

## 1 Linguistic analysis of signed languages and language universals

What can we learn from the study of signed languages? Earlier the study of these languages was clearly seen as relevant primarily to the teaching of deaf children. The earliest description of Danish Sign Language was three pamphlets by the medical doctor P. A. Castberg, who founded the first school for the deaf in Copenhagen in 1807. They were entitled *Om Tegn- eller Gebærde-Sproget med Hensyn på dets Brug af Døvstumme og dets Anvendelighed ved deres Undervisning* ('Of the Sign or Gesture Language with Regard to Its Use by the Deaf-and-Dumb and Its Usefulness in the Teaching of Them') (1809-1811).<sup>1</sup> But since the first modern linguistic analysis of a signed language, William Stokoe's description of American Sign Language (ASL) in 1960 (revised edition from 1978), which focused on the structure of individual signs, but covered also parts of the grammar, signed language research has spread to all areas of linguistic analysis. (For an overview of the research on ASL, see Wilbur 1987.) Today there are partial linguistic analyses of signed languages from many parts of the world.

The linguistic analyses of signed languages seek to find their characteristics as languages and to test universal claims about language structure. Sign linguists take as their point of departure that signed languages are natural languages, in the sense that they are the primary means of communication among human beings in everyday situation of life and that they are not parasitic on any other means of communication. Signed languages make use of different means of expression than spoken languages. To the extent that claims about linguistic universals are based on theories about human linguistic and cognitive skills or about the necessity of specific structural distinctions in a communication system as rich as any natural language, we must examine whether the universal claims are also true of signed languages irrespective of differences in expressive means. As the research on signed languages has progressed and it has become clear that such languages can be described as natural languages, the focus has shifted: if the universals claimed for other natural languages are true as well of signed languages, despite any differences in means of expression, the universals are corroborated. Otherwise, it must be examined whether the universals can be explained as dependent on specific means of expression.

It is natural to ask whether the difference in means of expression makes the structure of signed languages different from that of spoken languages. In this book, I focus on an aspect of signed languages that makes them appear very different from spoken languages, namely the use of space in morphosyntax and discourse structure. Since the use of space as a means of expression is unique to signed languages, we may expect to find structural differences from spoken languages in this area.

### *The use of space in signed languages and language universals*

Signers may refer anaphorically to nonpresent referents by means of directions from

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1 Appendix A is an overview of the use of Danish Sign Language in Denmark and Danish deaf people's situation

their bodies or points within the space in front of their body. They keep referents apart in anaphoric pronominal reference by modifying the pronoun PRON for the appropriate direction or point (the modified form of PRON looks like a pointing gesture in the direction in question). I use the term *locus* (pl. *loci*) for a direction from the signer or a point in the signing space by which a referent is represented. A locus can be expressed in modifications of signs such as PRON and in gaze directions and head and body movements.

Loci seem to occur in all signed languages (see, however, Washabaugh 1986, 36-42). There do not seem to be any limitations as to which directions from the signer in the signing space can be used to express loci. Thus Lillo-Martin and Klima (1990) find that 'from the point of view of grammar, as opposed to performance, there seem to be an indefinite number of distinct pronominal forms (and thus potentially an infinite number of distinct pronominal forms)' (194). No spoken language has an indefinite, or infinite, number of pronouns, but Lillo-Martin and Klima do away with this structural difference (and introduce a new one) between signed and spoken languages by analysing all pronominal forms as manifestations of one pronoun. In the description of both spoken and signed languages we need to indicate which nominals are intended to co-refer. In linguistic descriptions this is often done by means of indices in the form of subscript letters. Thus, according to Lillo-Martin and Klima, the difference between the signed language, ASL, and the spoken language, English, is that 'what are unspoken referential indices in English are overtly manifested in ASL' (ibid., 198). In the signed language pronoun, distinct referential indices are expressed by distinct loci, and Lillo-Martin and Klima predict that 'there will be fewer ambiguities in the assignment of discourse referents for ASL pronouns than there are for English' (ibid., 199).

In other words, signed languages manifest semantic features that we already know from the analyses of spoken languages, namely referential indices; but the way these features are expressed differ in the two types of language. Thus, according to Lillo-Martin and Klima's analysis, we find a higher degree of differentiation in the signed pronoun than in spoken language pronouns. At the same time, signed languages, by not distinguishing three or more persons in the pronouns, are less differentiated than spoken languages.

The conclusion of the analysis of the pronominal "pointing" signs in Danish Sign Language that I present in II.6.3 is that there is a two-way distinction between first person and non-first person in these signs. Greenberg's (1966) universal 43 states: 'All languages have pronominal categories involving at least three persons and two numbers' (113). Does that mean that the universal is invalid, or that signed languages are not languages? Rather than trying to answer that question, a more fruitful approach is to examine what distinctions are made in individual signed languages, to compare the results of such analyses with what is known about other signed languages and about spoken languages, and to look for explanations of differences

between signed and spoken languages in their different means of expression. Then we can specify the universals as being true of either signed or spoken languages or true of languages irrespective of their means of expression.

## 2 Traditional analyses of the use of space in signed languages and localist linguistic theories

In signed language research, there is a tradition of distinguishing between two different uses of space. They have been most strongly contrasted by Poizner, Klima, and Bellugi (1987, chapter 8), in a study of four American deaf aphasics, as a difference between 'spatial mapping' and 'spatialized syntax'. Spatial mapping is a more or less iconic use of space to represent location, i.e. a spatial mapping relation between content and form. In spatialized syntax, space serves syntactic purposes and discourse purposes and loci have an 'arbitrary, abstract nature' (ibid., 206).

The two uses of space in signing have been distinguished in signed language research especially in relation to two kinds of verbs or predicates. The verbs associated with the syntactic use of space have been claimed to show agreement. These verbs are modified for loci in space to show the syntactic or semantic relations between the verb and its arguments. In (1) from Danish Sign Language, the verb ANSWER is modified for the locus of its agent and for the locus of its recipient:<sup>2</sup>

- (1)  $\frac{\quad}{\text{LF DET+fh}}$  t /  $\frac{\text{bekræfte}}{\text{fh+SVARE+c}}$  /  
 $\frac{\quad}{\text{LF DET+fr}}$  t /  $\frac{\text{affirm}}{\text{fr+ANSWER+c}}$  /

(Ill. 1)

LF [The Danish National Association of the Deaf] has answered me.

The modification can be described loosely as follows: the verb is made with a linear movement and in the modified form the hand is first placed at a certain distance from the signer in the direction of the locus of the agent referent; then it moves toward the signer, the locus of the recipient referent.

It has been claimed that in spatial mapping or locative constructions verbs do not manifest the syntactic relationship between the verb and its arguments, but show a semantic locative relation (see in particular Padden 1988b, 40ff.). Liddell (1980, 95ff.) describes the difference between what he calls SVO constructions, i.e. constructions with a syntactic verb-argument relation between the constituents, on the

<sup>2</sup> Signed languages are traditionally transcribed by means of a score system in which the individual lines represent the activities of each articulator: each hand, the mouth, the eyes, the head, etc. (See also Appendix B.) Manual signs are transcribed by means of spoken language glosses usually chosen as a mnemonic to the sign's meaning. This practice, however, introduces a serious risk of confusing the sign with the spoken language word with respect to meaning, word class, etc. In this book, there is furthermore a risk that readers who are used to seeing English glosses used for signs from other signed languages, in particular American Sign Language (ASL), will misinterpret the gloss as representing a sign from another signed language. As a warning, I have transcribed example (1) first as it would look in a text in Danish.

one hand, and locative constructions, on the other. He discusses an example where a signer uses a locus for a fence on her right and a locus for a man on her left. In ASL, the signer can then make the sign BUY in the direction of the locus right:

- (2) MAN BUY+fr / (after Lidell 1980, 96)  
The man bought the fence.

In different versions of the same sentence the signer will sign the verb toward slightly different points in space; this does not change the meaning of the sentence. But if the sign BUY+fr is not made sufficiently close to the locus, the sentence becomes ungrammatical. It cannot mean something like 'the man missed buying the fence by six inches' or 'the man bought something six inches from the fence'. By contrast, if the signer uses a locative verb, there is always a locative relationship holding between the verb and the locus. For instance, if the signer uses a locative verb of a cat in relation to the locus for the fence, she says something about the cat's relation to the fence: that it was on the fence, a little to the right of the fence, behind the fence, etc.

The claim is that in spatial mapping the association of a referent with one point invests the entire signing space with meaning; all other points will be seen as related to the first one and to each other in terms of location. In spatialized syntax, the association of a referent with a locus is only relevant to that one referent and is manifested only in signs that refer to that referent or, in the case of verbs, in signs that are cross-referenced for that referent.

If one of the most conspicuous differences between signed languages and spoken languages is that signed languages make use of space and we find that signed languages make a sharp distinction between two uses of space, spatial mapping and spatialized syntax, this will weaken localist theories of spoken languages seriously. Lyons (1977) defines localism as

the hypothesis that spatial expressions are more basic, grammatically and semantically, than various kinds of non-spatial expressions ... Spatial expressions are linguistically more basic, according to the localists, in that they serve as structural templates, as it were, for other expressions; and the reason why this should be so, it is plausibly suggested by psychologists, is that spatial organisation is of central importance in human cognition ... (Lyons 1977, 718)

If languages that manifest relations between constituents spatially contrast locative constructions and other kinds of syntactic constructions, localist theories lose credibility.

### 3 The aims of the present analysis

What I want to show is that the two uses of space, spatial mapping and spatialized syntax, are related, but do represent extremes on a continuum. Factors other than localism influence the way Danish Sign Language is structured. Cognitive and social factors work against the iconicity of locative constructions. In III.8 Polymorphemic verbs, I show how signers, during discourse, reduce more complex and more iconic descriptions of a locative event to verbs resembling single conventional signs. Moreover, there are several ways of viewing a situation that consists of a transfer from one location to another. It can be conceived as a process of transfer from one location to another, but also as an event where an agent brings about a certain effect in relation to an entity, i.e. it can be described by a transitive construction. Two semantic features connect locative constructions and transitive constructions; one of them is transfer, the other is point of view. Transfer is clearly part of the semantic basis for the expression of locative as well as transitive constructions in signed languages. The expression of a specific point of view in signed languages has been studied much less; it involves a factor which is so obvious that it is easily overlooked, namely the signer's centre in the signing space.

The signer's body and the area near the signer are part of the expressive means of signed languages and they are used for expressing a specific point of view. In describing the use of the signer's body and the signer's locus as the sender locus, I use two concepts known from the analysis of spoken languages. The first one is shifted reference, which means the use of pronouns and nominals from a quoted sender's point of view, in particular the use of the first person pronoun for a quoted sender. The second concept is shifted attribution of expressive elements. The term is meant to cover cases where the emotions and attitudes expressed by the signer (or speaker) should not be attributed to the sender in the context of utterance, but to somebody else. A third concept is needed: shifted locus, which is special to signed languages. Shifted locus is the use of the sender locus for a referent other than the signer and, less frequently, the use of another locus than the sender locus for the signer. Shifted locus is crucial to the expression of a specific point of view in Danish Sign Language, and it should be distinguished from shifted reference and shifted attribution of expressive elements.

One of my main points in writing this book has been to find out what loci are. They are intrinsic to signed languages and, as they totally depend on the use of space, they are unknown from analyses of spoken languages. Loci are expressed through locus markers by means of directions or points in space that determine the position and/or orientation of the hand(s) in the production of signs. Loci are what I call *referent projections*, also a concept that is unique to signed languages. There are three types of referent projections in signed language: loci (including the sender locus), the signer's head and body, and the stems of certain verbs, i.e. polymorphemic verbs of motion and location. Referent projections contribute to what Lehmann (1982), in an

analysis of agreement in spoken languages, describes as keeping a linguistic object (i.e. a referent) constant. This is the reference-tracking function of referent projections. But as mentioned above, the sender locus is used for expressing a specific point of view in constructions with shifted locus, where the sender locus is used for a referent other than the signer. This phenomenon interferes with the reference-tracking function of loci as the referent in a shifted locus construction is no longer associated with the same locus as it may have been earlier in the discourse. Moreover, loci have functions other than reference-tracking: they express high referentiality and such semantic affinities between referents as possession, empathy, mental distance, comparison, point of view, locative configurations, and temporal relations. Loci are relevant both at the clausal level and the discourse level. This has led me to organise the book into two main parts: Part II, Discourse and Space, and Part III, Verbs and Space.

## 4 The composition of the book

### *Discourse and space*

In Part II, *Discourse and Space*, I show that the choice of anaphoric loci is not a free one, but is influenced by semantic-pragmatic notions known from the analysis of spoken languages, and that a change in the locus of the same referent may signal different discourse layers (II.2 The frame of reference). One particularly clear demonstration that the choice of loci is not free is the association of time referents with loci in the signing space. These loci have different meanings and thus assign particular relational meanings to time referents (II.3 Time lines).

Only some referents are represented by loci. They are referents with high referentiality or high discourse value (II.4 Loci and referentiality). Some referents that rank high on the referentiality scale are represented by the sender locus in what I call constructions with shifted locus (II.5 Shifted reference, shifted locus, and shifted attribution of expressive elements).

Loci are also relevant to pronominal reference. In II.6 Pointing signs, I examine different kinds of pointing signs that can be analysed as verbs, a pronoun, a determiner, and a proform that carries spatial morphology under special circumstances. Different forms of the pronoun and the determiner manifest differences in information-packaging, such as assumed familiarity and salience in terms of the sender's assumptions about which entity the receiver is focusing on at the time of the utterance (II.6.2 The pronoun, the determiner, and information-packaging). In II.6.3 Person, place, and shifters, I argue for an analysis of pronominal pointing signs in Danish Sign Language as distinguishing two persons, first and non-first person. The non-first person pronoun can be used to refer to all kinds of referents, such as places, time referents, and human beings. In the conclusion to Part II, I compare the role of loci in signed discourse with reference-tracking mechanisms in spoken languages, especially gender.

### *Verbs and space*

In Part III, *Verbs and Space*, I first present an analysis of the spatial morphology that occurs with signs having a base form, in contrast to the verbs that I describe as polymorphemic. Signs, and in particular verbs, having a base form can take three kinds of spatial morphology: distribution, agreement, and marking for a specific point of view.

Modifications for distribution denote the distribution of a state, a process, or an event over points or periods in time or over entities or locations. They can be expressed in signs of all kinds having predicative function, provided that they have a phonological form that permits spatial modification (III.5 Modifications for distribution).

Agreement between particular verbs and their arguments and the difference in agreement patterns with different generations of Danish Sign Language users cannot



be analysed independent of marking for a specific point of view and the encoding of agentivity in the sender locus (III.6 Semantic agreement and marking for a specific point of view). Verbs of one particular group, traditionally called agreement verbs, agree with arguments with which they have semantically unambiguous relations. This kind of agreement is called *semantic agreement*, but it only represents one kind of agreement in Danish Sign Language. The other kind, *pragmatic agreement*, is found with many more signs than is semantic agreement. Before I describe pragmatic agreement, I analyse the concept of agreement in relation to the modification of signs for loci in terms of agreement feature, direction, and domain (III.6.2 Agreement features, direction, and domain), and I discuss the difference between marking for a specific point of view and agreement omission (III.6.3 The many uses of the *c*-form). In III.6.4 First person, point of view, and agentivity, I compare the interrelations of first person agreement, agentivity, and marking for a specific point of view in Danish Sign Language with similar phenomena in spoken languages.

A very large group of signs in Danish Sign Language can show what I call *pragmatic agreement* (III.7 Pragmatic agreement). Pragmatic agreement also involves loci, but it differs from semantic agreement in that the relation between the agreeing constituents is not unambiguous. The so-called agreement verbs, which can show semantic as well as pragmatic agreement, have different modified forms for the two kinds of agreement. Moreover, in pragmatic agreement all signs of a predicate show agreement provided that they can be modified for a locus. Pragmatic agreement underlines the relationship between the predicate and the topic and manifests such semantic-pragmatic phenomena as comparison, mental distance and persuasion.

In III.8 Polymorphemic verbs, I present an analysis of a special category of verbs, polymorphemic verbs. It is an alternative to the widespread analysis of similar verbs in other signed languages as classifier verbs. These verbs have been compared with classificatory verbs in Athapaskan languages, especially Navaho, and through Allan's (1977) characterisation of Athapaskan languages as predicate classifier languages, the term *classifier* has been introduced in signed language research. By means of a description of the classificatory verbs in the Athapaskan language Koyukon, I show that Allan's use of the term *classifier* in relation to such verbs is unwarranted (III.8.2 Predicate classifiers and classificatory verbs in spoken languages). The verbs of Danish Sign Language cannot be described as classificatory in the strict sense, but they resemble the Koyukon verbs by conflating Figure and Motion (Talmy 1985) in their stems (III.8.3 Classifiers or verb stems in Danish Sign Language).

The polymorphemic verbs differ from the verbs treated in III.4-7 in that their stems can combine with a sequence of different morphemes expressed by movement and denoting motion or location. Other morphemes with which the stems can combine express manner, distribution, extension, and aspect (III.8.4 Movement morphemes in polymorphemic verbs). The stems can be categorised into different types on semantic and morphological criteria (III.8.5 Categories of stems in polymor-

phemic verbs). In III.8.6 Polymorphemic verbs and space, I finally discuss the analysis of simultaneous constructions where two verbs are articulated simultaneously by the two hands. Such constructions are compared to constructions of backgrounding and foregrounding in spoken languages. In Danish Sign Language backgrounded constructions are used in expressions of locative configurations, but can also be used to express discourse coherence. In III.8.6 Polymorphemic verbs and space, I also develop the analysis of referent projections and show that it is necessary to distinguish the sender locus from the signer's head and body in relation to some polymorphemic verbs. Finally, I describe how polymorphemic verbs are used to express a specific point of view.

#### *Methodological problems and form analysis of signs*

Some methodological problems are common to all linguistic analysis and some are special to analyses of signed languages. The discussion of iconicity as a methodological problem, judgements of grammaticality, and linguistic variation in I.5.1-3 leads to a characterisation of the informants and the data used for this study (I.5.4 The informants and the data for this study). In I.6 Form analysis of signs, I first give an elementary description of the articulatory means of signed languages and of different form types of signs, and I introduce some terms that are the necessary equipment of signed language linguistics. In I.6.3-5, I present one suggestion for a form analysis of signs, Liddell and Johnson's (1989) sequential analysis of signs. Their analysis is particularly suited to illuminating the notion locus from a formal point of view (I.6.4 The term *locus*) and to describing verb agreement formally (I.6.5 Formal description of some different verb types). Except for I.6.4 and I.6.5, section I.6 is intended as an introduction to signed language research. Therefore, some of the topics that are taken up later in the book appear here without any discussion. It is my hope that the section will familiarise readers who have no knowledge of a signed language sufficiently with the way these languages "look" and the ways sign linguists talk about signed languages that they will be able to read the rest of the book.

Here I would also like to mention an area that I do not touch upon, but which is very close to the discussion in especially the two sections on agreement, III.6 Semantic agreement and marking for a specific point of view, and III.7 Pragmatic agreement. It is the syntactic analysis of the arguments of the verb. I avoid using the syntactic terms *subject* and *object* except when I refer to other linguists' analyses. The reason is that a syntactic analysis must draw on other criteria than merely agreement, notably constituent order and systematic relations between clauses with the same verb and different numbers of constituents or different markings of the constituents; however, the analysis of such phenomena in Danish Sign Language still lies ahead.

## 5 Characterisation of the data

### 5.1 Expectations of iconicity

In signed languages, individual signs and much of the morphosyntax manifest iconic relations between content and expression (see, among others, Frishberg 1975; Bergman 1977; DeMatteo 1977; Mandel 1977; Klima & Bellugi 1979, Chapter 1; Wilbur 1987, 161-169). Iconicity is, therefore, an analytical and conceptual challenge to the signed language researcher; but it also represents a methodological danger. Both linguists and informants may be tempted to see iconicity where there is none and to expect constructions in signed languages to be more iconic than they are.<sup>1</sup> I shall demonstrate this danger by examples from my own work with Danish signers.

In order to examine how specific nonmanual features are used to mark information as given or new or having high discourse relevance, I made a tape with single sentence excerpts from signed monologues. The nonmanual features were: raised brows, lowered or pulled back chin, and squinted eyes (i.e. the signer contracts the muscles of the lids so that the eyes appear as narrow slits). I presented the tape to native signers and asked them questions like *Do you think that the person the signer is talking about has been mentioned earlier in the monologue?* and *What do you think the signer will go on talking about, x or y?* It turned out that most signers found it very difficult to answer such questions.<sup>2</sup> When I told them that I was interested in the function of specific facial expressions, they began to point out facial expressions signalling emotions such as surprise, anger, and sorrow. Signals of emotions are part of deaf people's language awareness: *If you use the sign HAPPY, you should look happy.* This is clearly false since signers do not look happy while uttering the equivalent of *Are you not happy?*

The reason that informants were not able to identify the features that I was interested in might of course be that they are not relevant to signing. That is not the case, however. Squinted eyes are used with referential expressions to check the receiver's understanding of the reference: the sender believes that the receiver knows the referent (givenness), but may have problems identifying it at the moment (accessibility) (Engberg-Pedersen 1990). Squinted eyes serve as an appeal: 'I believe that you already know this referent, but if you need help to identify it, tell me so. Then I'll give you more information about the referent.' A clear signal that squinted eyes have a function in Danish Sign Language is that receivers nod or look puzzled in response to squinted eyes.

1 Corbett (1988) mentions similar problems from the analysis of spoken languages. Here informants are not misled by iconicity, but by "logic". Confronted with examples of alternative agreement possibilities in Russian, 'Informants sometimes claim that there is a semantic difference between certain agreement options. In some cases it appears that they are imposing a logical interpretation on surprising and troublesome facts about their own language.' (47).

2 One signer, however, gave a very precise description of her own use of the signal squinted eyes.

When I presented my analysis of the three nonmanual features to a group of deaf persons, they accepted it. But in one case they denied that squinted eyes are used with the above-mentioned function:

- (1) brows: raised----- furrowed-----  
 eyes: squinted----  
 PRON+fr HOME / ANGRY PRON+fr /

When he comes home, he is mad.

Everyone agreed that the proper translation of (1) is with an adverbial clause, i.e. *When he comes home*. Squinted eyes are used on other occasions with time adverbials such as MONDAY MORNING. Earlier in the monologue, the signer says that the individual in (1) comes home. That is, the first part of (1) is an adverbial clause expressing given information. Therefore, it fits the analysis that the clause should be marked by squinted eyes. But the informants insisted that the facial expression in this case indicates anger, even though the contraction of the eye muscles ceases before the sign ANGRY. There is no doubt that the signer also expresses negative feelings during the first part of the sentence, as informants who only saw this part found that the signer expressed sadness. But the example demonstrates many signers' notion of their own language: facial expressions signal emotions (see also Klima & Bellugi 1979, 246). This view of nonmanual signals is not surprising when you consider both the extent to which facial expressions do signal feelings in signed languages, and the abstract nature of the function that squinted eyes fulfil (referent accessibility).

The use of emotional facial expression for linguistic purposes in signed languages is an example of the kind of iconicity in which linguistic expression mirrors content. This is the type that Haiman (1985b, 10) describes as an image. Another type of iconicity is diagrammatic iconicity with the subtype isomorphism, i.e. the principle of one meaning, one form (*ibid.*, 11, 14). In relation to signed languages, this type is relevant in an area that has to do with space; it is often described in a way that feigns isomorphism. Space is used, among other things, for keeping track of reference. A referent may be represented by a locus in space, and many signs that refer to it or imply reference to it are made in relation to the same locus. The choice of locus for any individual referent is generally not predetermined in signed languages. Therefore, we might expect that signers would explicitly assign new referents to loci when they introduce them or, put differently, that they would explicitly establish a locus – or an index, as it is often described – for a referent (Mandel 1977, 76; Baker & Cokely 1980, 223; Newport & Meier 1985, 916; Wilbur 1987, 153). That is, we might expect there to be a formal difference between assigning referents to loci (or establishing loci for referents) and using a locus once it was established. A pointing sign could, for instance, be an obligatory part of the

nominal that introduces the referent. Or the first pointing sign manifesting the locus could be longer (be held for a while or have repeated movements in the direction of the locus) compared with later pointing signs which "only" make use of the locus, once it is established. But no such formal difference exists between the two uses of loci in Danish Sign Language, i.e. the language does not distinguish 'establishing a locus for a referent' from later anaphoric reference by means of the same locus.

Iconicity, especially of the image type, is a reality to deaf people. Therefore, there is a danger that informants will not only interpret examples iconically, but also will present linguists with signing that is more iconic than their everyday signing and accept such examples from the linguist. That is one reason why I have preferred to use primarily signed monologues and dialogues and not elicited sentences or judgements of grammaticality of such sentences as data.

## 5.2 Judgements of grammaticality

Since the structuralist separation of language structure and language use, judgements of grammaticality have been considered an important way of procuring valid data for linguistic analysis. Judgements of grammaticality are seen as a way of getting around the "shortcomings" of naturalistic data in the form of processing problems such as faulty memory. We can, however, only rely on grammaticality judgements if we know that they are not subject to other kinds of shortcomings.

### *Judgements of grammaticality and prototype theory*

Since cognitive psychologists showed that many concepts are better described in terms of prototypes than as having clear boundaries (Rosch 1977), a number of linguists have shown that grammatical categories can have the same character (Dahl 1985; Hopper & Thompson 1980, 1985; Bybee & Moder 1983; Taylor 1989, Chapters 10-11). If linguistic categories do not have clear boundaries, native speakers naturally hesitate when asked to evaluate the acceptability of constructions that are not close to the prototype. I will demonstrate this by means of judgements of the Danish construction sentence intertwining.

Sentence intertwining ('sætningsknude') is typical of spoken Danish and its characteristic is that a constituent that syntactically belongs to a subordinate clause appears at the head of the main clause as in (1) and (2):

- (1) *ham ved jeg du kender*  
 him know I you know

That one, I know you know him.

- (2) *ham ved jeg i grunden ikke om jeg har hørt om før*  
 him know I actually not whether I have heard about before

Actually, I don't know whether I have heard about him before.

To illuminate the problems of judgements of grammaticality, I asked a number of native speakers of Danish to evaluate examples of sentence intertwining. Out of 35 informants, 16 said that (3) was acceptable, 13 that it was unacceptable, and 6 were in doubt.

- (3) *den bil er det din egen skyld hvis du ikke får solgt*  
 that car is it your own fault if you not get sold  
 That car, it's your own fault if you don't manage to sell it.

Creider (1986) made a study of similar sentences in Norwegian. He asked a number of speakers of Norwegian to rate the sentences with respect to grammaticality on a scale from 1 (least grammatical) to 4 (most grammatical) and found significant differences in means of judgements between different types of complements.<sup>3</sup> Creider concludes:

In sum, although research of the type reported here is not substitute for the sensitive judgements of native-speaker-linguist, I hope I have shown that quantitative study of acceptability judgements can reveal interesting and sometimes unsuspected patterns and can thus serve as a useful adjunct to the individual judgements that provide the bulk of the data on which linguistic research is based. (Creider 1986, 421-22)

But do we really know what we are doing when we make judgements of grammaticality? Even people with some linguistic training, when asked to evaluate whether (3) is acceptable or unacceptable as a Danish sentence, asked whether I meant 'intelligible' or 'correct'. *Grammatically acceptable* is supposed to mean neither.

### *Fuzzy set theory*

The sentence in (3) is not close to prototypical sentence intertwining. It deviates from the prototype in ways that result in indeterminacy. One way to illuminate what this means is to show what it does not mean. It does not mean that the boundaries of the category sentence intertwining are fuzzy and that membership of this category is gradual, that membership is a question of degree and can be fixed at some more or less arbitrary number. If membership of the category were gradual, it could be described by fuzzy set theory which imposes linearity on the relation between an item and a prototype: the higher on the scale an item is rated, the closer it is to the prototype, or the more representative of the category.

Set theory is concerned with sets within a certain domain, while a theory of concepts is concerned with classes in a context. The difference between domain and context is inadvertently brought out by Osherson and Smith's (1981) demonstration that prototype theory as a theory of concepts combined with fuzzy set theory leads to contradictions and counterintuitive predictions. For that reason, they reject prototype theory as a theory of concepts. But Osherson and Smith explicitly disregard con-

<sup>3</sup> I conducted a similar test with 16 Danes who evaluated Danish translations of Creider's sentences, and got very similar results.

text. One of their examples is the set of striped apples in the domain of fruit. According to set theory, the set of striped apples in the domain of fruit consists of all the members of the intersection of the set of striped fruit and the set of apples. Membership in an intersection is the minimal value of membership of either of the intersecting sets. Therefore, a striped apple is more typical of either striped fruit or of apples than it is of the intersection, striped apples; but intuitively, a striped apple is, of course, more typical of striped apples than of either apples or of striped fruit.

What Osherson and Smith do not see is that the contradiction arises because fuzzy set theory disregards a natural context and operates with sets of equal status: striped fruit and apples. In the context of a society where apples are a common kind of fruit, a striped apple is not something that is both striped and an apple, it is an apple that is striped. If we want to evaluate the typicality of a striped apple, we do it within a particular context. That is also why a guppy (another of Osherson and Smith's examples) can be a typical pet fish without being a typical fish. What is a typical member of the "intersection" is not necessarily a typical member of either of the original sets (the set of pets and the set of fish), because members of the "intersection" are not simply items that belong to both sets. (For a more extended criticism of Osherson and Smith's article, see Lakoff 1987, 139-145.)

The use of fuzzy set theory to explain the imprecision of categories with prototypes 'confuses indeterminacy with graduality' (Dahl 1985, 9). It is an attempt to create precision where there is none and to impose linearity on multidimensionality. Lakoff (1986, 41, 50) argues that linear structures such as representativeness structures ('closeness to the prototypical case') hide the richness of structure that is characteristic of categories with prototypes. Fuzziness arises when category membership is a matter of degree, and it results in prototype effects. But prototype effects may have other sources than fuzziness. The concept 'mother' is an example of what Lakoff calls an experiential cluster: a number of base models converge so that the prototypical mother is the person giving birth and having contributed the genetic material, who nurtures and raises the child, is married to the child's father, and is the female of the first ascending generation. If a mother deviates from this prototype, it is impossible to describe the deviation as a matter of degree (Lakoff 1986, 43-45; 1987, 74-76).

### *Multidimensionality of grammatical constructions*

Prototype theory as a theory of linguistic categories implies that we cannot make rules of grammar that clearly define the boundary between acceptable and unacceptable constructions of a language. One sort of imprecision is multidimensionality of grammatical constructions: a construction may share a number of properties with a specific type of construction, but deviate from it in other respects. Whether it is grammatical or not may be impossible to determine, and whether it will actually occur may depend on whether an appropriate context makes it possible.

Creider's (1986) study of what he calls constituent-gap dependencies in Norwe-

gian, as well as my own study of the Danish translations, showed that topicalization from a complement clause of a declarative verb as in (4) is rated highest on the acceptability scale, and topicalization from a relative clause as in (5) lowest on the scale (the examples and the results are from my own study):

- (4) *de blomster sagde Ulla at Peter havde fundet på marken*  
 those flowers said Ulla that Peter had found in the-field  
 related to the Danish equivalent of *Ulla said that Peter had found those flowers in the field.*  
 [rated highest on the acceptability scale by 9, and next highest by 7]
- (5) *den mand kender jeg damen der så*  
 that man know I the-lady who saw  
 related to the Danish equivalent of *I know the lady who saw that man.*  
 [rated lowest on the acceptability scale by 16 out of 16]

This means that clause type influences judgements of acceptability. But the issue is more complex. Topicalization from a conditional such as (6) (not in Creider's study) was rejected by 34 informants and accepted by 1:

- (6) *den bil vinder jeg et ur hvis jeg får solgt*  
 that car win I a watch if I get sold  
 related to the Danish equivalent of *I'll win a watch if I manage to sell that car.*

In (6), there is a contingent relation between the two propositions. Example (7), also with a conditional, was accepted by 14 informants and rejected by 5:

- (7) *det bliver jeg sur over hvis jeg hører*  
 that become I mad PREP if I hear  
 related to the Danish equivalent of *I'll get mad if I hear that.*

and (8) was accepted by 4 and rejected by 8:

- (8) *den bliver jeg glad hvis du tager med*  
 that become I happy if you take PREP  
 related to the Danish equivalent of *I'll be happy if you bring that.*

In both (7) and (8), there is a causal relation between the main predicate and the conditional: the conditionals express the events that cause the reactions expressed by the main predicates. In (7), the topicalized constituent can be understood as being the object of the main verb (*bliver sur over*) as well as of the verb of the subordinate clause, whereas the topicalized constituent of (8) can only be the object of the verb of



the subordinate clause. Some informants claimed that the acceptability of (8) increases if you insert a preposition (*for*) before the conditional. Such a preposition would both reinforce the causal relation between the main verb and the conditional and make the topicalized constituent a constituent of the main clause (*den bliver jeg glad for* is a completely acceptable independent sentence).

Thus, sentences can deviate from the prototypical sentence intertwining along several dimensions. The parameters mentioned here are the syntactic type of the subordinate clause, the semantic relation between the main clause and the subordinate clause, and whether the topicalized constituent can be interpreted as a syntactic constituent of the main clause. (For a similar discussion of English transitive clauses, see Taylor 1989, 210-217; DeLancey 1987.) But we cannot predict which dimensions language users will consider relevant when they extend the use of linguistic constructions. Neither can language users in a test situation. Have they heard a particular extension before? How often? Can they imagine a context where it would be appropriate? In fortunate cases, what the language users do is evaluate what they feel comfortable about, either because they manage to create a context for the sentence or because they find that the sentence is within the limits of some norm of correctness. The result in terms of "grammaticality judgements" reflects the language users' (lack of) linguistic creativity or openmindedness, but that is not what grammar writing is supposed to be based on.

#### *Prototypicality and frequency*

One source of prototypicality is frequency. That became particularly clear in my study of three verb stems of polymorphemic verbs used to describe the motion and location of human beings in Danish Sign Language (see III.8.3 Classifiers or verb stems in Danish Sign Language?). Informants agreed on which stems could be used in verbs to describe someone approaching the holder of the point of view; but they were either uncertain about or disagreed on which stems could be used in verbs for someone passing by the side of the holder of the point of view. We talk much more often about someone coming toward us than about someone passing us.

#### *Indeterminacy of linguistic categories*

To accept prototype theory as a theory of linguistic categories does not mean, of course, that the notion of grammaticality should be abandoned. All native speakers have an intuitive feeling that some constructions are completely unacceptable in their language. But when linguists ask native speakers to judge the grammaticality of certain constructions (or when linguists as native speakers make such judgements), they are seldom interested in completely unacceptable constructions. Rather they start with a certain kind of construction and try to find its boundaries by inventing new constructions along specific dimensions relevant to a delineation of the construction in the language in question. These constructions may extend from the

prototype in such a way that native speakers are unable to say when the boundary between acceptable and unacceptable constructions is reached. The boundary does not exist as a sharp line.

Distrust in grammaticality judgements of borderline cases should not, of course, lead to a complete lack of interest in possible extensions of a prototype. We must, in Taylor's words:

specify, not only the prototype, but also the manner and the extent of permitted deviation from the prototype. In other words, the degree of productivity of a construction needs to be stated as part of its characterisation. (Taylor 1989, 200)

But we should also be aware of the danger of making linguistic descriptions more determinate than the language.

The sources of indeterminacy of linguistic categories in spoken languages also play a part in signed languages. Moreover, besides being influenced by the indeterminacy of categories and constructions and by iconicity, judgements of grammaticality in signed languages are also influenced by the existence of a number of language varieties in the signing community and by deaf people's attitudes to their language (see I.5.3).

### 5.3 Different language varieties

The signs DEAF and HEARING are used not only to refer to the (lack of) ability to hear, but also to a spectrum of attitudes and to competence in Danish Sign Language. Some persons with normal hearing ability are closer to the deaf community than some persons with a severe hearing loss. Moreover, deaf persons are integrated in the deaf community to different degrees. The sign ÆGTE ('genuine') in Danish Sign Language is used to qualify DØV ('deaf') when deaf people want to characterise a deaf person as belonging to the deaf community (Widell 1988, 208). The expression does not characterise degrees of hearing loss, but signifies that the person in question is a core member of the deaf community in attitudes as well as language. It can also be used about the signing of a hearing person (he signs like an ÆGTE DØV), but cannot be used to describe a hearing person as such, no matter his attitudes and signing skills.

Among signed language researchers writing in English, it has become customary to distinguish between *deaf*, about a person with a hearing loss, and *Deaf*, indicating membership of a particular subculture (Padden & Humphries 1988, 2). As I do not feel competent or entitled to decide who is what, I shall not follow this practice.

#### *The deaf community*

Baker and Cokely (1980) see four possible entries to membership in the deaf community in the United States. One of them is hearing loss, but this factor by itself is not sufficient to become a core member of the community. It interacts with three

other factors. The first is fluency in ASL. The second is 'the ability to satisfactorily participate in social functions of the Deaf Community. This means being invited to such functions, feeling at ease while attending, and having friends who are themselves members of the Deaf Community' (ibid., 56). The fourth factor mentioned by Baker and Cokely is political, i.e. 'the potential ability to exert influence on matters which directly affect the Deaf Community on a local, state, or national level' (ibid., 56). The purpose of Baker and Cokely's model is to describe avenues to the deaf community. As a byproduct, however, it describes core members of the community as persons who have a hearing loss, are fluent in the signed language, have political influence within the community and in relations between the community and the environment, and who are socially at ease and active in the community.

Active participation in deaf political issues may be an avenue to membership in the deaf community for hearing persons, but it would be wrong to claim that being politically active in the community is a prerequisite to becoming a core member of the community in Denmark. The same is true about fluency in Danish Sign Language. That is, some deaf persons are accepted as core members of the deaf community even though their signing is strongly influenced by Danish. These persons are, however, able to understand, without any problem, Danish Sign Language as it is used among deaf persons having deaf parents. There are no thorough studies of criteria for membership of the deaf community in either the United States or Denmark, but the presumed differences may be due to the difference in size. As the deaf population in Denmark is very small, individual attitudes may become more important in determining membership than language.

### *Social stratification*

It has been shown that it is necessary to recognise social stratification within the deaf community of the United States (Stokoe, Bernard & Padden 1976 (1980); Woodward 1983). As yet, we know very little about the social varieties of Danish Sign Language, but many elderly deaf persons are said to sign differently than younger people. For instance, many elderly deaf persons use the Mouth-Hand System (see I.6.2 The manual alphabets, the Mouth-Hand System, and names) more than younger people. There are also regional differences, especially at the lexical level. These differences are linked to different schools for the deaf.

### *Sign-supported Danish, interlanguage, and contact signing*

The fact that there are many noncore members of the deaf community is one source of variation in signing. Very few noncore members become fluent in Danish Sign Language. For educational or practical reasons, many hearing persons prefer to use spoken Danish accompanied by signs (sign-supported Danish). Some simply fail to learn Danish Sign Language properly because of their marginal relation to the

community. Instead, they use an interlanguage that may be, but not necessarily is, influenced by Danish. Many core members switch between different varieties depending on the receiver. They use Danish Sign Language with their deaf friends and what Lucas and Valli (1989), in an American context, call a form of *contact signing* with hearing persons who know some signed language.

Another source of variation is the recruitment of language users. Most deaf children (between 90 and 95%) have hearing parents who, at first, know no signed language. The parents are offered courses, but rarely reach an advanced level of signing unless they actively seek the company of deaf adults. Some children attend kindergartens with other deaf children, but other deaf children see very little signing before they start school. Here they learn Danish Sign Language from the deaf children who have deaf parents, from older children, from the deaf adults at the schools, and from an increasing number of hearing teachers who master Danish Sign Language as a foreign language. But many hearing teachers still use sign-supported Danish. This means that most deaf children are surrounded by people who use either sign-supported Danish or an interlanguage form of Danish Sign Language.

A study of some deaf children's signed language (Kjær Sørensen & Hansen 1976) revealed that deaf children of deaf parents used a linearisation rule in describing a drawing: they mentioned first the items that were closest to the picture's foreground. Deaf children of hearing parents did not use such a rule. My own experience from summer camps with deaf children is that many children below the age of 12 neither use nor understand signs that are normally only used in interactions between deaf persons (Engberg-Pedersen & Pedersen 1985b; Engberg-Pedersen & Hansen 1986). But many deaf children's language has changed considerably in recent years because of their parents' increased use of Danish Sign Language and the parents' insistence that the children attend kindergarten with other deaf children and the schools for the deaf rather than be mainstreamed into classes with hearing children.

### *Attitudes to Danish Sign Language*

Especially earlier, many teachers and administrators in the educational system regarded Danish Sign Language as the last resort when a deaf child failed to learn to speak and understand Danish, and this attitude has inevitably influenced many deaf persons' attitude to Danish Sign Language. Many still feel that Danish Sign Language is more "primitive" than Danish; they attribute a higher status to deaf persons who can speak Danish (Faustrop 1980; Christensen 1989; Vikkelsø 1989). When hearing persons say about a deaf person, *He has very good language*, they almost always mean 'He speaks Danish well'. They forget that a deaf individual may be fluent in Danish Sign Language besides knowing some Danish. For many years, the language used in the news programmes produced specially for deaf people was sign-supported Danish, and many deaf persons still doubt that it is possible to talk about many subjects in Danish Sign Language even though they do so regularly in the

deaf clubs (Hansen 1986). Because such attitudes are widespread, it is still difficult, when videorecording deaf persons for the first time, to elicit Danish Sign Language rather than a variant of signing that is closer to Danish.

#### **5.4 The informants and the data of this study**

The main body of data for this study is about 3 1/2 hours of videorecorded monologues and dialogues by twelve native deaf signers, as well as observations of deaf persons' signing in natural settings, in particular at the Centre for Total Communication in Copenhagen. The data are about the informants' everyday life: work, meetings, holidays, problems with day care institutions, and the like. The signers are between 18 and 60 years of age, most of them between 30 and 45. Two have hearing parents, the rest all have deaf parents. Many of them have deaf children and their spouses are deaf. One of the informants is a native signer of another signed language and near-native in Danish Sign Language. The main informants are accustomed to being videorecorded. Several of them are employed by the Centre for Total Communication.

All of the informants are core members of the Danish deaf community in the sense that they use Danish Sign Language in their daily life and they socialise with deaf people. Many of them are exceptional in the sense that they use Danish Sign Language also in their work. The employees of the Centre for Total Communication are politically influential in the deaf community as a consequence of their work, and some of them hold other offices in the deaf community. Most of the informants are well-educated compared with the deaf population at large, and their signing is more influenced by Danish than the signing of some members of the deaf community.

The data have been supplemented with the outcome of discussions of my analyses. I have known the informants for between 5 and 14 years, and I often discuss my analyses with them and with other deaf persons. It has turned out that the discussions are most fruitful when several signers take part and when we discuss examples from the monologues, i.e. examples in a context. In such cases, the signers at times reach an agreement on grammaticality judgements; but even when this is not the case, the discussions bring about new examples and intuitions about the language.

Another kind of data is translations of sentences that focus on specific grammatical problems. Such sentences were presented to the informants with a context in written Danish or I explained the content and the context to the signers. Informants read the sentences, made sure they understood them, and tried to remember the content. Some time later they were videorecorded while they signed to another deaf person. Very few of the examples in this book come from this kind of sampling. One reason for repeatedly emphasising the textual and situational context is that the categories that I focus on in this study are context-dependent to a large extent, as I will show.

All transcriptions and translations of examples in the text have been checked with at least one native signer.

Throughout the book, when I talk about *Danish Sign Language* I mean the body of data that I have just described. In a few places, I comment on different varieties that appear in the data. What I have wanted to do in this study is not to formulate rigid grammatical rules, but to examine the different areas of the language where space is used: what are the morphosyntactic functions of the uses of space? For what discourse purposes is space used? How do the different linguistic areas interrelate?