequence of phonological units that comprise a sign. It may be complete or partial and constitutes a single lexical category.

- a. Complete reduplication: Complete reduplication involves two identical (bimodal) signs. In ISL, pluralization is an instance of complete sign reduplication as the reduplication is of the all of the formational parameters of the sign's citation form (see p. 103).<sup>18</sup> Iterative aspect, frequentative aspect, and individuated aspect are incorporated into the verb (see p. 112).
- b. Partial reduplication: Partial sign reduplication involves the reiteration of any of the sign's formational parameters. In ISL, the distributive aspect shows the reduplication of movement successively at [location: v1-h-l2], [location: v-h-l2], and [location: v1-h-l2], holding the other formational parameters constant. The reduplicated movement is an internal part of the movement (i.e., away-toward signer alternative) rather than syllabic reduplication or mora insertion, as described on p. 80.

The ISL lexeme BEAUTIFUL is a compound of FACE + FINE. It takes adjectival degree modification with the reduplication of the second root of the compound (i.e., FINE). Thus, "very beautiful" is FACE + FINE FINE, in which the reduplicated sign is articulated at a location different from the second root of the compound.<sup>19</sup> The fingerspelling J is articulated with an asymmetric double hand and a [movement: supinate] of the H1. When the movement of the H1 is partially reduplicated without changing the formation of the handshape, the sign (rather than the fingerspelling) means "joke."

- c. Discontinuous sign reduplication: Discontinuous sign reduplication is split by the interfixation of a syllable. For instance, GOOD is a monosyllabic static sign articulated with the [handshape: xA] at the [location: v-h-l]. In the superlative degree of comparison (i.e., "best"), the reduplication of the handshape takes place at a higher

locus than GOOD but within the same [location: v-h-]. In the comparative degree, with the addition of the movement, the segment changes from P to PM. This addition of movement can be seen as the interfixation of a syllable since M is more sonorous than P.

### Compounding

A large part of the ISL lexicon is made up of compounds. It is one of the productive word-formation processes and is used to create new lexical items. It differs from lexicalization processes as such compounds are used in forming superordinate categories, new concepts, and so on from the existing concepts available to signers.

Compounds in ISL comprise two or more independent roots. Apart from the compounding of the roots, these consist of plural morphemes, fingerspelling, classifiers, and numerals. The components of compounds are summarized in table 4.4.

In compounds other than those that comprise numerals, fingerspelling, and classifiers, the two roots of the compound are shown in table 4.5.

TABLE 4.4. *Components of ISL compound.*

Components	Example	Compound
Sign + Sign	COOK + HOUSE	KITCHEN
Sign + Sign + Plural Morph	APPLE + BANANA + ETC.	FRUIT
N numeral + Sign	10 + PASS	MATRICULATE
Sign + Classifier	WHITE + CLASSIFIER ROUND	MOON
Sign + Fingerspelling	FOOD + H*	HOTEL
Fingerspelling + Sign	D + COLD	DARJEELING
Fingerspelling + Classifier	D + CLASSIFIER BOSS	DIRECTOR

\*Note: H is not native to ISL but is a borrowed fingerspelling from ASL.

TABLE 4.5. *Word Class in ISL Compound.*

Components	Example	Compound
Noun + Noun	MAN + MARRY	HUSBAND
Noun + Adjective	MAN + OLD	GRANDFATHER
Noun+ Verb	FOOD + DISTRIBUTE	PARTY
Noun + Adverb	MORNING + FAST	DAWN

On the basis of the headedness of the compound, the ISL compounds can be divided into endocentric and exocentric compounds. *Endocentric compounds* are those in which the categorial feature of the head percolates to the projection and the relation between the head and the nonhead is an identifiable semantic relation of modification such as EAT + ROOM = DINING ROOM; POOR + HOUSE = HUT; WOMAN + MARRY = WIFE, and so on.

On the other hand, *exocentric compounds* are, semantically speaking, headless compounds; however, for syntactic purposes, the rightmost base determines the category of the compound. Headless compounds can be of two types: *bahuvrihi* and *dvanda*. The former refers to those compounds that do not have a head-modifier relationship and are semantically opaque (e.g., FACE + FINE = BEAUTIFUL; HOUSE + STUDY = HOMEWORK; FACE + CATCH = RECOGNIZE). The latter are those in which the coupled elements have equal status (e.g., JESUS + STAND = EASTER; WOMAN + MARRY + BROTHER = BROTHER-IN-LAW; MARRY + BREAK = DIVORCE).

Compounds in ISL are pluralized through reduplication, with a shift in the articulatory place but within the same cubicle. CAVES, PARTIES, DIRECTORS, and so on are formed by the complete reduplication of the compound. On the other hand, POST OFFICES, PONDS, DICTIONARIES, NEIGHBORS, PASSBOOKS, KITCHENS, and so on are formed by partial reduplication of the compound sign. KITCHEN is pluralized through the reduplication of the rightmost root: COOK + HOUSE HOUSE. The syntactic head of compounds is therefore uniformly the rightmost one.

## Derivational Morphology

In the sign language literature, Stokoe, Casterline, and Croneberg (1965) claim that noun-verb pairs such as CHAIR and SIT are identical at the articulatory level but distinct at the categorial level. Supalla and Newport's (1978) study of ASL shows systematic differences in movement that distinguish nouns from verbs (see also Klima and Bellugi 1979; Padden and Perlmutter 1987; Johnston 1991).

With regard to derivational morphology, ISL is relatively impoverished, although a few instances of derivational processes culminating in new signs are attested. However, such processes relate signs with other forms within the same semantic field and there, too, apply to only a few lexemes. In such cases, the change is in the formational parameters of movement and orientation.

**i. Nouns Derived from Adjectives**

The noun **COLOR** is derived from the adjective **RED** with a change in the handshape. The adjective **RED** is articulated with the [handshape: G]. The noun **COLOR** has the [handshape: 4], while the other formational parameters are the same as those of the adjective **RED**.

**ii. Adverbs Derived from Adjectives**

**QUICK** and **QUICKLY**, **SLOW** and **SLOWLY**, **CORRECT** and **CORRECTLY**, **ROUGH** and **ROUGHLY** are distinguished by their movement. The adverb sign is formed with the adverbial modification of the adjective sign (i.e., its path movement). It is often observed that a change takes place in [+DYN] of the path movement. In all adverbs derived from adjectives (e.g., **SLOWLY**, **QUICKLY**), a change occurs in the dynamics related to the signing speed. For example, the adverb **SLOWLY** will have slower dynamics than the adjective **SLOW**, whereas the adverb **QUICKLY** has the opposite.

**iii. Adjectives Derived from Verbs**

**CLEAN** (adjective) is derived from **CLEAN** (verb) with a change in the size of the verb's path movement. The verb has a small in-out unison path movement, whereas the adjective has a medium out-path movement.

**iv. Agentive Nouns**

In ISL, an agentive noun is formed by compounding the sign with the classifier **PERSON** or the classifier **BOSS**. For instance, **TYPIST** is a compound of **TYPE** + classifier **PERSON**.<sup>20</sup> Many agentive noun signs in ISL have the same formational parameters in their citation form. They are distinguished from one another with respect to their category on the

TABLE 4.6. *Noun-Adjective Ambivalence.*

Noun	Adjective
FOOL	FOOLISH
THIRST	THIRSTY
HUNGER	HUNGRY
STRONG	STRENGTH
BORE	BORING
RED	REDISH
BEAUTY	BEAUTIFUL
ANGER	ANGRY



basis of their relative position in a clause and/or other morphological processes that these signs undergo as a specific grammatical category.

Nouns of colors, shape and size, perceptual states, and so on are formed into adjectives without any change in articulation (table 4.6).

As related nouns and verbs also have the same formational parameter in their citation form, their identity as a member of a grammatical category is based on the position these signs occupy in a clause and/or the morphological processes they undergo (table 4.7).

Finally, several pairs of signs (e.g., MORNING, START) involve a metonymic/metaphorical extension of meaning. These are also similar in their formational parameters.

**Classifiers, Incorporation, and the Manner Component  
in ISL Predicates**

This section discusses the phenomenon known popularly as *classifier incorporation*. In the sign language literature, handshape is used in a variety of lexical items to categorize the lexical items into semantic classes. Such handshapes have traditionally been labeled “classifier”

TABLE 4.7. *Noun-Verb Ambivalence.*

Noun	Verb
FEAR	FRIGHTEN
DIE	DEATH
KILL	KILLED
FOOD	EAT
MILK	MILCHING
RAIN	RAINING
ADVISE	ADVICE
HATRED	HATE
QUESTION	QUESTION
DANCE	DANCE
TYPE	TYPE
LAUGH	LAUGH
SURPRISE	SURPRISE
SIGN	SIGN
PROMISE	PROMISE

handshapes, analogous to the widely accepted definition for spoken languages: Classifier morphemes classify nouns according to inherent semantic criteria such as shape, size, function, and qualities of their referents (see Senft 2000). In the sign languages investigated so far, the classifier handshapes have been argued to vary according to the size, shape, and textural appearance of the referents, the so-called size and shape specifiers mentioned in chapter 3. Supalla (1986) finds that only verbs of motion and location may incorporate classifier handshapes into verb signs.

In the linguistics literature, the term “incorporation” is used in a variety of senses. In one of these, it refers to those structures in which an element is attached to another element, yielding a complex word. In the syntax literature, the term “noun incorporation” has—since Baker (1985)—come to be used in a grammatical head-raising operation that yields a predicate. The phenomenon found in sign languages and known as “classifier incorporation” is exemplified by the ISL sentence in example 42. There, a verb of motion and location is articulated with a classificatory handshape that assumes the physical properties of the referent’s size, shape, and textural appearance.

- hf----- hf----- ht-----  
 (42) IX <sup>FRONT</sup> CL: FLAT SURFACE-TABLE CL: HANDLE-MUG <sub>FRONT</sub> CL:  
 HANDLE=PUT<sub>[LOC: CL: FLAT SURFACE-TABLE]</sub>  
 “You put a mug on the table.”

Figure 4.13 (left and center) show the onset and the offset of a verb of motion and location. In figure 4.13 (right) the handshape of the referent is assumed by the verb in lieu of its citation handshape. It is important to note here that the handshape that combines with the path



FIGURE 4.13. Onset (left) and the offset (center) of a verb of motion and location. The handshape of the referent assumed by the verb (right).

movement of the verb is not a lexical noun itself but a handshake that “represents the shape and size of MUG.” The lexical item MUG is articulated independently.

Although in the sign language literature, the term “classifier incorporation” is widely used to describe this phenomenon, Glück and Pfau (1998) argue that, with regard to German Sign Language (DGS), there is very little reason to believe that what is “incorporated” is a “classifier,” and the operation in fact qualifies as a syntactic incorporation. They point out that the facts in the DGS statements in examples 43a and 43b show that there is no analytic counterpart of the “incorporated” structure and that “classifier” incorporation, accompanied by a deletion of the theme nominal, is ungrammatical. If “classification” is indeed the same as “incorporation,” then we would expect (43a) to be grammatical.

(43) a. \*MAN-IND1 WOMAN-IND2 IGIVE2-CLFLOWER

“The man gives a flower to the woman.”

b. \*MAN-IND1 WOMAN-IND2 FLOWER IGIVE2

“The man gives a flower to the woman.”

(Glück and Pfau 1998, 6)

Further pointing out that the theme NP is not a copy of the classifier, Glück and Pfau (1998, 3) suggest that it is the “interplay of the object NP and the ‘classifier’ that yields the correct meaning.” Consequently, they propose an alternative analysis that suggests that “classification” is an instance of inflection akin to agreement. To achieve this, they make use of Anderson (1982, 82), who proposes that inflectional properties can be classified into four types:

- a. *Configurational* properties, which are assigned on the basis of the larger syntactic structure of a word (e.g., case).
- b. *Agreement* properties, which are assigned to words by reference to the value on a particular “paradigmatic dimension” of some other item within the same syntactic structure (e.g., subject-verb agreement).
- c. *Phrasal* properties, which are assigned to larger constituents within a structure but may be realized in individual words that constitute only part of those structures.
- d. *Inherent* properties, which are lexical characteristics of individual words that must be accessible to syntactic principles of agreement and so on in order for these to operate correctly (e.g., gender).

Based on agreement and phrasal properties, Glück and Pfau (1998) claim that the inherent properties of arguments (subject/object) are the relevant features for triggering classification morphology on verbs. Noting that verbs differ in terms of which argument they classify, they suggest that some verbs classify subjects while other verbs classify objects. For DGS, they locate this choice of which argument to classify in transitivity: Classifying transitive verbs always classify the object, and classifying intransitive verbs always classify the subject. In other words, the classifying inflection is an agreement with the lowest argument in the VP.

These proposals also fit the ISL data shown in example 44. However, ISL differs from DGS in significant ways. First, note that it is not always the properties of the theme noun that the classificatory morpheme doubles. To see this consider the examples in the following six examples:

- (44) a. FEM-IX <sup>IPSI</sup> S-I-T-A IX <sup>CONTRA</sup> BOOK <sub>IPSI</sub> CL: FLAT THICK=GIVE <sub>CONTRA</sub>  
 “She gave a book to Sita.”
- b. FEM-IX <sup>IPSI</sup> S-I-T-A IX <sup>CONTRA</sup> MANY BOOK <sub>IPSI</sub> CL: MASS=GIVE <sub>CONTRA</sub>  
 “She gave many books to Sita.”
- c. FEM-IX <sup>IPSI</sup> S-I-T-A IX <sup>CONTRA</sup> MANY BOOK <sub>IPSI</sub> CL: THICK=GIVE <sub>CONTRA</sub>  
 “She gave many books to Sita.”
- d. FEM-IX <sup>IPSI</sup> S-I-T-A IX <sup>CONTRA</sup> MANY BOOK <sub>IPSI</sub> CL: HORIZONTAL/  
 VERTICAL=GIVE <sub>CONTRA</sub>  
 “She gave many books to Sita.”
- e. \*FEM-IX <sup>IPSI</sup> S-I-T-A IX <sup>CONTRA</sup> BOOK CL: SHEET <sub>IPSI</sub> GIVE <sub>CONTRA</sub>  
 “She gave a book to Sita.”
- f. FEM-IX <sup>IPSI</sup> S-I-T-A IX <sup>CONTRA</sup> BOOK <sub>IPSI</sub> GIVE <sub>CONTRA</sub>  
 “She gave a book to Sita.”

GIVE is a single-handed sign in ISL. In example 44a, the classificatory morpheme that marks the noun BOOK is CL: FLAT THICK (however, example 44e shows that CL: SHEET cannot be used in this context). Note now, from example 44b, that CL: FLAT THICK can mark the verb GIVE only when the noun is singular. An ISL sentence with MANY<sup>21</sup> can have either the classificatory morpheme of the quantified noun or the handshape of the verb in its citation form; the classificatory morpheme of the referent



FIGURE 4.14. *Onset (left) and offset (right) of MANY in weak freeze.*

noun, as in other modifications, is disallowed. When the quantifier *MANY* modifies a noun, the classificatory morpheme changes to another classificatory morpheme, labeled *CL: MASS* (see example 44b), which is the offset of *MANY*. This classificatory morpheme has the double-handed [handshape: scB], where the stretch between the H1 and the H2 shows the approximate amount of the noun sign that is quantified as a single unit rather than the plural entities. This handshape is not found with indefinite, numeral, and other quantifiers.

The images in figure 4.14 show the onset and the offset, respectively, of *MANY* in weak freeze. The classificatory morpheme *CL: MASS*, which “incorporates” into the path movement of the verb, is a double-handed sign (i.e., not in weak freeze) that is a variant of the sign shown in figure 4.14 (right).

In example 44b the noun is modified by a quantifier, *MANY*. The classifier *FLAT THICK* cannot occur in such a modification by a quantifier. If, as in examples 44c and 44d, the noun is plural and quantified, the classificatory morpheme must be with *CL: HORIZONTAL/VERTICAL*, which marks primarily the plurality and secondarily the perspective of the signer. If the signer presents the manner of transfer as a horizontal stack, *CL: HORIZONTAL* will be chosen; otherwise, if the signer represents the transfer as a vertical stack, *CL: VERTICAL* will be chosen as a classificatory morpheme.

In another important difference with *DGS*, in *ISL* the doubling of the theme by the classification morpheme is optional, as example 44f shows. Further research is needed to determine whether the presence or absence of such agreement has any consequences for noun phrase interpretation, but for now we can assume that this optionality simply suggests that agreement is optional in *ISL*, unlike *DGS*.

Glück and Pfau's approach can also be employed to explain putative cases of manner adverb incorporation and aspectual marking on the verb. Specifically, their suggestion that the distribution of classificatory morphology is conditioned by verb class is especially useful in explaining the distribution of manner adverbial incorporation and aspectual marking.

ISL verbs such as *WALK*, *OPEN*, and *DRIVE* allow manner features to be marked on the verb sign through either a lexical process or one that marks manner in the dynamics of the path movement. In the citation form of verbs such as *WALK* and *RUN*, the dynamics of the path movement are normal (see example 45a). In the adverbial function, to mean "he walks quickly," the dynamics of the path movement of this sign are accelerated to indicate the adverbial function, as shown in examples 45b and 45c.

- (45) a. IX<sup>LOC: IPSI</sup> *WALK*  
 "He walks."  
 b. IX<sup>LOC: IPSI</sup> *WALK QUICKLY*  
 "He walks quickly."  
 c. IX<sup>LOC: IPSI</sup> *WALK=QUICKLY*  
 "He walks quickly."  
 d. IX<sup>LOC: IPSI</sup> *WALK=QUICKLY* [superlative]  
 "He walks very quickly."

In example 45a, the citation form of the verb *WALK* has normal dynamics in its path movement. In the case of lexical adverbial modification, *QUICKLY* (as a lexical sign; figure 4.15) follows *WALK*—without being

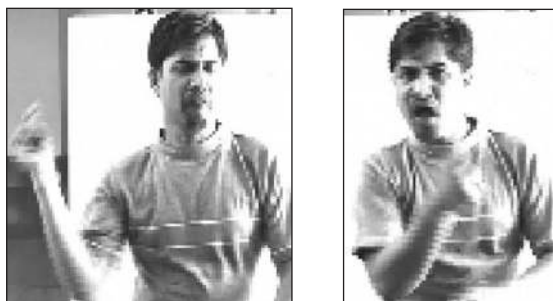


FIGURE 4.15. Onset (left) and offset (right) of *QUICKLY*.

marked—into the movement of the verb WALK, as shown in example 45b. However, in the case of adverbial modification, QUICKLY is marked in the path movement of the verb, modifying the verb's movement dynamics (examples 45c and 45d). The acceleration of the verb's path movement marks the different degrees of adverbial modification, distinguishing example 45c from example 45d.

In ISL, Sinha and Richa (2006) examine the verb classes of Levin (1993) and arrive at the following conclusions about the distribution of adverbial marking. In ISL, adverbial modification with respect to the verb class seems to fall into three patterns:

- i. In verbs of change of state, verbs of appearance and disappearance, verbs of manner of motion, and verbs of cleaning, adverbial marking is on the verb (e.g., GROW, REVOLVE, APPEAR, DISAPPEAR, WIPE, WASH).

(46) COLOR DISAPPEAR=SLOWLY

“The color disappeared slowly.”

- ii. In verbs of emission and verbs of communication, verbal marking for adverbial modification is not observed but is carried out by strictly postverbal lexical adverbial signs.

(47) IX <sup>IPST</sup> REPLY QUICKLY

“He replied quickly.”

- iii. In agentive verbs of manner of motion, verbs of inherently directed motion, verbs involving motion, and iterative motion, as well as in verbs of putting, consumption, and image impression, the marking on verbs and on lexical adverbial signs is found, as in examples 45b–45d.

This shows that ISL adverbial marking is not an across-the-board phenomenon but a phenomenon that is compatible with only specific verb classes, which has a bearing on the nature of eventuality denoted by a verb. In other words, adverbial marking is a property of verb class and indicates the manner in which eventualities take place (see Sexton 1999, 126n18).

Similarly, in ISL, aspectual modulation is marked in the movement parameter of the verb sign. In aspectual marking, the movement of the verb is modulated in its dynamics, shape, size, hold, and tense. The ISL data also show the possibility of a nonmarking structure, as shown in example 48b.

(48) a. YESTERDAY MASC-IX<sup>LOC:IPSI</sup> LAUGH<sup>[continuative]</sup>

“He was laughing yesterday.”

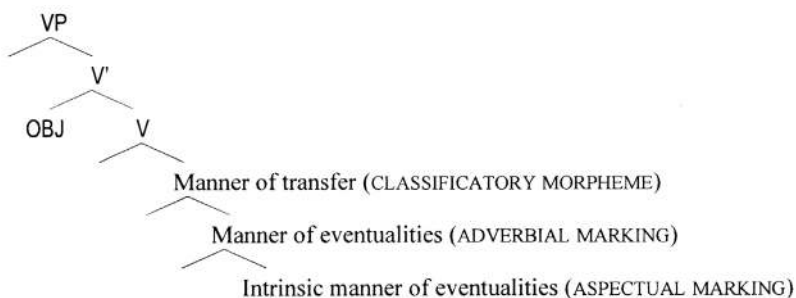
b. IX<sup>FRONT</sup> LAUGH PERF

“You have laughed.”

Although aspectual marking plays no role in the argument structure of the verb, it does play a role in revealing both the nature of the event denoted by the verb and the intrinsic properties of the eventualities.

Since the phenomena of classificatory, adverbial, and aspectual morphology are conditioned by verb class, Sinha and Richa (2006) suggest a uniform account: ISL verbs can be divided into two broad categories with respect to the manner component (internal and external) by building on the insights of Hale and Keyser (1993). Sinha and Richa (2006) argue that feature marking on verbs is compatible with verbs with a manner component in their lexical representation, whereas verbs that lack a manner component must be lexically modified. The choice between either strategy is argued to be a choice between either externally or internally licensing the manner component. Following Hale and Keyser’s (1993) original proposal for an internally licensed manner component, Sinha and Richa (2006) propose that a verb’s internally licensed manner component is further trifurcated, as schematized in 49, where manner of transfer, manner of eventualities, and intrinsic manner of the eventualities are marked.

(49)



To sum up, the phenomena surrounding classificatory morpheme, aspectual, and adverbial markings show certain properties similar to those of incorporation; hence, they were traditionally analyzed as incorporation. On the other hand, Glück and Pfau’s (1998) approach shows



that these phenomena are conditioned by verb class. To this, following Sinha and Richa (2006), I have suggested that these phenomena are associated with the manner component of verbs.

My analysis thus far suggests that many instances of what have been called incorporation in ISL are not in fact best analyzed as such. There are, however, two instances in which an incorporation analysis seems more appropriate, and I conclude this section with a discussion of them.

In ISL, tense marking takes place along a visual time line, as described on p. 106. A signer indicates temporal reference in relation to the time line indices. In the citation form of PAST or FUTURE, the [handshape: xB] is used for an unspecified time reference. In the case of a specified time reference, numeral incorporation takes place along the time line indices.

Numeral incorporation takes place with the time line indices to mark adverbial time reference. The handshape of the sign marking the adverbial time unit is incorporated into the tense, resulting in NP adverbs of time. YESTERDAY is articulated with the [handshape: G], which is incorporated into the past time line index.

- (50) YESTERDAY IX <sup>FRONT</sup> RUN  
 “You ran yesterday.”

Numeral incorporation limited to the quadruple number is further specific to tense. Although the incorporation of the quadruple (i.e., [handshape: 4 or tB] is seldom found, [handshape: V, W] incorporates into future time. On the other hand, not all numbers incorporate with past. Other calendric units expressing NP adverbs of time do not incorporate.

In ISL, adpositions such as IN, INSIDE, UNDER, ON, AT, ABOVE, and BELOW incorporate into nouns, but others, such as NEAR and WITH, do not. In cases of incorporation where the noun sign is followed by the adposition, one of the handshapes articulates the noun, and the other articulates the adposition. In example 51, HOUSE is a double-handed sign. In the case of incorporation, the H2 of HOUSE remains the same after the articulation of the sign. As figure 4.16 illustrates, IN is articulated with H1 below the H2 of HOUSE.

- rb----- hb-----  
 (51) H1: YESTERDAY MASC-IX <sup>LOC: IPS1</sup> EAT+COOK+HOUSE=IN MILK DRINK  
 H2: HOUSE  
 “He drank milk in the kitchen last week.”



FIGURE 4.16. *Left, QUICKLY (onset); right, QUICKLY (offset).*

The incorporated phrase is localized after the articulation of the incorporated sign (example 52). In other cases, incorporated adpositions are optional, as the locative NP will give a sense of the location of the event with respect to the participants (example 53).

hf-----

rb-----

(52) H1: ROOM=IN IX <sup>LOC: IPSI</sup> S-I-T-A RAM /V/ YEAR PAST STORY WRITE

H2: ROOM

“Ram and Sita wrote a story in the room last year.”

rb-----

(53) STUDY+ROOM=IN YESTERDAY MASC-IX <sup>LOC: IPSI</sup> LAUGH

“He laughed in the classroom yesterday.”

## Clause Structure and Clause Types

It is an established fact that arguments of the verb are always preverbal (Sinha 2003). However, it is also important to note that the order among these arguments is relatively free. To begin, consider the following pair of ISL sentences with a transitive plain verb.

- (1) a. R-A-M IX<sup>IPSI</sup> S-I-T-A IX<sup>CONTRA</sup> LIKE  
 b. S-I-T-A IX<sup>IPSI</sup> R-A-M IX<sup>CONTRA</sup> LIKE  
 “Ram likes Sita.”

In ISL, the sentence-initial argument of the verb is generally the subject of the sentence. Out of context, a plain verb, such as that in example 1, is ambiguous with regard to which is the subject and which the object of the verb. If context does not make this clear, a strategy that I label *DIR* is employed for disambiguation.

- c. S-I-T-A IX<sup>IPSI</sup> R-A-M IX<sup>CONTRA</sup> LIKE<sub>CONTRA</sub> DIR<sub>IPSI</sub>  
 “Ram likes Sita.”

Disambiguation may also be achieved by reference to animacy: Animates are preferentially accorded subject roles.

- d. R-A-M IX<sup>CONTRA</sup> BOOK LIKE  
 e. BOOK R-A-M IX<sup>CONTRA</sup> LIKE  
 “Ram likes book.”

Finally, as the onset and/or the offset of agreement and spatial verbs mark arguments, there is no ambiguity about the subject/object status of arguments in any of the possible orders:

- (2) a. RAM IX<sup>CONTRA</sup> S-I-T-A IX<sup>LOC: IPSI</sup> BOOK<sub>CONTRA</sub> GIVE<sub>IPSI</sub> [ SUB IO DO V ]  
 b. RAM IX<sup>CONTRA</sup> BOOK S-I-T-A IX<sup>LOC: IPSI</sup> GIVE<sub>IPSI</sub> [ SUB DO IO V ]  
 c. S-I-T-A IX<sup>LOC: IPSI</sup> RAM IX<sup>CONTRA</sup> BOOK<sub>CONTRA</sub> GIVE<sub>IPSI</sub> [ IO SUB DO V ]  
 d. S-I-T-A IX<sup>LOC: IPSI</sup> BOOK RAM IX<sup>CONTRA</sup> GIVE<sub>IPSI</sub> [ IO DO SUB V ]  
 e. BOOK RAM IX<sup>CONTRA</sup> S-I-T-A IX<sup>LOC: IPSI</sup> GIVE<sub>IPSI</sub> [ DO SUB IO V ]  
 f. BOOK S-I-T-A IX<sup>LOC: IPSI</sup> RAM IX<sup>CONTRA</sup> GIVE<sub>IPSI</sub> [ DO IO SUB V ]  
 “Ram gave a book to Sita.”

With respect to word order in ISL, S-O-V is the default neutral order, while other orders are pragmatically determined (see p. 163). In the case of sentential complementation, S-V is the default order in neutral contexts, although others (e.g., those in example 3) also obtain.

- (3) IX<sup>SELF</sup> THINK S-I-T-A IX<sup>IPSI</sup> HOME<sup>CONTRA</sup> IPSI<sup>GO</sup> CONTRA  
 [Subject Verb [Object Subject Object Verb]]  
 “I think Sita went home.”

Consider, finally, complement clauses in ISL, which may occur to the left or the right of the matrix clause, although the latter position is more common. The following pair of sentences shows the position of the subordinate clause in ISL.

- e.g.: IPSI  
 (4) a. IX<sup>SELF++</sup> THINK MASC-IX<sup>IPSI</sup> CLEVER  
 e.g.: IPSI  
 b. MASC-IX<sup>IPSI</sup> CLEVER IX<sup>SELF++</sup> THINK  
 “I think he is clever.”

## DETERMINER PHRASES AND THEIR CONSTITUENTS

### Determiners

In the sign language literature, it has been argued that the heads of determiner phrases (DPs) are usually associated with localization, index, and possessive signs. For ASL, Bahan (1996) and MacLaughlin (1997) both analyze prenominal localization as a definite determiner. Bahan (1996) analyzes postnominal localization as adverbial, while MacLaughlin (1997) considers it to be either definite or indefinite. There is consensus, however, on the index, which in ASL is generally agreed to be a pronoun.

On p. 90 I argue that localization and indexing, although similar in articulatory terms, are different: Localization does not signify an act of *reference*, whereas indexing does. As this functional definition does not explain the syntax and semantics of localization and index, the remainder of this section is devoted to developing such an account.

In ISL, although localization (glossed as IX<sup>LOC</sup>) is a property of nouns alone, not all nouns allow localization: Only [+animate], [+concrete], [+locative] nouns may be localized; however, [+abstract], [+mass], and

[+generic] nouns may not. Imagine a discourse in which a speaker wants some milk to drink. Here the signer cannot localize MILK because, if the signer were to do so, the referent of the NP would be interpreted as a glass of milk located at a particular location. This act of nonlocalizing [+abstract], [+mass], and [+generic] nouns is evident in the ISL corpus collected for this study. Whenever localization takes place, it is always postnominal, although there may be intervening material between a noun and its IX<sup>LOC</sup>. The following instances of localization are observed in ISL:

1. A noun is articulated at a desired locus: BOOK<sup>LOC</sup> (=BOOK IX<sup>LOC</sup>)
2. Localization follows a noun: BOOK IX<sup>LOC</sup>
3. Localization follows a noun and an adjective that modifies the noun: BOOK RED IX<sup>LOC</sup>
4. Localization follows an adposition that is incorporated into a noun: HOUSE=IN IX<sup>LOC</sup>

Once a referent is localized, resulting an R-locus, an index (glossed as IX) to the R-locus suffices to refer to the same referent unambiguously, even after many intervening signs in the discourse. Moreover, on p. 101, I argue that the index refers to an R-expression in ISL. In the absence of localization, the sign for the referent is articulated in every instance of its reference. These observations lead us to the conclusion that both localization and index have different semantics. In the following, I use the ideas of Heim (1982) in distinguishing these two uses.

Heim (ibid.)<sup>1</sup> argues that indefinite descriptions are referential. On the basis of their semantics, she argues that an indefinite is used to introduce a new entity into the discourse, while a definite or a pronoun is used to refer to old/familiar entities. Heim's novelty and familiarity conditions can be paraphrased as follows:

- i. *Novelty condition*: The use of an indefinite description presupposes that its referent is being introduced into the discourse for the first time.
- ii. *Familiarity condition*: The use of a definite description is permitted only when the existence of the referred-to entity has been established in the particular discourse.

For our present purpose the two conditions suffice to analyze localization and index in ISL: Localization is governed by the novelty condition, but indexing falls under the familiarity condition. Thus, localization signals the equivalent of indefiniteness in ISL, while indexing yields the

equivalent of definite descriptions in ISL. This entails that a noun introduced into a discourse without localization is indefinite, while the subsequent articulation of the same in the discourse is definite.

Moreover, in ISL, proper names can be localized when introduced into a discourse; hence, they are indefinite. This observation contradicts the claim that proper names are definites. As a matter of fact, the ISL data could be taken as support for the view that proper nouns are not inherently definite but become definite after raising them to D(determiner) (Longobardi 1999).

Let us now examine another use of the index in ISL. In the presence of many referents of the same kind, such as “many books,” the articulation of BOOK with an index serves the function of uniqueness.

- (5) a. BOOK IX GOOD  
b. IX BOOK GOOD

In such cases, as the descriptive content alone is not enough to determine a unique referent, an index must be articulated; here, indexing functions as a demonstrative.

As I report on p. 101, Mathew and Sinha (2005) and Sinha (2006) argue that, wherever the referent is located at that point of the discourse, the index to the R-locus traces the referent’s movement in the spatiotemporal dimension. This shows that, in ISL, the index encodes deixis as well, parallel to languages such as Hindi, which has no definite article; moreover, demonstratives may be used to mark familiarity. In ISL, these two heads—definite and deictic—are fused together as a single head D, in which the deictic reading is inherent. However, not every instance of an index in ISL necessarily has deictic as well, apart from its referential reading. In example 5, the index necessarily has an overt deictic reading. This contrasts with example 6, where the deictic reading of (IX<sup>IPSI</sup> i.e., Ram) is inherent but implicit.

- (6) IX<sup>IPSI</sup> FEM-S-I-T-A IX<sup>LOC: CONTRA</sup> LIKE  
“Ram likes Sita.”

In ISL, the relationship between the possessor and the possessed is shown by an indexlike sign with a different handshape, labeled as POSS and shown in figure 5.1. In kinship relations and inalienable possession, the relationship between the possessor and the possessed can be articulated with or without POSS (examples 7 and 8). Further, POSS is also optional in cases in which the relationship between the possessor and the



FIGURE 5.1. POSS.

possessed can be recovered from the context. In other cases, the POSS is articulated at the possessor and is followed by the possessed.

- (7) a. RAM (POSS<sup>IPSI</sup>) MASC-SIBLING=YOUNGER YESTERDAY CRY  
 “Ram’s younger brother cried yesterday.”

- b. IX<sup>IPSI</sup> MASC-SIBLING=YOUNGER YESTERDAY CRY  
 “His brother cried yesterday.”

- (8) RAM MOBILE-PHONE OLD  
 “Ram’s cell phone is old.”

As an aside, in ISL, nominal emphasis is marked by the presence of an emphatic sign, which is articulated at the locus of the antecedent referent, in postverbal position, as shown in example 9. However, in ISL the positional occurrence of the emphatic sign is sensitive to negation. In the presence of the negative element, it occurs in the preverbal position (example 10).

rb----- - bf----- rb ----- bf-----

- (9) FEM- IX<sup>IPSI</sup> SHOE POLISH EMP<sup>IPSI</sup>  
 “She polished her shoes herself.”

rb----- bf----- neg face-----

- (10) TABLE IX<sup>FRONT</sup> IX<sup>IPSI</sup> EMP<sup>IPSI</sup> CLEAN NOT  
 “You cannot clean the table yourself.”

When the emphatic sign also occurs in the preverbal position as an object of the transitive verb (example 11) and as a subject of the clause (example 12), it may have a reflexive function:

bf-----

- (11) UDAY IX <sup>IPSI</sup> CL: MIRROR EMP <sup>IPSI</sup> SEE <sup>FRONT</sup>  
 “Uday saw himself in the mirror.”

hf----- torso:IPSI--

- (12) FEM- S-I-T-A ROOM IX <sup>FRONT</sup> <sup>IPSI</sup> COME <sup>FRONT.</sup> EMP <sup>IPSI</sup> CL: MIRROR SEE  
 CONTRA  
 “Sita came to the room. She saw herself in the mirror.”

In the following sections I examine adjective, numeral, and quantifier phrases in ISL before summarizing the constituent phrases within the DP.

### Adjective Phrases

ISL adjectives are either lexical or articulated as part of the noun sign. Color and stative adjectives are chiefly articulated through lexical signs, while shape and size adjectives are marked in the noun sign. The latter type of adjective is modified through the changes in the movement parameter to reflect shape, size, and dynamics by either reduplication or changes in the expression.

Both attributive and predicative adjectives occur in ISL. In examples 13a–b, the following readings are possible:

- (13) a. SHIRT RED  
 “A shirt is red.” (predicative, sentential reading)  
 “A red shirt . . .” (attributive, phrase-level reading)
- b. RED SHIRT  
 “A/the red shirt . . .” (attributive, phrase-level reading)  
 \*A shirt is red. (predicative, sentential reading)

Attributive adjectives are either prenominal or postnominal (examples 14a–b and 15, respectively). On the other hand, predicative adjectives are always postnominal (examples 14b and 15). However, predicative adjective are preverbal in the presence of a possessive HAVE (example 16).

- (14) a. RED BOOK IX <sup>LOC: IPSI</sup> OLD  
 rb----  
 b. BOOK RED IX <sup>LOC: IPSI</sup> OLD  
 “A red book is old.”



rb----

- (15) BOOK OLD IX<sup>LOC: IPSI</sup> RED

“An old book is red.”

- (16) IX<sup>SELF</sup> RED CAR HAVE

“I have a red car.”

Another important phenomenon is observed in ISL regarding adjectival predications that are used to mean “gradual internal progression/reduction.” Such predicates are marked by slower, uninterrupted, but paused movement (example 17) and labeled as “inceptive.” They are of two types: X “increases” or “decreases,” which is shown by the gradual opening and closing of the [handshape: U] and is marked as  $\pm$ , respectively. In examples 17 and 18, it has assimilated to the handshape of the preceding sign (see also figure 5.2).

- (17) MONEY CL: VERTICAL INCEPTIVE

“Money became more (gradually).”

- (18) THINK INCEPTIVE

“Thought became less (gradually).”

### Numeral and Quantifier Phrases

Numerals and quantifiers are used for the definite (familiar) and indefinite (novel) quantification of nouns in ISL, with a clear distinction between the use of the numeral one and other numerals in predicative, as well as attributive, readings. The position of numerals greater than one is strictly postnominal; however, the numeral one may either precede or follow the noun.



FIGURE 5.2. *Left, +inceptive aspect; right, -inceptive aspect.*

- (19) IX<sup>LOC: IPSI</sup> IX<sup>LOC: CONTRA</sup> BOOK TWO<sub>IPSI</sub> GIVE<sub>CONTRA</sub>  
 “He gave two books to him.”
- (20) IX<sup>SELF</sup> CHILD<sup>+++</sup> FIVE HAVE  
 “I have five children.”
- (21) a. ix<sup>self</sup> masc ix<sup>loc: ipsi</sup> one bag one book<sub>ipsi</sub> give<sub>contra</sub>  
 b. ix<sup>SELF</sup> MASC IX<sup>LOC: IPSI</sup> BAG ONE BOOK ONE<sub>IPSI</sub> GIVE<sub>CONTRA</sub>  
 “I gave him a bag and a book.”

When a noun is modified by a numeral and an adjective, the position of a numeral greater than one is strictly postnominal. On the other hand, the adjective can be either prenominal or postnominal, as mentioned earlier.

- (22) a. IX<sup>SELF++</sup> IX<sup>FRONT++</sup> RED BOOK TWO<sub>SELF</sub> GIVE<sub>FRONT</sub>  
 b. IX<sup>SELF++</sup> IX<sup>FRONT++</sup> BOOK RED TWO<sub>SELF</sub> GIVE<sub>FRONT</sub>  
 “I gave two red books to you.”
- (23) IX<sup>SELF++</sup> IX<sup>FRONT++</sup> RED BOOK OLD TWO<sub>SELF</sub> GIVE<sub>FRONT</sub>  
 “I gave two red old books to you.”

Numerals and quantifiers are in complementary distribution in ISL. This leads me to conclude that they fall under a single phrase head, which I call a quantifier phrase. MANY may be lexically articulated, or the noun sign that is to be quantified may be pluralized through ARC, along with the verb in individuated aspect (example 24).<sup>2</sup> Moreover, MANY is either postnominal or prenominal (examples 25–26) and may follow or precede a postnominal adjective (examples 27 and 28).

- (24) SCHOOL+SIBLING<sup>+++</sup> FACE-ARC<sub>LOC: FRONT- IPSI</sub> HOME GO<sub>[individuated]</sub>  
 “Many students are going home.”
- (25) FEM-IX<sub>IPSI</sub> S-I-T-A IX<sup>CONTRA</sup> MANY BOOK<sub>IPSI</sub> CL: MASS=GIVE<sub>CONTRA</sub>  
 “She gave many books to Sita.”
- (26) IX<sup>SELF++</sup> IX<sup>FRONT++</sup> BOOK MANY CL: MASS=GIVE<sub>FRONT</sub>  
 “I gave many books to you.”
- (27) IX<sup>SELF++</sup> IX<sup>FRONT++</sup> BOOK MANY RED OLD MASS=GIVE<sub>FRONT</sub>  
 “I gave many red old books to you.”
- (28) MASC IX<sub>LOC: IPSI</sub> FEM-IX<sub>CONTRA</sub> COMPUTER OLD MANY<sub>IPSI</sub> CL:  
 SQUARE=GIVE<sub>CONTRA</sub>  
 “He gave many old computers to her.”

In ISL, the quantifiers *SOME* and *FEW* are articulated with the same manual parameters and with an expression (i.e., squeezed face and eye gaze) fixed at the lexical sign. However, they are two different signs, as *FEW* has an additional [expression: intensely squeezed brow]. As with the other quantifiers described so far, these two can either precede or follow the noun, as shown in the following pairs of sentences.

- (29) a. SCHOOL+SIBLING<sup>+++</sup> SOME MONEY=MORE  
 b. SOME SCHOOL+SIBLING<sup>+++</sup> MONEY=MORE  
 “Some students are rich.”

- (30) a. SCHOOL+SIBLING<sup>+++</sup> FEW POOR  
 b. FEW SCHOOL+SIBLING<sup>+++</sup> POOR  
 “Some students are poor.”

The quantifier *EVERY* is articulated with *ARC* over the referents that are included in a given set. It is interesting to note that, despite the inclusion of several referents of the given set, the verb is not in individuated aspect.

- (31) IX<sup>SELF++</sup> PERSON<sup>LOC: FRONT</sup> IX<sup>LOC: IPSI -1</sup> IX<sup>LOC: IPSI -2</sup> ARC<sup>FRONT- IPSI -2</sup> HELP  
 “I helped everyone.” (lit., I helped every person).

In other cases, such as those in example 32, the noun incorporates into *AGAIN*, which is reduplicated to quantify the noun.

- (32) FEM- S-I-T-A IX<sup>IPSI</sup> DAY=AGAIN<sup>+++</sup> WORK  
 “Sita works every day.”

The quantifier *EACH* is realized either through a reduplication of the numeral one, followed by *ARC* or through the individuated aspect.

- (33) RAM IX<sup>LOC: IPSI</sup> FACE-ARC<sup>LOC:FRONT- IPSI</sup> ONE ONE ARC<sup>FRONT- IPSI</sup> LOVE  
 “Ram loves each of them.”

- (34) IX<sup>SELF</sup> FACE-ARC<sup>LOC:FRONT- IPSI</sup> HELP<sup>SELF FRONT- IPSI</sup> [individuated]  
 “I helped each of them.”

*ALL* is a compound sign in ISL. It is composed of the fingerspelling *A* and the incorporated fingerspelling *L* in *ARC*.

- (35) RAM IX<sup>LOC: IPSI</sup> FACE-ARC<sup>LOC: FRONT- IPSI</sup> A+L=ARC<sup>FRONT- IPSI</sup> LIKE  
 “Ram likes all of them.”

Moreover, the semantics of *ALL* can also be realized via an individuated aspect (example 36).

- (36) TEACHER FACE-ARC <sup>LOC: FRONT-IPSI</sup> IX <sup>SELF++</sup> STORY ETC <sup>FRONT-IPSI</sup> GET <sup>SELF</sup>  
[distributive]

“I got data from all the teachers.”

The partitive function is carried out through the structural use of space in ISL. Consider the schematic drawings in figure 5.3.

In figure 5.3a, the sweep of ARC includes all referents in the discourse, as well as the signer. Figure 5.3b has ARC making reference to the referents alone, excluding the signer. Figures 5.3c and 5.3d show the inclusion of all the referents, including the addressee and the signer, respectively. Figure 5.3e shows the index to the addressee.

Although EVERY, EACH, and ALL are articulated with ARC, they differ from each other with respect to the modification on ARC (in the absence of aspectual modification on the verb). In EVERY, it is over the referents to be included. The numeral one is reduplicated in the case of EACH and compounded in ALL.

As mentioned earlier (p. 124), classifier doubling is further determined by the noun modifiers. Apart from the manner in which the transfer takes place, such as whether it is vertically or horizontally transferred to the recipient, adjectival modification and quantification of the noun determine the classifier handshape that is doubled in the verb. The following examples illustrate this.

- (37) FEM-IX <sup>IPSI</sup> S-I-T-A IX <sup>CONTRA</sup> MANY BOOK <sup>IPSI</sup> CL: MASS=GIVE <sup>CONTRA</sup>  
“She gave many books to Sita.”

- (38) FEM-IX <sup>IPSI</sup> S-I-T-A IX <sup>CONTRA</sup> THICK BOOK <sup>IPSI</sup> CL: THICK=GIVE <sup>CONTRA</sup>  
“She gave a thick book to Sita.”

Examples 37 and 38 show that classifier doubling applies not only to noun classifiers but also to adjectives and quantifiers, which modify nouns. In the presence of noun modifiers, then, the highest phrase modifies the noun, which is doubled in the verb (examples 39 and 40).

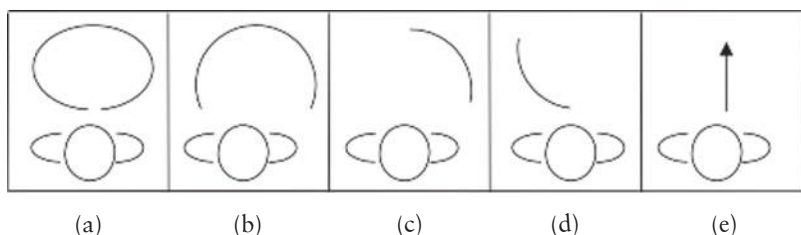
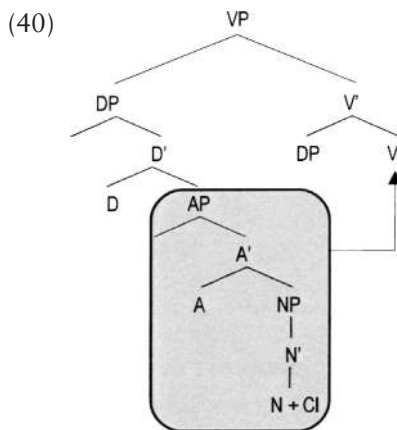
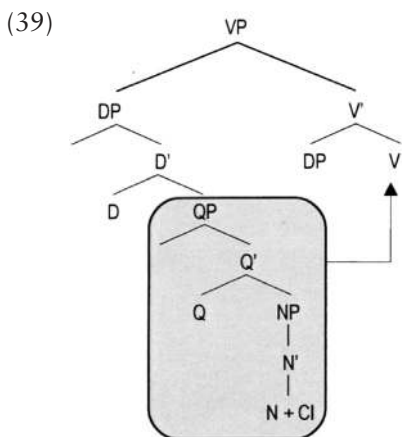


FIGURE 5.3.



### ADPOSITIONAL PHRASES

In ISL, the articulation of adpositions depends on the lexical semantics of the verb; consequently, various strategies are used for their articulation. Adpositions such as *TO*, *FROM*, and *AT*, which are inherent in the lexical semantics of the verb, are realized in the grammatical relations of the verb.

Locative adpositions such as *ON*, *IN*, *ABOVE*, *UNDER*, and so on are marked on the verb, where one of the handshapes articulates the noun and the other articulates the adposition. In example 41, *IN* and *HOUSE* are attached as a single unit (figure 5.4). Such a structure is assumed to be driven by head movement.

- rb----- hb-----  
 (41) YESTERDAY MASC-IX<sup>LOC: IPSI</sup> EAT+COOK+HOUSE=IN MILK DRINK  
 “He drank milk in the kitchen last week.”

Furthermore, such a structure may be localized, as in example 42. In addition, in ISL, adpositions are phonetically null, as the locative NP gives a sense of the location of the event with respect to the participants (example 43).

- hf-----  
 rb-----  
 (42) ROOM=IN IX<sup>LOC: IPSI</sup> S-I-T-A RAM /V/ YEAR PAST STORY WRITE  
 “Ram and Sita wrote a story in the room last year.”  
 rb-----  
 (43) STUDY+ROOM YESTERDAY MASC-IX<sup>LOC: IPSI</sup> LAUGH  
 “He laughed in the classroom yesterday.”



FIGURE 5.4. *HOUSE* and *HOUSE=IN*.

Another articulatory strategy is the articulation of the noun sign in the location of the other noun to show the spatial relation between them, with H1 and H2 used simultaneously to represent the relationship between the signs. Similarly, in some cases the locative noun phrase provides the location of the event with respect to the participants (examples 44–46).

- (44) IX<sup>SELF</sup> IX<sup>FRONT</sup> MUG<sub>SELF</sub> GIVE<sub>FRONT</sub>  
 “I gave a mug to you.”

hf----- hf----- ht-----

- (45) a. IX<sup>FRONT</sup> CL: FLAT SURFACE-TABLE CL: HANDLE-MUG<sub>FRONT</sub> CL:  
 HANDLE=PUT<sub>[CL: FLAT SURFACE-TABLE]</sub>  
 “You put a mug on the table.”

- b. IX<sup>FRONT</sup> CL: FLAT SURFACE-TABLE CL: HANDLE-MUG<sub>FRONT</sub> CL:  
 HANDLE=PUT<sub>[CL: FLAT SURFACE-TABLE: BELOW]</sub>  
 “You put a mug under the table.”

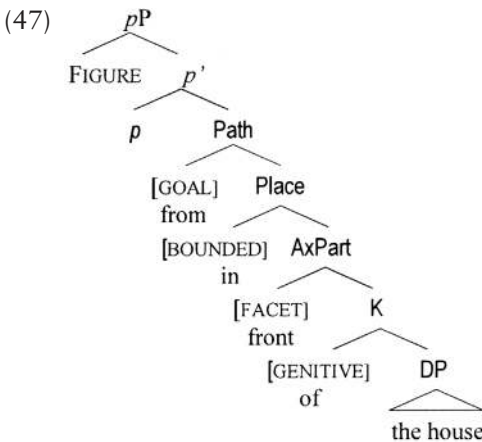
rb ----- rb-----

- (46) IX<sup>FRONT</sup> J-N-U IX<sup>LOC: CONTRA</sup> MONTH=ONE PAST SIGN TEACH  
 “You taught sign language at JNU a month ago.”

In example 44, the adposition *TO* is inherent in the lexical semantics of the verb *GIVE* and is realized by the offset of the verb’s path movement. In examples 45a–b, *TABLE* is articulated in the [location: v-h-l]. These sentences are identical in their articulation except for the fact that, in 45b, the offset location of the verb is *below* *TABLE* at the [location: v-h-l], whereas in 45a the offset is *at* the [location: v-h-l] where *TABLE* is signed. In example 46, *JNU* provides the location of the event; hence, an adposition is not found in that sentence.<sup>3</sup>

In these sentences, the use of the locative signs corresponds to the definitional properties of adpositions. Adpositions show the binary relations between entities, which Talmy (1983) labels as the Figure and the Ground: “The Figure is a moving or conceptually movable entity whose path, site, or orientation is conceived as a variable, the particular value of which is the relevant issue. The Ground is a reference entity, one that has a stationary setting relative to a reference frame, with respect to which the Figure’s path, site, or orientation is characterized” (Talmy 2000, 312, from Svenonius 2007a). Moreover, the DP complement selected by the adposition shows the spatial relation between the Figure and the Ground. Syntactically speaking, it is the adposition that selects the Ground as its complement.

To account for the linguistic encoding of space, Svenonius (2007b) deconstructs adposition (P) into several projections, from which the adposition derives its meaning. These projections are Path and Place, inspired by Jackendoff’s (1983) formulations of a distinction between Path and Place, and a trajectory of the two places and a Thing (noun) combined with a spatial adposition, respectively. Svenonius (2007b) further deconstructs Place, adding an “axial part” (hereafter, AxPart) projection, typically referring to the front, back, top, bottom, sides, and middle depending on the reference frame (Levinson 1996) as a complement of the Ground object. Furthermore, axial part takes a case marker, K (see Svenonius 2007a, 2006, for details), as its complement, which in turn selects for the Ground. Svenonius also introduces a syntactico-semantic functional head *p*, which introduces a Figure and specifies a spatial relation to a Ground. The structure of an adpositional phrase such as “from in front of the house” would thus be as in example 47:



Drawing cross-linguistic and cross-categorical comparisons with tense and determiners, Svenonius (2007b) posits null heads for the projections when no corresponding overt morpheme is present (e.g., Zapotec has a null Place head corresponding to the overt one found in Japanese). Cross-linguistic observations also show that, although some AxParts may appear with overt Place heads, others have a monomorphemic AxPart and Place (as in Yucatec Maya) or a monomorphemic AxPart, Place, and K in Zapotec corresponding to English “at the behind of.” The head of *pP* can have an overt manifestation, such as in Norwegian, or an incorporated Path, as in English (ibid., 2007a, 436). Svenonius (ibid.) argues that the given structure holds universally. In what follows, I use Svenonius’s (ibid.) proposals as the basis of my description of how different categories related to the spatial dimension are structured in a language that employs space and motion.

In ISL discourse, the narrator often plays the role of the characters in turn and narrates the event from their perspective as direct speech. To do this, the signer either orients his or her body toward the other characters’ R-locus or takes the perspective of the agent or the person who experienced the event. This phenomenon is known as role-playing (also known as role shift or referential shift) in the sign language literature. Such role-playing yokes together varying frames of reference in addition to the expected relative frame of reference; intrinsic and absolute frames of reference are also observed. This can be illustrated by considering a popular story involving a person pretending to be deaf, a police officer, and sign language.

In figures 5.5a and b, the signer alternately plays the role of a pretended deaf person, who is driving a car, and a police officer, who stops the car for speeding. Figures 5.5c and 5.5d show the classifier vehicle, which has an absolute reference frame, “front,” as shown by the forward movement of the vehicle (indicated by the arrows); the police officer’s motorbike (side) intercepts the car (front). Here, the H1 and the H2 are used simultaneously so as to represent the relationship between the motorbike and the car, respectively.

- (48) (IX LOC: IPSI) CAR CL: VEHICLE=MOVE-STOP<sub>IPSI</sub>  
 “The car stopped in front of him.”

In example 48, IX<sup>LOC: IPSI</sup> is already localized in the discursive context (indicated by parentheses). In the discourse, the space around the noun sign reflects the facets of the noun. The sign glossed as MOVE-STOP has



a distinct hold before the R-locus of the Ground, signifying that “the car stopped in front of him,” without a sign for “front,” suggesting that AxPart is not morphologically overt, and neither is K.<sup>4</sup> Another example illustrates the same phenomenon. In example 49, the palm of H2 shows the facet TOP of FLOOR (figure 5.6). Here, too, AxPart is not morphologically overt, and neither is K. Although it is evident that the space around the Ground has the same semantics of AxPart as overt morphemes do.

- (49) H1: IX<sup>SELF</sup> STAND  
 H2: FLOOR  
 “I stood.” (lit., I stood on top of the floor)

Further support for this claim comes from verbs that lack movement. In SAT, as in “She sat beside the table,” the side of the table is shown by the index to be the space beside the table. But it would instead mean literally that “she sat there (at the side of the table).” This shows that space around the Ground DP is used as an AxPart, as discussed earlier. Similarly, example 50 shows the absence of an overt Place head.

- (50) H1: MASC-IX<sup>LOC: IPSI</sup> CAR CL: VEHICLE=MOVE  
 H2: BRIDGE  
 “He drove the car under the bridge.”

In example 50, H2 is maintained until H1 articulates the sign that follows it. In the absence of the immediate precedence, it passes through the localized BRIDGE to indicate that the CAR passed under the BRIDGE. This case, too, shows that space around a noun sign is utilized, suggesting that Place is semantically present but morphologically empty.



FIGURE 5.5.



FIGURE 5.6. *STAND*.

Similarly, in the case of an overt adposition that incorporates post-nominally with the Ground, as in example 51, the sign is articulated with both the hands, as shown in figure 5.7.

- rb-----  
 (51) ROOM=INSIDE YESTERDAY MASC-IX<sup>LOC: IPSI</sup> LAUGH  
 “He laughed inside the room.”

H1 is a relational noun similar to “front” in “the front of” in English, showing the “part” sense of the ROOM (for fuller discussion of AxPart vs. relational noun see Svenonius 2006). H2 shows the spatial relationship with reference to the ROOM. Here, too, we find that space is used to show the relationship between two binary elements. Therefore, H1 is a DP rather than an AxPart, and H2 shows its relation to H1 as in example 49. In this case, too, the Place head is morphologically empty but has semantic content.

## ISL SENTENCE STRUCTURE AND GRAMMATICAL RELATIONS

### Verb Agreement

In sign languages (see Mathur 2000), verbs basically fall into two classes: verb signs whose directional movement or spatial displacement takes place with respect to the arguments of the verb, and verbs that do not. The onset and the offset of the verb’s path movement between its arguments are referred to as “verb agreement” in the sign language literature. Following Padden’s (1988) typology of verbs, verbs fall into the following three classes (summarized with examples from ISL):<sup>5</sup>



FIGURE 5.7. *Left, ROOM; right, INSIDE.*

### *i. Plain Verbs*

Verbs that do not inflect for agreement are called plain verbs. The form of the verb is not determined by the referential features of its arguments.

- (52) YESTERDAY IX<sup>FRONT</sup> RUN  
 “You ran yesterday.”

### *ii. Agreement Verbs*

Verbs that agree with their subject and object.<sup>6</sup> The agreement verbs are further divided into two groups that differ on the basis of the linear ordering of the agreement affixes.

- a. *Regular verbs*: The onset of the sign marks the subject, and the offset marks the object.

- (53) PAST IX<sup>SELF</sup> S-I-T-A IX<sup>LOC: IPSI</sup> BOOK<sub>SELF</sub> GIVE<sub>IPSI</sub>  
 “I gave a book to Sita.”

- b. *Backward verbs*: The offset of the sign marks the subject, and the onset marks the object.

- hf----- hf-----  
 (54) PAST IX<sup>FRONT++</sup> IX<sup>SELF++</sup> BOOK<sub>SELF</sub> GET<sub>FRONT</sub>  
 “You got a book from me.”

### *iii. Spatial Verbs*

These verbs agree with the spatial referents (i.e., locations). The onset and the offset of the sign are associated with the actual locations: the source of motion and the goal of motion, respectively.

(55) CL: HANDLE-BAG CL: HANDLE-BOX FRONT R-A-M IX LOC: CONTRA

CONTRA PUT FRONT

“Ram puts a bag in a box.”

The preceding discussion shows that verb agreement is not a property of verbs in general but of a subset. The lexical-semantic structure of the verb determines whether or not it inflects for agreement (Meir 1998). The agreement and the spatial verb denote transfer of concrete or abstract and of motion from one location to another, respectively. The plain verb denotes neither transfer nor motion; therefore, it lacks an onset and an offset.

Since verb agreement phenomena are widely attested in all sign languages, various analyses are available. I next discuss some of these approaches before formulating my own.

#### VERB AGREEMENT: APPROACHES

Stokoe, Casterline, and Croneberg (1965) analyze onset and offset as a verbal inflection for personal reference. Klima and Bellugi (1979) and Padden (1983/1988) refer to this inflectional process as an indexical reference to 1P, 2P, and 3P. Meier (1982) argues that the morphemes inside the verb are its arguments and that they are manifested in various phonological manifestations of agreement.

Following Lacy (1974), Lillo-Martin and Klima (1990), and others analyze the R-locus as a variable that appears cliticized to the verb and derives its content from the discourse. Along similar lines, Kegl (1986) claims that ASL is a *pro-drop* language. She argues that a role-prominence proclitic licenses the empty subject position and that a classifier proclitic coindexed with NPs bearing theta roles (other than theme) absorbs the objective case, with the result that the object NP is a nonargument topic. On the other hand, Lillo-Martin (1986) claims that null subjects of agreeing and nonagreeing verbs in ASL are *pro*, sanctioned by the presence of overt verb-agreement morphology and interpreted as variables licensed by a topic (lexically or null), respectively.

Mathur (2000), adopting the distributed morphology framework, analyzes verb agreement as alignment, a phonological operation or process of readjustment available in the grammar of sign language. Rathmann and Mathur (2005), focusing on a class of agreeing verb in ASL, German Sign Language, and Japanese Sign Language, find that

nonfirst person and singular are unmarked in these languages and that person and number features may be left unexpressed. They argue that these unexpressed features constitute a case of syncretism and suggest that sign language syncretism is oriented toward the unmarked. Aronoff, Meir, and Sandler (2005) argue that verb agreement in sign language is determined by the phonological form rather than by the morphosyntactic categories. They maintain that the various manifestations of verb agreement in sign languages is an instance of literal alliterative agreement, as found in the Wolof, Arapesh, and Bainouk languages. Bahan (1996) and Neidle et al. (2000) explore the nonmanual manifestation of agreement in ASL and argue that eye gaze and head tilt express agreement with the object and the subject, respectively, irrespective of verb typology. However, Thompson and Emmorey (2003), by means of an eye-tracking experiment, show that this is not always the case.

The semantic approach of Friedman (1975), Shepard-Kegl (1985), and Bos (1998) avers that affixation on the verb is determined by the spatial thematic role of the arguments. Wilbur (1979) suggests that verb agreement is the strongest cue for grammatical relations. The path movement of the verb is from source to goal, which consequently blurs the distinction between the regular and the backward verbs. Janis (1992, 1995) draws the class membership of verbs from a hierarchy of controller features (where the controller is the nominal with which the verb agrees). Her three-tier hierarchy is based on case, grammatical relations, and semantic relations. Meir (2002) focuses on the differences among the agreeing elements and the restrictions that modality imposes on the structure of the lexicon. She assumes within Israeli Sign Language a three-tier semantic structure of the onset its syntactic argument-taking properties, and its phonological form. She maintains that verb agreement in Israeli Sign Language has the same characteristics as verb agreement in spoken language.<sup>7</sup> Meir also argues that the lexical-semantic structure of SL verbs determines whether they inflect for agreement. She further claims, adopting Jackendoff's lexical conceptual structure (1987, 1990), that agreement is not a property of verbs per se but of spatial predicates.

To sum up, in the syntactic approach, the offset and the onset of agreement verbs, as well as eye gaze and head tilt in plain-verb construction, realize the agreement of the verb with its subject and object. On the other hand, the semantic approach considers the phenomenon as encoding

theta relations. In my analysis I choose the latter approach, but before that I describe the ISL agreement facts.

#### VERB AGREEMENT IN ISL: DESCRIPTION AND ANALYSIS

In ISL, the following are the manifestations of verb agreement with respect to the one-handed and the two-handed signs (see Mathur 2000).

*i. Change in direction of path movement*

The direction of the verb's path movement changes, while other formational parameters remain the same as those in the citation form of the verb. The onset and the offset are interchanged.

*ii. Change in orientation*

The orientation of the verb sign changes so that the palm faces the object locus. No change takes place in the direction of the path movement.

*iii. Change in direction of path movement and orientation*

This phonological manifestation involves a combination of the aforementioned two manifestations. The verb changes not only its direction of path movement but also its orientation, so that the palm faces the object locus.

*iv. Change in direction of path movement and orientation in two-handed signs*

This phonological manifestation occurs in some two-handed signs. Both the H1 and the H2 change the direction of path movement and the orientation. Moreover, the two hands change their position relative to the body.

*v. Change in orientation in two-handed signs*

This phonological manifestation is the same as the preceding change except that there is no direction of path movement from one locus to another. The two hands change their orientation, and the palm of the H1 faces the object locus.

This phonological manifestation of verb agreement in ISL is schematized in table 5.1.

Mathew and Sinha (2005) adopt “agree” as a syntactic concept (i.e., the matching/valuing of phi features; Chomsky 2001) and examine the case-agreement system in ISL. As ISL does not exhibit any evidence of gender or number agreement with the verb, these features do not exist

as uninterpretable features in the language. Since ISL lacks a syntactically relevant  $\phi$ -feature set of person, number, and gender, they argue that person, number, and gender are ISL morphological-semantic categories that do not have any syntactic implications. Mathew and Sinha regard the phenomenon as purely an encoding of theta relations and argue that the marking of the goal argument in these constructions is a strategy for delimiting an event (Tenny 1989).

Under this analysis, the following observations about ISL are relevant.

*Lack of Phi Features*

On p. 101 I argue that the R-locus does not have any phi features on the basis of which pronouns can be identified and distinguished from nouns. In the absence of localization and in the case of a mobile referent (see examples 1–3 in chapter 4), an index is substituted by an R-expression. We have seen that an index to the R-locus refers to the definiteness of the noun previously localized. Consequently, the onset and offset of the verb do not exhibit any evidence for person, gender, or number agreement with the verb, as shown in example 56.

- (56) PAST S-I-T-A IX<sup>LOC:IPSI</sup> MASC-IX<sup>LOC:CONTRA</sup> BOOK<sub>IPSI</sub> GIVE<sub>CONTRA</sub>.  
 IX<sup>CONTRA</sup> BOOK= READ.  
 “Sita gave a book to a boy. The boy read it.”

TABLE 5.1. *The Phonological Manifestations of the Agreement and Handedness.*

Category	Type 0: One-Handed	Type 1: Two-Handed Symmetric	Type 2: Two-Handed Asymmetric
Change in direction of path movement	CLIMB COME GO MOVE SHIFT WALK	EXCHANGE GIVE GOSSIP INVITE LEND MEET	HELP
Change in orientation	TEACH		
Change direction of path movement and orientation	BRING BUY GET HATE PAY	CRITICIZE INVITE WELCOME	QUESTION

### *Agreement Is Optional*

In addition, the onset of the verb can be dropped if the subject noun associated with it is topicalized or is a discourse topic (see p. 164). In other instances, both the onset and the offset are dropped when the relative position of the nouns, along with animacy, determines the relationship with the verb. In the following sentences, RAM is topicalized and is associated with the [expression: rb].

- rb----
- (57) a. RAM S-I-T-A BOOK<sub>SELF</sub> GIVE<sub>FRONT</sub>
- rb-----
- b. R-A-M BOOK S-I-T-A<sub>SELF</sub> GIVE<sub>FRONT</sub>
- c. S-I-T-A BOOK<sub>SELF</sub> GIVE<sub>FRONT</sub>
- “Ram gave a book to Sita.”

In examples 57a–b, the topicalized element is accompanied by the [expression: rb]. In example 57c, the topicalized element is elided due to topic chaining. In all of these sentences, the onset of the verb is from the signer’s locus rather than from that of the topicalized element, which was previously localized. These facts suggest that subject agreement is optional with subject topicalization in ISL.

### *Argument Drop*

In discourse, overt arguments of the verb can be elided as well. The onset and the offset of the verb’s path movement can determine its arguments.

- (58) IPSI<sub>HELP</sub> CONTRA
- “Ram helps Sita.”

### *Adjunct*

In spatial verbs, the offset or the onset marks not only arguments but adjuncts as well, particularly those adjuncts that delimit the event.<sup>8</sup>

- hf-----
- (59) R-A-M IX<sub>LOC: IPSI</sub> FLOWER+CL: FLAT SURFACE IX<sub>LOC: CONTRA</sub>
- IPSI<sub>WALK</sub> CONTRA
- “Ram walks to the garden.”



### Deletion in *Wh*-Questions

In content *wh*-subjects and *wh*-object questions, the verb is in the citation form.

- (60) a. S-I-T-A IX<sup>LOC: IPSI</sup> R-A-M IX<sup>LOC: CONTRA</sup> <sup>IPSI</sup>HELP<sup>CONTRA</sup>  
 “Sita helps Ram.”
- b. S-I-T-A IX<sup>LOC: IPSI</sup> <sup>IPSI</sup>HELP<sup>FRONT</sup> FACE-WH  
 “Whom did Sita help?”
- c. R-A-M IX<sup>LOC: IPSI</sup> <sup>SELF</sup>HELP<sup>FRONT</sup> FACE-WH  
 “Who helped Ram?”

Example 60a is a declarative sentence, where the verb’s onset and offset mark the subject and object, respectively. In example 60b, with a *wh*-object, although the onset may be associated with the subject, the offset is as in its citation form. This is in sharp contrast to a *wh*-subject question (example 60c), where the onset and the offset do not indicate agreement; hence, the verb of the question sentence is manifested in its citation form. However, in a *wh*-adjunct question, all of the overt NPs are as expected, and the onset and/or the offset is shown on the verb, as in example 61.

- hf-----  
 bf-----
- (61) IX<sup>LOC: CONTRA</sup> IX<sup>FRONT</sup> IX<sup>LOC: IPSI</sup> IX<sup>LOC: IPSI-2</sup> PEN FEM- S-I-T-A IX<sup>LOC: IPSI -3</sup>  
<sup>FRONT</sup>GIVE<sup>IPSI</sup> WH  
 “Which pen did you give to Sita?”

With respect to eye gaze as a possible agreement marker, I follow Liddell and Metzger (1998), who observe that in spoken language, the direction of the speaker’s face or eye gaze makes the addressee’s identity clear among the potential addressees. In the tactile communication of a deaf-blind person, facing and/or eye-gaze fixation is also observed, as it is in home sign systems (Casey 1999). Therefore, it seems to be a general property of communication to make the communicative content and intent clear.

These observations show that the phenomenon under discussion is not an instance of verb agreement.<sup>9</sup> Rather, the onset and the offset of the verb’s path movement mark theta roles. Table 5.2 summarizes the onset and the offset of theta roles of ISL verbs.

In body-anchored verbs, such as SEE and TELL, ISL employs other mechanisms to mark such relations. SEE is a body-anchored verb, where the onset marks the subject locus. The object locus is marked with the addition of the direction of path movement in the verb stem, with all other formational parameters of its citation form intact. I refer to this articulatory mechanism *appendage* (see figure 5.8) and this specific case as an instance of *offset appendage*.

TELL is also a body-anchored verb in ISL. In its citation form it is articulated in contact with the signer's lips, with the palm facing the signer, and a path movement toward the addressee. However, with a localized R-expression, the verb is articulated as in the citation form, but the offset marks the object. Nevertheless, TELL can be modulated to show agreement despite being a body-anchored verb in its citation form. This

TABLE 5.2. *The Onset and the Offset of Verb's Theta Roles in ISL.*

Θ-Roles	Onset	Offset
Agent	Θ (Regular)	Θ (Backward)
Patient	Θ (Backward)	Θ (Regular)
Beneficiary	Θ	
Experiencer	Θ	
Theme	-	Θ
Location	Θ	Θ
Instrumental	-	-
Source	Θ	
Goal		Θ



FIGURE 5.8. *Left, onset; right, offset and offset appendage.*

is carried out by role-playing, which I analyze as an instance of onset appendage.

- bf-----
- (62) RAM IX<sup>LOC: IPSI</sup> FACE-ARC<sup>LOC: CONTRA</sup> STORY TELL<sub>CONTRA</sub>  
 “Ram tells them a story.”
- hf----- bf----- hf-----
- rb----- rb-----
- (63) IX<sup>FRONT</sup> MASC-IX<sup>LOC: IPSI</sup> TELL<sub>FRONT</sub><sup>IPSI</sup> MASC-IX<sup>LOC: IPSI-2</sup> SICK  
 “You told him<sub>i</sub> that he<sub>j</sub> is sick.”

In addition to appendage, ISL employs what I call *aphesis*, by which the onset or offset is muted. For example, GIVE is an agreement verb that marks both the subject and the object locus; however, the onset is always optional (cross-linguistically)—an instance of onset aphasis. Thus, there are two ways of signing “Ram gave a book to Sita,” as shown in example 64 and in the two figures. The aphasis is assumed to be permitted by topicalization associated with the [expression: rb], as in example 64b.

- bf----- bf-----
- (64) a. FEM-S-I-T-A IX<sup>LOC: IPSI</sup> RAM IX<sup>LOC: CONTRA</sup> BOOK<sup>++</sup> THREE<sub>IPSI</sub> GIVE<sub>CONTRA</sub>  
 rb-----
- b. FEM-S-I-T-A IX<sup>LOC: IPSI</sup> RAM<sub>IXLOC: CONTRA</sub> BOOK THREE<sub>SELF</sub> GIVE<sub>CONTRA</sub>  
 “Sita gave three books to Ram.”



FIGURE 5.9. *Left, onset appendage; right, offset.*

In addition to these two mechanisms, some sign languages allow another strategy of agreement with plain verbs, which the sign language literature refers to as a person agreement marker (PAM) (Rathmann 2000), AUX (Smith 1990; Fischer 1996), or auxiliary verb (Bos 1994 for Sign Language of the Netherlands). In general, it is known as an auxiliary mechanism. In ISL, it is a sign similar to GO in clause-final position, as in example 65. Since ISL does not utilize person and agreement, the phenomenon is referred to as *appendix* and is transcribed as DIR (figure 5.11).

- ht: CONTRA-----  
 hf-----  
 (65) a. PLANT+ CIRCLE IX<sup>LOC: IPSI</sup> IX<sup>SELF</sup> RUN<sub>SELF</sub> DIR<sub>IPSI</sub>  
 “I ran to the park.”

These facts lead me to conclude that the underlying form of the ISL verb is composed of the direction of the path movement; that is, every verb, including plain verbs, is specified for onset and offset marking. Agreement, appendage, aphasis, and appendix are the mechanisms that operate on the possible manifestations of this deep property.

Considering these observations taken from the sign language literature and the ISL data, I maintain that the phenomenon of verb agreement is actually a relation between the onset and the offset of the path component of the verb and that it encodes theta relations. In the absence of a path component in the verbs (as in the case of plain verbs), this encoding is done by appendage, aphasis, and appendix. In my analysis, in instances of appendage, aphasis, and appendix, the onset and offset of verbs are added in the PF component.



FIGURE 5.10. Left, onset; center, onset aphasis; right, offset.

Although this proposal is not novel in sign language linguistics, it nonetheless differs significantly from earlier ones, most particularly that of Shepard-Kegl (1985). Shepard-Kegl argues that in ASL “the simple verb stems all take one argument which can simply be characterized as LOC” (ibid., 454). She also maintains that the “clause as a whole assigns” another argument—a structural function “tied into a complex metaphysical system hooked up to the conceptual system encoded in lexical semantics, particularly the lexical semantics of verbs” (ibid.). In my proposal, the onset and the offset of the path component of the verb encode theta relations, and the manifestation of the same is subjected to the PF component rather than to the metaphysical system.

### Negation Phrases

Negation in ISL is either manually signed (as in examples 66b–f) and/or indicated by a headshake (as in example 66a), which does not spread



FIGURE 5.11. *DIR*.

TABLE 5.3. *Verb and Its Mechanisms for Marking.*

Underlying Form		Phenomenon					
Onset	Offset	Appendage		Aphesis		Appendix	
		ONSET	OFFSET	ONSET	OFFSET	ONSET	OFFSET
TELL, SEE, GIVE, LIKE		ONSET	OFFSET	ONSET	OFFSET	ONSET	OFFSET
		TELL	SEE	GIVE	-----	DIR	

over other signs and is optional even with the negation. Although the headshake is optional with manual negators, it suffices to negate the proposition. Negation may also incorporate into the “Force head” in Rizzi’s (1997) deconstructed left periphery, resulting in a negative imperative. The position of negation is strictly postverbal. The following data exemplify the positional behavior of negation in ISL.

hs--

(66) a. UNDERSTAND

“I did not understand.”

b. BEAT NEG-IMP

“Don’t beat me!” (adapted from Zeshan 2000, 95)

c. DOG MASC-IX <sup>LOC: IPSI</sup> LIKE NOT

“He does not like dog.”

d. DHARMESH UDAY SEE<sup>IPSI</sup> ASP <sup>[perfect]</sup> NOT

“Dharmesh has not seen Uday.”

e. FEM-IX <sup>LOC: IPSI</sup> YESTERDAY CRY <sup>[continuative]</sup> NOT

“She was not crying yesterday.”

f. MASC-IX <sup>LOC: IPSI</sup> HOME GO WANT NOT

“He does not want to go home.”

g. FACE+FINE <sup>[intense]</sup> DANCE NOT FACE+WH

h. DANCE FACE+FINE <sup>[intense]</sup> NOT FACE+WH

“Who did not dance beautifully?”

Apart from the clause-final occurrence, negation also occurs in the clause-initial position in reply to the request. Such negatives are instances of what is called *supplicative negation* in the ISL literature. Consider the following question and answer:

(67) Request: Would you like to drink tea?

Answer: NO, IX<sup>SELF</sup> TEA=DRINK NOT

“No, I don’t drink tea.”

The negative element is often associated with a distinct facial expression: pursed lips, with the lower lip pushed slightly forward, forming

philtral lines on the face (figure 5.12). This expression is glossed as neg(ative) face in the text.

The following observations of neg face are recorded in ISL.

- hs---  
neg face----
- (68) a. IX<sup>SELF ++</sup> YESTERDAY RUN NOT  
“I did not run yesterday.”
- rb----- neg face-----
- b. IX<sup>FRONT</sup> SHARAD IX<sup>LOC: IPSI</sup><sub>FRONT</sub> SEND=LETTER<sub>IPSI</sub> NOT  
“You did not send a letter to Sharad.”
- hs--  
rb----- neg face-----
- c. ENGLISH SHARAD UNDERSTAND NOT  
“Sharad does not understand English.”
- hs--  
neg face-----
- d. <sub>FRONT</sub>HELP<sub>SELF</sub> NOT  
“You did not help me.”

### Tense Phrase

ISL lacks infinitives altogether.<sup>10</sup> There is no distinct sign or marker to indicate a [–Tense] category. The finite verbs belong to two groups on the basis of their phonological realization: overt and not overt. The latter



FIGURE 5.12. *Neg face.*

group is phonologically null and is found in copular constructions and verbs of inherent possession.

- (69) YESTERDAY IX<sup>SELF</sup> ANGRY

“I was angry.”

e.g.: IPSI

- (70) MASC-IX<sup>LOC: IPSI</sup> CLEVER

“He is clever.”

- (71) RED BOOK IX<sup>LOC: IPSI</sup> OLD

“A/the red book is old.”

- (72) IX<sup>SELF</sup> YOUNGER=SIBLING THREE

“I have three younger brothers.”

Although clauses in ISL do not require an overt tense marker, semantic tense is always present. The present tense need not be marked morphologically unless it is needed for emphasis or contrast. The past and the future references are made either lexically or through the use of NP adverbs of time (which incorporate into tense).<sup>11</sup>

In discourse, once the temporal reference is established, all subsequent sentences refer to that period of time until a new time reference is established. In other words, ISL is a tense-neutralization language. Wherever it occurs in ISL, tense is always preverbal and usually appears in a clause initially. In some discourse contexts, however, it may appear after either the NP subject or the NP objects. The surface position of tense in ISL is shown in example 73 in boldface.

- (73) a. TENSE RAM IX<sup>CONTRA</sup> S-I-T-A IX<sup>LOC: IPSI</sup> BOOK<sup>CONTRA</sup> GIVE<sup>IPSI</sup>  
[T SUB IO DO V]  
b. RAM IX<sup>CONTRA</sup> TENSE S-I-T-A IX<sup>LOC: IPSI</sup> BOOK<sup>CONTRA</sup> GIVE<sup>IPSI</sup>  
[SUB T IO DO V]  
c. RAM IX<sup>CONTRA</sup> S-I-T-A IX<sup>LOC: IPSI</sup> TENSE BOOK<sup>CONTRA</sup> GIVE<sup>IPSI</sup>  
[SUB IO T DO V]  
d. RAM IX<sup>CONTRA</sup> S-I-T-A IX<sup>LOC: IPSI</sup> BOOK TENSE<sup>CONTRA</sup> GIVE<sup>IPSI</sup>  
[SUB IO DO T V]  
e. \*RAM IX<sup>CONTRA</sup> S-I-T-A IX<sup>LOC: IPSI</sup> BOOK<sup>CONTRA</sup> GIVE<sup>IPSI</sup> TENSE  
\*[SUB IO DO V T]  
“Ram gave a book to Sita.”



## Aspect and Adverb (Manner) Phrase

The perfect aspect and the reciprocal aspect can each appear as an independent sign. On p. 111 I mention that the perfect aspect either cliticizes to the verb or follows it, as shown in example 74. The latter is also true of the reciprocal aspect.

- (74) a. MASC-IX <sup>LOC: IPSI</sup> GO <sub>CONTRA</sub> <sup>[perfect]</sup>  
 “He (just now) went.”
- b. MASC-IX <sup>LOC: IPSI</sup> EAT RECP-ASP <sup>[perfect]</sup>  
 “He has (just now) eaten.”

This leads us to conclude that the aspect follows the verb in the surface order. Similarly, in ISL, lexically overt manner adverbs can be either preverbal or postverbal. Example 75 shows its position vis-à-vis the verb.

- (75) a. FACE+FINE <sup>[intense]</sup> DANCE FACE+WH  
 b. DANCE FACE+FINE <sup>[intense]</sup> FACE+WH  
 “Who danced beautifully?”

In addition, adverbs are associated with an [expression: vertical stretching of the upper lip], glossed as *adv(erb) face* (figure 5.13). *Adv face* is either over the adverb alone or over the preceding constituent(s) of the VP.

- rb----- *adv face*-----
- (76) a. FEM IX <sup>LOC: IPSI</sup> DANCE FACE+FINE  
 “She danced beautifully.”
- rb----- *adv face*----
- b. FEM IX <sup>LOC: IPSI</sup> FACE+FINE DANCE <sup>[perfect]</sup>  
 “She has danced beautifully.”



FIGURE 5.13. *Adv face*.

On p. 127 I note that aspect and the manner adverb mark onto the manner component of the verb, changing its citation form.

### Interrogatives

ISL *wh*-questions are strictly clause final. An ISL *wh*-sign is a composite of a noun and a sign, generally labeled as *wh*-sign/particle in association with an expression. In this book, I refer to this *wh*-sign/particle as the C-particle<sup>12</sup> and the expression as the Q-particle. An ISL *wh*-sign thus consists of a noun, a C-particle, and a Q-particle. Of these, the noun can be dropped when the meaning of the *wh*-question is recoverable. This shows that the C-particle and the Q-particle suffice to form a *wh*-question.

The C-particle is primarily a double-handed symmetric sign, as seen in HOW (figure 5.14a), and often undergoes weak drop, resulting in a one-handed sign (figures 5.14b and 5.14c). The suppletive form of the C-particle is seen in diurnal WHEN, which differs from other *wh*-questions in its manual articulation, as well as in the expression shown in figure 5.14d.

Unlike the C-particle, the Q-particle is not a manual sign but an expression. The basic expression associated with it is the relative chin up from the immediate sign (figure 5.14e). The Q-particle also appears

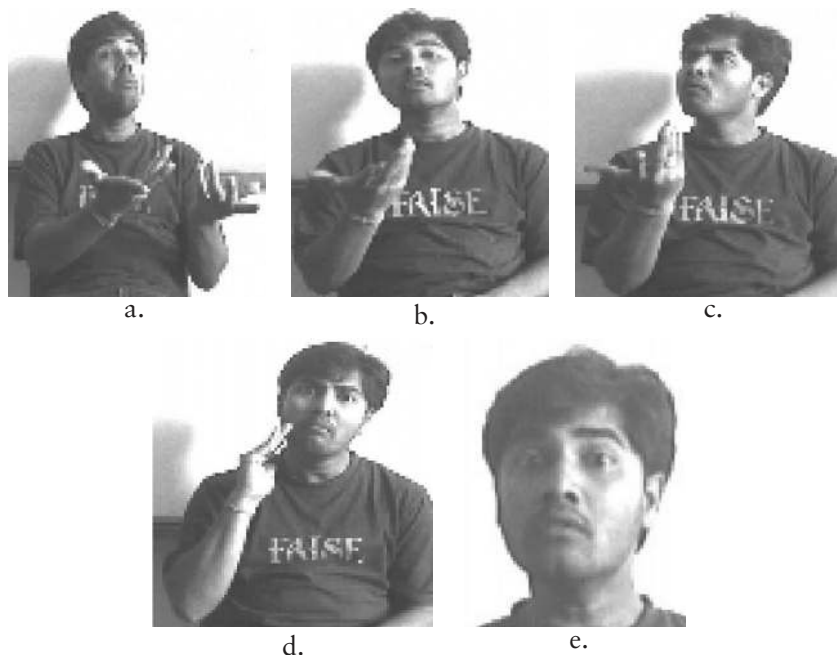


FIGURE 5.14.

in yes/no questions and serves to distinguish interrogatives from declaratives. The following sentences show the difference between the two and a *wh*-question.

- (77) a. MOTHER SLEEP  
 “Mother is sleeping.” (declarative)  
 q-----  
 b. MOTHER SLEEP  
 “Is mother sleeping?” (yes/no question)  
 q-----  
 c. IX<sup>FRONT</sup> TEA, IX<sup>FRONT</sup>  
 “Would you like to have tea, would you?” (tag question)  
 q-----  
 (78) a. IX<sup>FRONT</sup> NAME C-PARTICLE  
 “What is your name?” (*wh*-question)  
 q-----  
 b. IX<sup>IPSI</sup> LIKE FACE+C-PARTICLE  
 “Whom does the boy like?” (*wh*-question)

Aboh, Pfau, and Zeshan (2005) claim that ISL (their IndSL) is a verb-final language in which the question particle follows the verb. Their claim for a split *wh*- is based on their data, which show that composite phrasal expressions such as PLACE + G-WH for “where” (G-WH stands for general *wh*-) can be separated as PLACE and G-WH. Following Neidle et al. (2000), they assume that ISL nonmanual *wh*-marking is associated with the [+wh] feature in C. They suggest that, in ISL, G-WH is a question particle that always appears in the clause-final position, either with or without an associate phrase, while the associated phrase remains in situ. Aboh, Pfau, and Zeshan (2005, 40n11) also claim the existence of a split *wh*- in ISL. This phenomenon, however, is not instantiated in my corpus. In contrast to other sign languages, ISL has minimal *wh*-sign paradigms and no doubling of the *wh*-sign.

## Conditionals

ISL does not employ an overt lexical sign to mark a clause as a conditional. However, in many cases, the conditional clause begins with

the fingerspelling I-F, and the result clause follows. The articulation of T-H-E-N is rare. An expression of raised brow and head forward commonly accompanies the final sign of the conditional clause. Moreover, a brief pause occurs at the clause boundary before the main clause. Together, these are considered to be a conditional expression (glossed as COND). To distinguish the main clause from the conditional clause in ISL, the former is often marked with head back, while the latter may be marked with head forward. Thus, the pause and these expressions clearly distinguish the two clauses of a single sentence.

- cond--      rb----- hb-----
- (79) a. SIBAJI COME, UDAY OFFICE GO <sup>[m: perfect]</sup>  
 “If Sibaji comes, Uday will go to the office.”
- hf---  
 rb--- cond--- hb-----
- b. TEA READY, INDEX<sup>SELF X2</sup> TEA=DRINK  
 “If the tea is ready, I will drink it.”
- hf----      hb-----
- rb---- cond--      neg face-
- c. RAIN HAVE, INDEX<sup>SELF X2</sup> SCHOOL GO NOT  
 “If it rains, I will not go to school.”

It is interesting to note that FOR in a *for*-clause is in fact a C-particle, which I mentioned earlier in relation to the *wh*-question. The *for*-clause in ISL is strictly postverbal, as shown in example 80.



FIGURE 5.15. *Cond.*

- (80) a. HOUSE IX<sup>SELF</sup> BUILD IX<sup>LOC; CONTRA</sup> C-PARTICLE IX<sup>SELF</sup> WOMAN+MARRY  
 “I built the house for my wife.”
- b. UDAY<sup>SELF</sup> SAY<sup>FRONT</sup> [perfect] SIBAJI IX<sup>LOC; IPSI</sup> MOBILE<sup>CONTRA</sup> BUY<sup>IPSI</sup>  
 C-PARTICLE RITU  
 “Uday said that Sibaji bought a cell phone for Ritu.”

## INFORMATION STRUCTURE PACKAGING: TOPIC AND FOCUS

There is general agreement that the different linear orders of the same base sentence are determined by the information structure packaging of the sentence. However, Erteschik-Shir (2007) shows that the basic information structure notions—topic and focus—are realized in a variety of phenomena cross-linguistically. Using various descriptive labels, she describes a number of phenomena connected to topic-hood and focus. Here, using Erteschik-Shir’s labels, I first describe the diverse inventories of topic and their properties in ISL. This is followed by an analysis of the information packaging structure in ISL, using the file-card metaphor of Vallduví’s (1992) distinction of sentences into Focus and Ground.

First, ISL marks pragmatic salience in either or both of two ways: intonation and/or structure. In the former, the overt elements are associated with an expression, whereas, in the latter, elements are either scrambled (with or without an accompanying expression) or undergo the elision of certain elements.

As in most other natural languages, the subject of an ISL sentence tends to also be its topic. In many cases, this subject may continue to be the topic of the following sentences. This instance of topic-hood is called “topic chaining” (Erteschik-Shir 2007, 2). In ISL, topic chaining is carried out by either localization or repetition. With localization, an indexing of the R-locus of the established referent suffices to mark the topic chain in the subsequent sentence. Repetition, which involves a later articulation of a referent, takes place in the absence of an R-locus. The following examples show (in boldface) both of these topic-chaining strategies as an information structure inventory in ISL.

- (81) a. IX<sup>SELF</sup> PAST<sup>[remote]</sup> SCHOOL I-O PASS. IX<sup>SELF</sup> HOME REST . . .  
 “A long time ago, I passed class X. I stay at home . . .”
- b. MASC-IX<sup>LOC; IPSI</sup> OFFICE GO NOT. IX<sup>IPSI</sup> FUT MARKET GO.  
 “He did not go to the office. He will go to the market.”

In example 81a, IX<sup>SELF</sup> is the subject, as well as the topic, of the sentence. The topic of the following sentence is the same: IX<sup>SELF</sup> (also indicated in boldface). A similar strategy is used for topic marking (example 81b).

Another strategy of topic formation, Erteschik-Shir points out, is that of “focus chaining” (ibid., 3), by which a new topic (shown in boldface) is derived from the focus (underlined) of the previous sentence.

- (82) TODAY INDIA CRICKET LOSS. U-K WIN. U-K STRONG BAT.  
 “Today, India lost (a cricket (match)). England won (the match).  
 England has a strong batting lineup.”

In example 82, “U-K WIN” is an all-focus sentence. In the following sentence, “U-K” is the new topic, which is derived from the previous all-focus sentence. Similarly, in ISL, topics may also be derived from a “hypertheme” (underlined) introduced in the previous sentence, which involves a set of discourse-restricted elements. Erteschik-Shir (2007) calls these “derived topics.” To illustrate a case in example 83, a “hypertheme” (i.e., BORN FOUR) includes “siblings” (in that particular discourse), and in the following sentences, “siblings”—HEARING BROTHER and HEARING SISTER—are topics derived from the hypertheme.

- (83) IX<sup>SELF</sup> FATHER+MOTHER BOTH BORN FOUR. HEARING BROTHER  
 FIRST. SISTER HEARING SECOND. DEAF SISTER THIRD. IX<sup>SELF</sup> FOURTH.  
 “My parents have four children. First, a hearing brother. Second,  
 a hearing sister. Third, a deaf sister. I am the fourth.”

Once a topic is established in a discursive context, it is usually elided in the following sentences, as the omitted information is recoverable from the context. This phenomenon is labeled topic drop (ibid., 23). In example 84a, IX<sup>SELF</sup> is the topic; however, it is elided in the following sentence. In such cases in ISL, the onset of the verb agreement that marks the topic referent is optional. Consequently, the onset and the offset of the agreement verb are from or toward the signer rather than the topic referent (example 84b).

- (84) a. IX<sup>SELF</sup> MASC FRIEND MANY HAVE. FEM FRIEND MANY HAVE.  
 “I have many male friends. (I) have many female friends.”  
 b. GOPAL BOMBAY STAY . . . PAST BANK WORK . . . DHARMESH  
 BOOK <sub>SELF</sub> GIVE<sub>FRONT</sub> . . .  
 “Gopal stays in Bombay (Mumbai)... (He) worked in a bank  
 (in the past) . . .  
 (He) gave a book to Dharmesh.”

In addition, in ISL, the focus chaining can undergo topic drop, as in the following discourse:

- (85) IX<sup>SELF</sup> DELHI IX<sup>LOC: DOWN</sup> J-O-B GET . . . IX<sup>SELF</sup> SISTER=ELDER HAVE.  
HOME STAY.

“I got a job in Delhi . . . I have an elder sister. (She) stays at home.”

In example 85, IX<sup>SELF</sup> is the topic of the sentence, and SISTER=ELDER HAVE is the focus of the following sentence. In the subsequent sentence, IX<sup>SELF</sup> is not the topic. A new topic is established from the focus of the previous sentence (i.e., SISTER=ELDER). Interestingly, the following all-focus sentence is not about IX<sup>SELF</sup> but about SISTER=ELDER, which has undergone topic drop.

Finally, expressions are also used to mark a topic. The expression associated with the topic is raised brow (abbreviated as rb) (see also Zeshan 2000). Such topic marking is optionally associated with the element designated as topic, as shown in examples 86a–c.

- hf-----  
rb----- rb-----
- (86) a. FACE-ARC<sup>IPSI</sup> FACE-ARC<sup>CONTRA</sup> BIRTHDAY CARD<sup>IPSI</sup> SEND<sup>CONTRA</sup>  
“As for them, as for the birthday card, they sent it to them.”
- rb-----
- b. FEM-S-I-T-A IX<sup>LOC: IPSI</sup> IX<sup>SELF</sup> BOOK<sup>SELF</sup> TAKE<sup>IPSI</sup>  
“As for Sita, she took a book from me.”
- rb-----
- c. INDEX<sup>SELF X2</sup> FEM<sup>X2</sup> IX<sup>LOC: IPSI</sup> HELP<sup>SELF IPSI</sup>  
“As for her, I helped her.”

Vallduví (1992) bifurcates sentences into Ground and Focus. In Ground, he distinguishes Link, to which the focus information is updated, and Tail, the nondefault mode of update. According to Vallduví, both Links and Tails belong to the presupposition, or the Ground of the sentence. A Link can be both new and given at the same time, whereas a Tail must have an antecedent in the preceding sentence. In a file-card metaphor, the Link indicates “on which file card to store new information,” the Tail tells “what is already stored in the card,” and the Focus tells “what is needed to add to the card.”

Now consider the following ISL discourse to identify the properties associated with Link, Tail, and Focus in ISL:

- (87) a. [AGE 8 SCHOOL GO]<sub>FOCUS</sub>  
 “At the age of eight, (I) went to school.”
- b. [DEAF ALL]<sub>FOCUS</sub>  
 “(The school was) a deaf school.”
- c. [SIGN]<sub>FOCUS</sub> [IX<sup>SELF</sup>]<sub>LINK</sub> [KNOW NOT]<sub>FOCUS</sub>  
 “Sign language, (I) did not know.”
- d. [DEAF STUDENTS A+L=ARC<sup>IPSI-CONTRA</sup><sub>SELF</sub> LEARN<sup>IPSI-CONTRA</sup>]<sub>FOCUS</sub>  
 “(I) learned (sign language) from all the deaf students.”
- e. [KNOW INCEPTIVE<sup>[+ inceptive]</sup>]<sub>FOCUS</sub>  
 “(I) gradually came to know (sign language).”

In the preceding discourse, example 87a is an all-focus sentence in which a card with an address, IX<sup>SELF</sup>, is contextually available and is positioned at the top of the stack. An elided Link, which serves as an “address pointer,” directs the focus information into the card. Example 87b is also an all-focus sentence. It has a contextually drawn (though elided) switch topic (SCHOOL). It is into this card that an elided Link specifies the focus information to be updated. In example 87c, the Link appears overtly as there is a change of address to the card, IX<sup>SELF</sup>. The Link is on the card with the address IX<sup>SELF</sup>, which is now at the top of the stack with the focus information, and “not knowing sign language” is updated. In examples 87d and 87e, the elided Link specifies the focus information to be updated on the card that is on the top of the stack. In these two sentences, the Tail (SIGN LANGUAGE), which derives from the antecedent of the previous sentence, is elided.

To examine the nature of the information-update instruction in ISL, let us consider a set of questions and answers:

- q-----
- (88) a. Q. IX<sup>FRONT</sup> COME PLACE+C-PARTICLE?  
 “Where did you come from?”
- A. [IX<sup>SELF</sup>]<sub>LINK</sub> [C-H-A-N-D-I-G-A-R-H IX<sup>LOC: UP</sup>]<sub>FOCUS</sub>  
 “I (came from) Chandigarh.”



q-----  
 b. Q. IX<sup>FRONT</sup> C-PARTICLE?  
 “Where are you from?”

A. [IX<sup>SELF</sup>]<sub>LINK</sub> [BOMBAY IX<sup>LOC: DOWN</sup>]<sub>FOCUS</sub>  
 “I (am from) Bombay.”

The data show that the Link is contextually retained even though it is elided, whereas the Tail is elided in ISL. The observations also show that the information update in ISL is to the Link.

### CHAPTER I

1. Battison (1978) added a fourth parameter: palm orientation.
2. According to the International Classification of Impairment, Disability and Handicaps proposed by the World Health Organization (1980–1997) (from Terzi 2004, 142), (1) Impairment is referred to as an abnormality in the functioning of the body, whether through disease or trauma; (2) Disability is referred to as a restriction in one's ability to perform tasks; (3) Handicap is referred to as a social disadvantage that could be associated with impairment and/or disability.
3. See also Lane (1995) for details of how the formulation of deafness as a loss contradicts the primary foundations of the Deaf community.
4. An estimate by Dr. Madan Vasishta, as cited in the *Indian Sign Language Dictionary* (2001).
5. The 2001 census figures show 1.3 million persons with a hearing impairment (i.e., 5.8 percent of the total 21.9 million persons with disabilities in India) (cited in Julka and Sabu ms).
6. Report on the Workshop on Linguistic Minorities, Central Institute of Indian Languages, Mysore, India (2006).
7. Jepson (1991b) mentions two sign languages in a village but does not take community aspect into account. The two signers are home signers rather than members of a community.
8. Meher Sethna Dadabhoy, coordinator, ISL Cell, Ali Yavar Jung National Institute for Hearing Handicapped, Mumbai (pers. comm.).
9. During a screening of the film, I asked the director about the lack of political correctness of this portrayal, which he justified by pointing to the context of the story. He maintained that his intention was to cause offense. He welcomed my question and added that if the film made people react, then that was a positive development (pers. comm., November 4, 2008).
10. O'Malley (1907) reported widespread deaf-mutism in Champaran, a district in Bengal. Similarly, Ibbetson (1883) described a high prevalence of deaf-mutism in some mountainous districts of Punjab, as did Srinivasan's (1964) biomedical study at Bettiah, Bihar. Deaf mutism in Guntur, Andhra Pradesh, has been ascribed to genetic factors promoted by cultural practices (Mazumdar 1972).
11. [www.projectdeafindia.org](http://www.projectdeafindia.org).

12. This claim is made on the basis of fieldwork that I undertook as part of my doctoral studies in the spring of 2005. The field report is available on a CD-ROM upon request to me.
13. ANI/Reuters July 9, 2001, reference 7449/01, tape 7320.
14. *Hindustan Times*, Feb. 9, 2007.
15. Actually, both ISL and contact signing; however, the latter is not described, and I refer to it only to identify the continuum of language use in the Indian Deaf community.

## CHAPTER 2

1. See also Armstrong, Stokoe, and Wilcox (1995) for arguments that demonstrate the gestural roots of ASL morphosyntax. Some useful criteria have been devised for distinguishing lexemes from (productive) signs along the lexicalization continuum for sign language (Johnston and Schembri 1999).
2. See Ann (1993) for the anatomy and physiology of hands.
3. A-DAY is articulated with an index finger only. TWO is incorporated into the sign (see p. 121). Such incorporation does not make a difference to the feature change as long as it is a single sign.
4. “Secondary movement” has been defined as “movement of the fingers or wrist whose key characteristic is that it can occur while the hand executes a path movement” (Perlmutter 1992, 411). Hence, in his system, secondary movement does not account for handshape change, orientation change, and nonresultative change. In this context, Perlmutter does not consider wiggling, which results in a nonresultative change and is more sonorous than static.
5. In signs having an MP template (e.g., HUNGRY), the handshape is assumed into shape from the normal neutral position (i.e., along the movement) rather than with a hold. For statistical calculations, the hold lasts approximately 0.1–2 seconds (see Brentari 1995, 617).

## CHAPTER 3

1. However, this is more schematic than literal. For example, in tracing the perimeter of a referent such as TELEVISION, the default articulation would attribute a size and shape that would not distinguish any particular screen size.
2. Except in the compound GARDEN, due to the assimilation of orientation with FLOWER (see p. 78).

3. It seems that the [handshape: B] is used in lieu of the [handshape: G] inasmuch as the latter, when used for a human referent, is considered unmannerly in the Indian sociocultural setting. Therefore, the manual index can be divided into honorific and nonhonorific, respectively.
4. The data were elicited at Mumbai (formerly Bombay) in 2003.
5. The data were elicited at New Delhi in 2005.
6. Historically, fingerspelling c in ISL was amphicheric with movement (pers. comm., Sibaji Panda).
7. Internet Explorer's icon was initially used as the sign for "Internet" (pers. comm., Sibaji Panda).
8. The terms in parentheses are from Lehmann (1985).
9. During my ISL class in December 2001, I encountered FINISH as a postverbal lexical sign that indicated that an eventuality had recently been completed. Later, during my fieldwork in 2003, I found FINISH to be a double-handed, postverbal, perfect aspectual marker, which was articulated with movement that was shorter than that of the verbal form. Later on, I found the attrition of H2 with single-handed signs and the persistence of H2 with double-handed signs. As a cliticized element, it occurs where handedness is maintained with the handedness of the host sign. However, further attrition of H2 with a double-handed host sign also occurs. In my corpus it figures only with tense neutralized or in the past tense only, not with overt future and past markers.
10. In ASL as well, FINISH has developed into perfect and perfective markers (Rathmann 2005, 145). The same is reported for Italian Sign Language, Israeli Sign Language, German Sign Language, and Sign Language of the Netherlands (Pfau and Steinbach 2006b).

## CHAPTER 4

1. Friedman (1975) was the first to argue that person reference in ASL is accomplished by indexing, although she maintained that the ASL lexicon has no pronoun equivalent.
2. The pronoun reversal phenomenon is also observed among deaf children who are learning sign language (Petitto 1987).
3. In ISL, pro drop resorts to deletion, one of its properties as discussed in sign language literature.
4. See Richa (2003).
5. Reciprocity (single handed) differs from the dual conjunction in orientation and positional (postverbal) occurrence.
6. Triplication distinguishes pluralization from reduplication for emphasis. Moreover, a singular noun sign is reduplicated twice (but this does not mean

that the noun is quantified for two) rather than three times, with a slight change of location at the same cubicle. These cases of reduplication are not instances of morphological pluralization but are instead reduplication for emphasis. Such emphatic use of reduplication abounds in ISL:

torso: IPSI  
FEM<sup>++</sup> IX<sup>LOC: IPSI</sup> APPLE<sup>++</sup> LIKE  
“She likes apple.”

7. See Pfau and Steinbach’s (2006b) typological study of pluralization in sign languages.
8. Another pluralization strategy observed in ISL is *hedging*. The plural morph ETCETERA (abbreviated ETC) is preceded by a noun sign. This is an instance of pluralization since it is in contrastive distribution with triplication and blocks the latter. Phonologically, it may assimilate with the noun sign; in such cases, one of the handshapes of the noun sign remains the same, while the other articulates the plural morph. This type of pluralization is distinct from compounding, in which a superordinate category of metonymically related items is formed:

bf----- torso: CONTRA torso: IPSI  
MASC IX<sup>LOC: IPSI</sup> BOOK<sup>++</sup> ETC LIKE FEM IX<sup>LOC: CONTRA</sup> BOOK+SPORTS+ETC LIKE  
“He likes books and she likes magazines.”

9. I am grateful to Gaurav Mathur for information about gender in ASL and Japanese Sign Language.
10. However, ROOSTER and HEN are lexically different.
11. I thank Sibaji Panda (pers. comm.) for this observation. I continue to use English pronouns as glosses for these items, purely for ease of exposition.
12. Sibaji Panda (pers. comm.) maintains that these expressions stand for MAN and WOMAN rather than for the pronouns “he” and “she,” respectively. However, English glossing is carried out as in the text.
13. Cinque (1999, 87) writes that the matching between temporal adverb and T (past), T (future) appears to be straightforward, especially in view of the recurrent observation that languages lacking overt tense distinctions often resort to temporal adverbs to locate events in time. A similar phenomenon is found in Nootka (Comrie 1985, 13).
14. This is similar to the tense neutralization observed in Bahinemo (ibid., 103).
15. Rathmann (2005, 34) groups Klima and Bellugi’s (1979) “protractive,” “durational,” and “continuative” under continuative aspect “since they all have to do with taking place over a period of time.” He groups them on the basis that the interval over which eventuality unfolds is uninterrupted.

16. In ISL, an emphasis on the verb is marked by reduplication<sup>++</sup> in a manner similar to emphasis on nouns:

hf----- torso: IPSI  
 MASC-IX<sup>LOC: IPSI</sup> FEM- IX<sup>LOC: CONTRA</sup> LIKE<sup>++</sup>  
 “He likes her.”

17. Rathmann (2006) analyzes a similar construction in BSL as a conative morpheme.
18. Complete sign reduplication refers to paired constructions in which a single sign or a clause is repeated once in the same sentence without any phonological or morphological variation (see Abbi 1992).
19. Because the second root of the compound (rather than the compound itself) is reduplicated, I take this as an instance of partial reduplication.
20. Separate lexical signs (e.g., TEACHER) are underived from TEACH.
21. MANY in ISL is homophonous with COUNT. “How many” is a compound of COUNT and the WH sign.

## CHAPTER 5

1. I am grateful to Ayesha Kidwai (pers. comm.) for bringing this literature to my notice and for information about its relevance to the ISL facts.
2. Furthermore, the semantics of ARC (MANY) and ALL are indistinguishable.
3. In fact, the locative noun is localized. However, this is not always the case. Despite the fact that KITCHEN provides the location of the event in example 41, the adposition is incorporated into the locative noun.
4. It is possible that, as one reviewer points out, AxPart is morphologically overt and is expressed by the relation between H1 and H2. However, I maintain that Facet here is not lexicalized.
5. In ISL, noninherent possessions are marked by HAVE, as shown in the following example. In discourse, HAVE (figure 1n) can be articulated at various cubicles and marks the referent’s spatial location. Therefore, it confirms Benveniste’s (1966) proposal that HAVE is BE + adposition.

bf-----  
 a. IX<sup>SELF++</sup> SOME BOOK HAVE  
 “I have some books.”  
 b. IX<sup>SELF++</sup> EAT+ROOM SOME MILK HAVE  
 “I have some milk in the dining room.”



FIGURE N1. HAVE.

6. A similar phenomenon of agreement is found in Huichol, a language spoken in central Mexico (Comrie 1982).
7. Her terminological preference is predicate agreement.
8. If verb agreement in ISL basically marks the goal argument (i.e., the Ground), it is tempting to account for the marking on the verb as a directional morpheme (see Meir 2002) and, consequently, as an overt Path head, which incorporates into the verb. However, this phenomenon also occurs when the verb has no movement and/or when the sentence contains no adposition. In the following example, it appears with an additional element, which is glossed as DIR. These observations rule out the possibility that it is an overt Path head.

RAM IX LOC: IPSI SITA IX LOC: CONTRA LIKE IPSI DIR CONTRA  
 “Ram likes Sita.”

9. An earlier account of the phenomenon (Sinha 2003) assumes the pronominal argument hypothesis (Jelinek 1984) and the morphological visibility condition (Mark Baker 1996). Sinha (2003) also explains that the onset and the offset of the verb (phonologically realized or zero, as in the case of plain verbs) are argument morphemes of the verb’s receiving theta roles from them. These affixes on the verb absorb case; consequently, overt NPs are left-dislocated to adjunct position.
10. This is a known typological feature of the head-marking languages (Nichols 1992, 152–53).
11. As in many spoken languages, the recent past is indicated by the perfect aspect, which cliticizes to the verb.
12. The same sign or particle is also observed in *for*-constructions as FOR in ISL. However, as FOR, it is not associated with the expression that we find in *wh*-questions.

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