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Grammaticalization and modality: the emergence of a case-marked pronoun in Israeli Sign Language[1]

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This paper focuses on the role of modality in determining certain properties of grammaticalization processes in signed vs. spoken languages. The process examined here is the evolution of a case-marked pronoun in the pronominal system of Israeli Sign Language. This pronoun is shown to have evolved from the homophonous noun PERSON. The grammaticalization path leading to the evolution of a case distinction is compared to the evolution of case markers in spoken languages. This comparison reveals that languages in different modalities target different words as sources for grammaticalization. Case markers in spoken languages usually evolve from certain nouns or verbs denoting spatial relations, while in sign languages this is not the case. It is suggested that this difference might be attributed to the scarcity of prepositions in sign languages, and to the iconicity of spatial predicates, which may restrict the possible grammaticalization processes in which they may participate.

One of the more productive ways for a language to acquire new grammatical structures is by means of grammaticalization, a process which involves the evolution of grammatical morphemes from full lexical items.[2] The present paper focuses on a grammaticalization process in a language transmitted via

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[2] See Heine et al. (1991a: 5–23) for a comprehensive survey of early works on grammaticalization, from the 10th century AD up to the present. See also Traugott & Heine (1991), Hopper & Traugott (1993), Bybee et al. (1994), and references cited in these works.

the manual-visual modality: the evolution of a case-marked pronominal form in Israeli Sign Language (ISL), the major language of the Deaf community in Israel. The morpheme in question is cognate with a sign meaning 'a person', but seems to have a different role when functioning as the pronominal object of certain verbs. A comparison between the properties and distribution of the sign PERSON and those of the pronominal sign, glossed as $PRO_{[bC]}$ (a pronoun with a bC handshape,[3] shown in figure 2 below), supports the hypothesis that the latter has grammaticalized from the former.

That grammaticalization is not restricted to spoken languages comes as no surprise. Recent work on various sign languages has found a considerable number of examples of the use of this mechanism for developing new grammatical structures. For example, in American Sign Language (ASL) the verb FINISH has evolved into an aspectual marker for perfective action (Fischer & Gough 1999 [1972]). Also in ASL, an agentive suffix has evolved from a noun meaning 'person' (Supalla 1998) and a negative suffix from a word meaning 'zero' (Aronoff et al. 2000). In ISL, a marker of the perfect aspect has evolved from the adverb ALREADY (Meir 1999). A cross-linguistic study (Wilcox et al. 2000) showed that in several sign languages grammatical markings of modality developed from lexical forms. Sign languages may also use non-linguistic elements as sources for grammaticalization, e.g. the development of facial expressions into various grammatical markers (Y/N questions, topic markers and conditionals; see MacFarlane 1998, Janzen 1999), and the development of gestures into Size and Shape Specifiers and classifier constructions (Zeshan, in press).

The development of a case marker from a noun, the topic of the present study, is by no means exceptional. Such processes have been attested in many languages all over the world. However, case markers in spoken languages have been reported to evolve mainly from nouns denoting spatial relations (e.g. *back*, *top*, *inside*) or certain verbs of motion and transfer (Croft 1991, Heine et al. 1991a, Traugott & Heine 1991, Blake 1994, among many others). The particular case where a lexeme denoting 'a person' develops into a case-marked pronominal seems to be unique. Sign languages, unlike spoken languages, seem not to recruit nouns or verbs denoting spatial relations as sources for developing case markers. This complementarity suggests that modality does play a role in grammaticalization, in as much as it may determine possible source words for the process and possible grammaticalization paths. Grammaticalization sources and paths have been assumed to reflect some shared cognitive basis (as has been suggested by, for example, Heine et al. 1991a, b), and therefore this difference between signed and spoken languages is rather unexpected. If, however, such a difference can be

[3] A bC handshape is produced by extending the thumb and the index finger in a 'cupped' manner, while the other fingers are closed. See appendix B for illustrations.

shown to stem from a particular property characteristic of one modality but not of the other, then the study of grammaticalization in sign languages is significant in two respects: it provides a testing ground for generalizations made so far only on the basis of studies of spoken languages, and it also offers a new angle for studying the interaction between modality and the structure of language.

The analysis presented in this paper aims at identifying the factor causing the difference in grammaticalization sources and paths pointed to above. These differences are attributed to the ways in which spatial relations are realized in signed vs. spoken languages. By exploring the interaction between this factor and the process of grammaticalization, this paper makes some novel hypotheses concerning the relationship between source and target structures, in particular, the forces determining which classes of words are possible sources for certain grammaticalization processes. It is argued that sign languages target different sources for grammaticalization for the following reasons: (1) they do not need to develop spatial adpositions in order to convey spatial relations, as they can express such relations in a much more direct manner than spoken languages; and (2) the form of the few spatial predicates which are found in ISL, in particular their iconicity, makes them less likely to grammaticalize into grammatical morphemes such as case markers.

1. THE PROPERTIES OF $PRO_{[bC]}$

An essential property of the pronominal system of sign languages is that it makes use of space for anaphoric reference. A nominal in a sign language discourse is usually associated with a location in the signing space that remains constant throughout that stretch of discourse. If the referent of the nominal is present, it gets associated with its actual location. If the referent is not present, the association may be made by producing the nominal sign and then pointing to or gazing at a specific point in space. Subsequent reference to that location (by pointing to it, or directing a verb to it) has the function of referring back to that nominal. In that respect, these locations, referred to as R-loci, function as referential indices for the nominals they are associated with.

A pronoun in object position in ISL usually takes the regular pronominal form: G (extended index finger; see appendix B) handshape pointing towards the R-locus of a referent. This pronominal form does not show case distinctions; subject NPs and object NPs take the same form, as is illustrated in (1) and figure 1. As is a common practice in sign language literature, this pronominal form is glossed as INDEX.[4]

[4] For notational conventions used in this paper, see appendix B.

(1) $INDEX_3$ INTERRUPT $INDEX_2$.
'He interrupted you.'

However, certain verbs in the language mark their pronominal object by a special morpheme, which has a bC handshape and a downward movement, as in (2) and figure 2. This sign is glossed here as $PRO_{[bC]}$ (a pronoun with a bC handshape).

(2) $INDEX_1$ BE-IMPRESSED $PRO_{[bC]3}$
'I am impressed with him.'

The distinction between an INDEX object and a $PRO_{[bC]}$ object is manifested only when the object NP is pronominal. When the object is a full NP, it does not carry any morphological marker and the distinction is neutralized:

(3) $INDEX_3$ INTERRUPT SISTER $POSS_2$
'He interrupted your sister.'

(4) INDEX_1 BE-IMPRESSED SISTER POSS_2
'I am impressed with your sister.'

$\text{PRO}_{[bC]}$ is cognate with a sign meaning 'person'. However, the meaning, function and distribution of these two homophonous signs are quite different. One sign means 'a person', while the other sign is a pronoun which refers to a nominal previously introduced into the discourse. The interpretation of the pronoun is, therefore, dependent on the noun it co-refers to, and is translated as 'me/you/him/her', depending on its antecedent. These two distinct meanings are associated with different clusters of properties, which can serve as tests for distinguishing one sign from the other. We now turn to grammatical and functional differences.

1.1 *Differences between PERSON and* $PRO_{[bC]}$

The first difference between the nominal and pronominal use of the sign concerns the syntactic functions which they may take. The sign PERSON may assume any NP function in a clause, for example, it may function as the subject or the object of the verb (sentences (5)–(6)). $\text{PRO}_{[bC]}$ is restricted to functioning as the object of a verb (sentence (7)). Hence, when the sign occurs in subject position, the only possible interpretation is PERSON; a pronominal interpretation is not possible. Sentence (5) can only mean 'A person approached me', but not 'He/she approached me'.

(5) **PERSON** INDEX_3 $_3\text{APPROACH}_1$
'A person approached me.' (*'He/she approached me.')
(6) INDEX_1 KNOW **PERSON** DEAF, INDEX_3 LIKE $\text{TRIP}_{(\times 3)}$
'I know a deaf person, he likes to go on trips.'
(7) INDEX_1 BE-AFRAID $\mathbf{PRO_{[bC]_3}}$
'I am afraid of him.'

Secondly, the two readings differ with respect to modification. PERSON can be modified by adjectives, as in (8), by nouns, as in (9), by numerals, as in (10), or by an index, as in (11). (12) shows that $\text{PRO}_{[bC]}$ cannot be modified in these ways.

(8) INDEX_1 SEE PERSON **FRIGHTENING**
'I saw a scary person.'
(9) MALE **ARBITRATOR** PERSON
'A real-estate agent.'
(10) INDEX_1 SEE **FIVE** $\text{PERSON}_{(\text{PL})(\times 3)}$
'I saw five people.'
(11) MALE PERSON $\mathbf{INDEX_3}$, INDEX_1 CONVINCE LEARN
'I have convinced that man to study.'

(12) I BE-FED-UP-WITH $PRO_{[bC]}$/*$PRO_{[bC]}$ LAZY/*$PRO_{[bC]}$ $INDEX_3$/*THREE $PRO_{[bC].}$
'I am fed up with him/*lazy him/*that one/*three of them.'

Morphologically, the two readings differ with respect to the grammatical categories of number and person. The sign interpreted as PERSON has dual and plural forms. When signing the sign twice in two different locations in space, the form has the meaning 'two persons'. Three or more iterations of the sign means 'people' (plural, as in 10 above). Two or more iterations of the sign $PRO_{[bC]}$, as in (13b) and (14b) below, result in a different interpretation: it can only have a distributive meaning ('each one of them'). Hence, the form illustrated in figure 3 can be interpreted either as PEOPLE, or as 'each one of them' (as in 14b). A non-distributive meaning ('all of them') cannot be conveyed by $PRO_{[bC]}$, but rather by using the regular INDEX form with a horizontal arc movement, illustrated in (14a), or the dual pronoun BOTH-OF-THEM, which has a V (extended index and middle fingers; see appendix B) handshape, (13a).

(13) (I saw the two of you performing at the play last night.)
(a) $INDEX_1$ BE-IMPRESSED $YOU_{(DUAL)}$, EXCELLENT
'I was very impressed with both of you, you were excellent.'
(b) $INDEX_1$ BE-IMPRESSED $PRO_{[bC](\times 2)}$, EXCELLENT
'I was very impressed with each one of you, you were excellent.'

(14) (All of my brothers have new cars. I am the only one driving a wreck.)
(a) $INDEX_1$ ENVY $INDEX_{3(ARC\text{-}EXHAUSTIVE)}$
'I envy them (all of them)!'
(b) $INDEX_1$ ENVY $PRO_{[bC](\times 3)}$
'I envy each one of them!'

Figure 3
Plural form 'PEOPLE' or 'each one of them'

Additionally, the sign $PRO_{[bC]}$, as a pronominal sign, shows person distinctions. It can refer to 1st and non-1st persons. When referring to 1st person, the sign is articulated on the signer's body. The noun PERSON, on the other hand, denotes only 3rd person. It cannot refer to the signer or the addressee, and it cannot be articulated on the body. Thus, the sign in figure 4, which relates to the example in (15), can only be interpreted as the pronoun 'me'.

(15) TEACHER $POSS_1$ RECOMMEND $PRO_{[bC]1}$ ROLE MAIN
'My teacher recommended me for the main role.'

Figure 4
$PRO_{[bC]1}$ 'me'

The two interpretations also have different discourse functions. PERSON can introduce new referents into the discourse. When it refers to a person introduced for the first time in a discourse, it is usually accompanied by INDEX (and often also by the sign MALE or FEMALE), thus creating an R-locus for that referent. Alternatively, it can occur on its own, and then the location in space where the sign is articulated will constitute the referent's R-locus. $PRO_{[bC]}$, in contrast, cannot introduce new referents to the discourse. It can only function anaphorically, as pointing back to a referent already mentioned in the discourse. Sentence (16) contains the sign PERSON for introducing a new referent and $PRO_{[bC]}$ as a pronominal object.

(16) MALE PERSON $INDEX_3$ – $INDEX_1$ BE-FED-UP $PRO_{[bC]3}$
'That person, I am fed up with him.'

Finally, there are also phonological differences. $PRO_{[bC]}$ tends to cliticize to the verb of which it is a complement. One indication of cliticization is the spreading of non-manual markers, such as specific facial expressions, which are obligatorily part of the articulation of some verbs, to $PRO_{[bC]}$ (as illustrated in figure 5 below). In addition, mouthing of the Hebrew word for

the verb usually spreads over $PRO_{[bC]}$ when it follows the verb. The spread of mouthing from lexical words to pronouns has been argued to characterize cliticization in other pronouns in ISL (Sandler 1999, 2000). Additionally, adverbials and negators usually occur after the $V + PRO_{[bC]}$; that is, $PRO_{[bC]}$ tends to be inseparable from the verb, as is illustrated in (17)–(18). However, it has not yet been fully grammaticalized as a clitic; it can precede the verb if topicalized, as in (19)–(20), and in some cases certain negators can occur closer to the verb, as illustrated in (21) (though the word order in (22) is much more common). $PRO_{[bC]}$ seems to be in the process of becoming a bound morpheme, but has not yet reached the final stage of this process.

(17) $INDEX_1$ BE-DISAPPOINTED $PRO_{[bC]3}$ NEVER
'I have never been disappointed with him.'

(18) *$INDEX_1$ BE-DISAPPOINTED NEVER $PRO_{[bC]3}$
'I have never been disappointed with him.'

(19) top
$PRO_{[bC]3}$ – $INDEX_1$ BE-DISAPPOINTED NEVER
'I have never been disappointed with him.'
(Literally: 'Him, I have never been disappointed with.')

(20) top
$PRO_{[bC]3}$ – $INDEX_1$ ENVY ZERO
'I am not envious of him at all.'
(Literally: 'Him, I am not at all envious of.')

(21) $INDEX_1$ ENVY ZERO $PRO_{[bC]3}$
'I am not envious of him at all.'

(22) $INDEX_1$ ENVY $PRO_{[bC]3}$ ZERO
'I am not envious of him at all.'

PERSON shows different phonological properties. First, it is very often accompanied by the mouthing of the Hebrew word for 'person' (*'iš*). That is, PERSON gets its own mouthing, a property characteristic of lexical heads, not of clitics. Additionally, PERSON is usually not adjacent to a verb.

It is preceded by the signs MALE or FEMALE, and followed by a modifier, either an INDEX or an adjective. Hence, PERSON forms a prosodic unit (a phonological phrase[5]) with its modifiers and does not cliticize onto the verb.

The differences between PERSON and $PRO_{[bC]}$ are summarized in table 1.

	PERSON	$PRO_{[bC]}$
SYNTACTIC FUNCTION	Any NP function	Only object
MODIFICATION	Adjectives, numerals, index	–
NON-SINGULAR FORMS	Dual and plural	Dual and plural forms only for distributive reading; no dual and plural forms for exhaustive reading
MARKING PERSON DISTINCTIONS	–	1st and non-1st forms
INTRODUCING NEW REFERENTS	+	–
PHONOLOGICAL FORM	Free word	Tendency to cliticize

Table 1
The differences between PERSON and $PRO_{[bC]}$

1.2 *Co-occurrence restrictions on $PRO_{[bC]}$*

As mentioned in the preceding section, $PRO_{[bC]}$ is restricted to object position. There are additional restrictions on its distribution, which concern both the NPs it can co-refer to and the verbs it can co-occur with.

First, $PRO_{[bC]}$ can co-refer only to NPs which have human referents. In that respect, it shares a semantic feature with PERSON, [+human]. This is quite typical of grammaticalized morphemes, a point which will be further elaborated in section 2. When a verb takes a non-human object, the pronominal form is the INDEX form.

(23) (I visited a very beautiful place last year.)
$INDEX_1$ MISS $INDEX_3$/*$PRO_{[bC]}$
'I miss it (the place)/*him.'

(24) (My brother has been away for quite a while.)
$INDEX_1$ MISS $PRO_{[bC]3}$
'I miss him (my brother).'

[5] For the definition and properties of phonological phrases in ISL, see Nespor & Sandler (1999).

In addition, $PRO_{[bC]}$ may only co-occur with certain verbs, which divide into three classes, based on their semantics (a full list of the verbs found so far in the language is presented in appendix A):

(i) 'Experiencer-subject' (ES) psych verbs such as: WORRY, HATE, PITY, ADMIRE, BE-ANGRY-AT, SHOW-AFFECTION-TO-WARDS, BE-MAD-AT. These verbs typically take a subject that is the thematic experiencer (the argument experiencing a mental or psychological state) and an object which is the 'subject matter of emotion' (using Pesetsky's 1990 terminology),[6] that is, the entity or event that the experiencer's emotions are concerned with. For example, in a sentence meaning 'I am worried about you', *you* is the entity which my worries are concerned with.
(ii) Verbs denoting an action whose agent intends to harm or negatively affect the complement in some way, e.g. LIE-TO, INSULT, TAKE-ADVANTAGE-OF.
(iii) Verbs which take a 'content' object, e.g. TALK, WRITE, ASK, READ ABOUT.

This classification holds for most cases. However, there are cases that do not fall neatly into one class or another. Some verbs can fall into more than one class, e.g. SUSPECT ((i) and (ii)), BEAR-GRUDGE ((i) and (ii)), GOSSIP-ABOUT ((ii) and (iii)). There are also some arbitrary gaps. For example, most ES psych verbs take a $PRO_{[bC]}$ object, but some do not. While ADMIRE, ADORE and HATE take $PRO_{[bC]}$, LOVE can only co-occur with an INDEX pronominal object. Finally, there are some verbs which do not belong to any of these classes, such as ELECT, ENCOURAGE, 'TO FISH (for a sweetheart)', KEEP-EYE-ON, INFLUENCE, DISMISS.

Verbs which $PRO_{[bC]}$ cannot co-occur with are verbs denoting motion and location, most verbs denoting a change of possession, and any verb which does not select a [+human] complement.

Certain verbs take either 'bC' or 'INDEX' pronominal objects. In most cases there is a difference in meaning, though sometimes this difference is very subtle and hard to specify. Some examples are given in (25)–(27).

(25) (a) BELIEVE + INDEX 'to believe somebody'
(b) BELIEVE + $PRO_{[bC]}$ 'to rely on somebody'
(26) (a) BE-SHY + INDEX 'I am shy of him.'
(b) BE-SHY + $PRO_{[bC]}$ 'I am ashamed of him, of something he has done.'
(27) (a) CHOOSE + INDEX 'to choose/pick somebody'
(b) CHOOSE + $PRO_{[bC]}$ 'to elect somebody for a position.'

[6] This argument has also been referred to as STIMULUS, CAUSE, THEME, OBJECT OF EMOTION or TARGET OF EMOTION (see Levin 1993: 189). The term 'subject matter of emotion' is used in this paper, since it seems to fit best the semantic characterization of verbs selecting $PRO_{[bC]}$.

In many cases, ISL native signers feel that the difference between an INDEX object and a $PRO_{[bC]}$ object is that the latter assumes a greater degree of familiarity between the subject and the object. Consider the following examples, and the contexts in which they occur:

(28) (a) CHECK + INDEX
Implies physical objective examination, as in 'The physician checked me'.
(b) CHECK + $PRO_{[bC]}$
Would be used in contexts where some specific qualifications of a person are under examination, implying stronger personal connection between the examiner and examinee, as in 'I examined him in order to see whether he knows ISL well'.

(29) (a) REMEMBER + INDEX
Has a neutral meaning. It could be used in a question such as 'Do you remember him?'
(b) REMEMBER + $PRO_{[bC]}$
Implies a strong, long-lasting connection, as in the following contexts: 'I remember him, we grew up together'; 'I remember her well, she was my best teacher'.

(30) (a) UNDERSTAND + INDEX
'I understand you' (i.e. 'I understand what you said').
(b) UNDERSTAND + $PRO_{[bC]}$
Understanding one's behavior and reactions, as in the following context: 'I don't understand you, why did you make such a mess?!'

(31) (a) SHOW-RESPECT-TO + INDEX
Has a general, neutral meaning, 'I respect you'.
(b) SHOW-RESPECT-TO + $PRO_{[bC]}$
Respecting somebody for something specific s/he did, as in 'I respect you for making the effort and coming here'.

Do the various verbs that co-occur with $PRO_{[bC]}$ have something in common? Obviously, they all select for a human object, since $PRO_{[bC]}$ is specified as [+human] and, therefore, can co-refer only to human NPs. Interestingly, all these verbs also select for a human SUBJECT. In ES psych verbs, the subject is an experiencer. As such, it has to be a sentient being, most likely human. The subject of the verbs in group (ii) is both agentive and volitional, since this argument performs the action in order to negatively affect the object argument. An agentive and volitional argument is most likely to be human as well. The verbs in group (iii) all have to do with acquiring information. The ability to acquire information implies sentience on the part of the acquirer, which again makes it more likely to be human. Hence, verbs taking $PRO_{[bC]}$ can be characterized as imposing selectional restrictions on both their subjects and objects, in that both have to be [+human].

Nonetheless, there are other classes of verbs which select [+human] subjects and objects and yet do not occur with $PRO_{[bC]}$. The most notable is the class of verbs denoting transfer. Such verbs involve the transfer of an entity from one possessor to another. Possessors are most likely to be human, hence these verbs usually take human subjects and (indirect) objects. Yet most verbs of transfer do not take a $PRO_{[bC]}$ object. It seems, therefore, that there is an additional property which distinguishes the objects of verbs of transfer from those of verbs of groups (i)–(iii) above: the latter are not perceived or treated as a holistic entity, but rather as a set of properties, qualities or deeds. For example, in a sentence such as 'I am angry with him', it is usually the case that the cause of my anger is not the person 'him', but rather something that he did, or some property of his. This is true also with respect to content objects, as well as complements of 'negative effect' verbs. When we talk/write/read/learn about someone, what we refer to is his/her qualities or actions, not the person as a holistic entity. And in the case of negative intentions on the part of the agent, the action is targeted towards the person's feelings, not towards the person as an entity. In other words, the various classes of verbs which select for a $PRO_{[bC]}$ complement all relate to the qualities of that argument as a person. $PRO_{[bC]}$ reflects someone's qualities as a PERSON, not as a referent.[7]

Interestingly, we find similar patterning in other languages. In some spoken languages, the preposition which is used to mark content complements is also used in some 'negative effect' or adversative sense. In Hebrew, the preposition *ʕal* 'on' has this dual function:

(32) (a) Lamadnu ʕalav bakita.
learn-PAST-1ST.PL on-3RD.MASC.SG in-the-class
'We have learnt about him in class.'

(b) ʔišto meta ʕalav.
wife-POSS.3RD.MASC.SG die-PAST-3RD.FEM.SG on-3RD.MASC.SG
'His wife died on him.'

(c) Hu ʕavad ʕalay.
he work-PAST-3RD.MASC.SG on-1PS.SG
'He worked on me.' (i.e. 'He pulled my leg' in colloquial Hebrew)[8]

In English, content complements are usually marked by the preposition *about*, yet *on* is possible too. *On* is also used in adversative contexts, such as

[7] This suggests that the process of grammaticalization has not proceeded so far as to bleach the original meaning completely, a point I shall return to in section 2. I am indebted to an anonymous *JL* referee for this point.

[8] In colloquial Hebrew *ʕal* is used quite productively to create an adversative sense. For example, the colloquial *hu šiker ʕalay* ('He lied "on" me') has a stronger negative sense than *hu šiker li* ('He lied to me'), which is the standard form.

His car broke down on him. Thus, it seems that the notions of 'greater familiarity with', 'aboutness' and 'negative effect' are treated as semantically related in languages other than ISL.

1.3 *The syntactic status of PRO*$_{[bC]}$

PRO$_{[bC]}$ is a pronominal form which stands in paradigmatic relation with the pronominal form INDEX. PRO$_{[bC]}$ is the marked member of the paradigm, as it is associated with a specific syntactic function (marking the object NP), and is selected by verbs with certain semantic characteristics. As such, I suggest that it be analyzed as a pronoun marked by a semantic (oblique) case marker, on a par with semantic case affixes or adpositions in spoken languages. Semantic case markers in spoken languages encode specific semantic relations, e.g. various specific locative cases, instrumental, comparative and comitative (see Blake 1994). Semantic cases are often contrasted with grammatical or syntactic cases, which are described as encoding pure grammatical relations, such as subject and object. However, this distinction is in many cases not clear-cut, since the same case markers can be used to mark syntactic relations as well as specific semantic relations. For example, Blake (1994: 33) points out that in Latin the accusative marks the syntactic relation of object, as well as the semantic relation of destination. Many semantic cases are not confined to encoding only one type of semantic relation; rather, they often encode a variety of semantic relations, which may or may not be loosely related to each other. In Latin the ablative expresses the semantic roles of source, location and instrument (Blake 1994: 33).

PRO$_{[bC]}$ exhibits the properties of an element marked by a semantic case. It marks arguments with certain semantic characteristics, as described in section 1.2. As is the case with Latin and other case systems, several semantic relations are encoded by the same marker. These semantic relations are somewhat related to each other, as they share certain meaning components: [human], 'person'. Additionally, as is frequently the case with semantic case markers, sometimes the occurrence of PRO$_{[bC]}$ is arbitrarily determined by specific verbs, and there are also arbitrary gaps (e.g. it does not co-occur with LOVE, though it occurs with LIKE and SHOW-AFFECTION-TO).

The case distinction marked by the opposition between PRO$_{[bC]}$ and INDEX is apparent only in the pronominal system. Full NPs are not case-marked, and therefore this distinction is neutralized in sentences containing full object NPs (see sentences 1–4 above). This as well is not uncommon. In many languages, pronouns show more case distinctions, or different case distinctions, than full NPs. In English, for example, case distinctions (nominative–accusative) are manifested only in the pronominal system.

An alternative analysis is to regard PRO$_{[bC]}$ as an agreement marker. Verb agreement in sign languages is rather complex, as classes of verbs show

different agreement patterns (first identified by Padden 1988 [1983] for ASL). Relevant for our purpose here is the distinction between agreement verbs and plain verbs. AGREEMENT VERBS mark agreement with their subject and object. Their initial and final points are determined by locations in space associated with their syntactic argument. The path movement of agreement verbs is, therefore, from a location associated with one argument towards the location associated with the other. PLAIN VERBS have invariant beginning and end points; in particular, the form (movement path) of these verbs does not vary with the locations in space associated with their arguments.

Most of the verbs which co-occur with $PRO_{[bC]}$ belong to the class of plain verbs. It might be argued, then, that the function of $PRO_{[bC]}$ is to mark agreement with the object of those verbs that do not inflect for agreement. Auxiliaries whose main function is to mark agreement when the verb is not morphologically marked for agreement have been attested in other sign languages (SL of Taiwan (Smith 1990), SL of the Netherlands (Bos 1994), Japanese SL (Fischer 1996), German SL (Rathmann 2000)). However, such an analysis could not be maintained for ISL $PRO_{[bC]}$ for several reasons. First, $PRO_{[bC]}$ marks only the object NP, not the subject NP. The agreement auxiliaries mentioned above, as well as the class of verbs which inflect for agreement in sign languages (the so called 'agreement verbs'), mark agreement with both the subject and the object. More importantly, agreement markers can co-occur in the same clause with the NPs they agree with, as is illustrated in (33). The agreement markers are the initial and final locations of the verb LOOK-AT, represented here as the subscripts. $PRO_{[bC]}$, in contrast, cannot co-occur with a full NP in the same clause. In fact, it is in complementary distribution with full NPs, as in 34.

(33) **INDEX**$_{1\ 1}$LOOK-AT$_3$ **STUDENT INDEX**$_3$
'I looked at the student.' (Literally: 'I I-look-him the student.')

(34) INDEX$_1$ BE-IMPRESSED $\left\{ \begin{array}{l} PRO_{[bC]3} \\ STUDENT\ INDEX_3 \\ *PRO_{[bC]3}\ STUDENT\ INDEX_3 \end{array} \right\}$
'I am impressed with him/the student/*him the student.'

Furthermore, $PRO_{[bC]}$ can co-occur with agreement verbs. Some agreement verbs, such as REJECT, SHOW-AFFECTION-TOWARDS, EXTRACT-INFORMATION, are morphologically marked for agreement, yet their pronominal object takes the bC form, as in (35). If the function of $PRO_{[bC]}$ is to mark agreement, its co-occurrence with a verb marked for agreement would be unaccounted for. The case-marker analysis, on the other hand, accounts straightforwardly for the distributional facts of $PRO_{[bC]}$, and therefore is to be preferred.

(35) INDEX_1 ,$\text{SHOW-AFFECTION-TOWARDS}_3$ $\mathbf{PRO}_{[bC]3}$
'I showed affection towards him.'

To summarize, this section has provided evidence for the claim that PERSON and $\text{PRO}_{[bC]}$ are two distinct signs in the language, as they differ with respect to their phonological, morphological, syntactic and semantic properties. Moreover, it was suggested that the pronominal form encodes semantic case distinctions and, therefore, is to be analyzed as a case-marked pronoun. The similarity in form between PERSON and $\text{PRO}_{[bC]}$, as well as in some semantic features (i.e. [human] and 'person'), suggests that the pronominal form has evolved from the noun by a regular diachronic process, as has been argued for the development of case markers in spoken languages. Therefore, examining the evolution of $\text{PRO}_{[bC]}$ will enable us to compare the evolution of case systems in languages transmitted in different modalities. We turn to these issues in the next section.

2. The evolution of $\text{PRO}_{[bC]}$ by means of grammaticalization

2.1 *Properties of grammaticalization*

Grammaticalization can be described as a process by which full lexical items become grammatical morphemes. A classical definition of the term is given in Kuryłowicz (1965: 52): 'Grammaticalization consists in the increase of the range of a morpheme advancing from a lexical to a grammatical or from a less grammatical to a more grammatical status'. This process is characterized by correlated changes in the phonology, morphosyntax, semantics and function of the source lexical item. Heine & Reh (1984: 15) describe the development of a lexical item into a grammatical marker as 'evolution whereby linguistic units lose in semantic complexity, pragmatic significance, syntactic freedom, and phonetic substance'. Often, the original form remains as an autonomous lexical item in the language alongside the grammaticalized morpheme. This may result in a situation where multiple forms exist in the language, which may have the same phonological form and a common etymology, yet differ functionally. Such a situation is referred to as 'divergence' by Hopper (1991: 24).

Semantically, the process of grammaticalization is often characterized by 'desemanticization' (Heine & Reh 1984) or 'semantic bleaching' (Givón 1975 and others).[9] These terms refer to the process whereby the meaning of a morpheme shifts from lexical to grammatical. Lexical meaning is regarded as more concrete and elaborate, whereas grammatical meaning is more

[9] Various other terms have been suggested in the literature. See Heine et al. (1991a: 40) for a comprehensive survey, as well as some criticism of the term 'bleaching'.

abstract and schematized. For example, with reference to the development of the verb *go* to mark future, Sweetser (1988: 392) points out that

> we lose the sense of physical motion (together with all its likely background inferences). We gain, however, a new meaning of future prediction or intention – together with its likely background inferences. … we have … exchanged the embedding of this image-schema in a concrete, spatial domain of meaning for its embedding in a more abstract and possibly more subjective domain.

Another typical example can be found in the evolution of reflexives (Croft 1991: 236). In Hebrew, for example, the reflexive pronoun is cognate to a noun meaning 'bone'. Through grammaticalization, this noun ceases to denote a concrete entity; its meaning is abstracted and highlights only one of the properties of 'bone', namely, that it belongs in an essential way to oneSELF. This abstract and schematized meaning of [self] is encoded in the resulting grammatical morpheme, the reflexive pronoun.

The semantic change is often accompanied by various additional processes. Phonologically, this implies the coalescence of two independent words into one phonological word, by means of compounding, cliticization, affixation and, finally, fusion (Heine & Reh 1984). Morphologically, grammatical morphemes often become a member of a closed class of elements; that is, they become members of a paradigm. (Lehmann 1985 refers to this process as 'paradigmaticization'.) Syntactic changes include constraints on the distribution of the more grammatical morphemes, in that their distribution is much more restricted than that of the lexical items from which they originated. Often there is also a change in their syntactic category (de-categorization), from a major lexical category, a noun or a verb, to a secondary category, such as a preposition, a determiner or a pronoun.

Though it is not possible to define precisely the range of items that are likely to serve as source concepts, some generalizations can be made. The lexical items functioning as sources for grammaticalization can be largely characterized as words denoting concrete objects, processes or locations (Heine et al. 1991a: 32). Sources have been described as 'fundamental elements (symbolic and deictic in function) in a typical speech situation' (Traugott 1982: 246). Source words are also frequent in use (Bybee & Pagliuca 1985: 72). The list of source items recurring in grammaticalization processes has much in common with 'basic vocabulary', that is, lexical items that are less likely to be replaced by others. These include inter alia body-part terms, natural phenomena, human social terms (e.g. *person*, *father*, *mother*, *child*), and some of the most basic human activities, such as *do/make*, *come*, *go*, *give*, *take/hold*, *finish* and *say*.

Grammaticalization is a diachronic process. The correlation of processes described above, leading to the evolution of grammatical morphemes from lexical items, extends over time. Intermediate stages on the grammatical-

ization path correlate with temporal sequential stages of the process. Nonetheless, grammaticalization is also often reflected synchronically in that the various stages on the grammaticalization path can co-exist synchronically, leading to polysemy or homophony. Therefore, it is possible to study grammaticalization by examining variation in the distribution and uses of the same grammatical morpheme (as pointed out by Romaine 1999: 325). The reflection of a diachronic process in a synchronic stage of the language is of particular importance in the case of ISL. ISL is a young language (not older than 60–70 years), and research on ISL is much younger still. Detailed documentation of earlier stages of the language is not available. Therefore, grammaticalization processes can be studied only in terms of their reflection in the structure of the language today. The hypothesis that $PRO_{[bC]}$ has evolved from PERSON is supported by examining the similarities and differences between them, which can be accounted for and explained if grammaticalization is assumed. Furthermore, some occurrences of the form can be shown to correspond to intermediate stages on the path (see sentence (37) below). Individual variations among signers with respect to the verbs selecting $PRO_{[bC]}$ also support the hypothesis that a diachronic linguistic process is taking place.

2.2 *Grammaticalization properties of $PRO_{[bC]}$*

$PRO_{[bC]}$ exhibits all the properties mentioned above as characteristic of grammaticalization. Semantically, its meaning is much more abstract and schematized than that of PERSON. While the latter denotes a concrete entity in the world, $PRO_{[bC]}$ has no denotation of its own; it can only co-refer to a referent introduced earlier in the discourse. This semantic change is accompanied by syntactic de-categorization. $PRO_{[bC]}$ is no longer a noun, but rather functions as a pronoun. Its distribution is likewise much more restricted: it occurs only in object position of certain verbs, and it cannot be modified. Morphologically, $PRO_{[bC]}$ has become a member of the set of object pronouns, forming a paradigm with INDEX in various syntactic environments. In many cases, grammaticalization results also in 'obligatorification' (Lehmann 1985), that is, grammatical morphemes become obligatory in certain environments. This property as well is exhibited by $PRO_{[bC]}$. Many verbs take a $PRO_{[bC]}$ object obligatorily (see the table in appendix A). Finally, there is also phonological reduction. As we saw earlier, $PRO_{[bC]}$ tends to cliticize onto its host verb and form one prosodic word with it, though the cliticization has not yet been fully grammaticalized.

An interesting feature of products of grammaticalization is that they tend to preserve some traces of their original lexical meanings. (Hopper 1991: 22 uses the term 'Persistence'.) This is clearly manifested in the constraints on co-referentiality and distribution of $PRO_{[bC]}$. It has preserved the feature [+human] of its source PERSON. Therefore, it can co-occur only with verbs

selecting for a [+human] complement. Furthermore, it relates to the referent's qualities as a person, not as a holistic entity. This is manifested in the fine semantic distinctions between the use of an INDEX pronoun and a $PRO_{[bC]}$ pronoun in examples (25)–(31) above.

2.3 *The grammaticalization path of* $PRO_{[bC]}$

The evolution of $PRO_{[bC]}$ can be seen as having proceeded along the following path:

(36) Noun > co-referential noun > pronoun in object position >
I II III
case-marked pronoun
IV

The transitions from one stage to another are triggered by contextual factors which lead to different interpretations of the word in different contexts. Heine et al. (1991a: 71–72) refer to this process as 'context-induced reinterpretation', which involves several stages. First, a given linguistic form, in addition to its core sense, acquires an additional sense in a specific context. Next, this additional sense makes it possible for the item to be used in contexts that are compatible with its new sense, but not with its core meaning. Finally, the new meaning is conventionalized, which results in two 'polysemes' which may develop eventually into homophones.

The development of $PRO_{[bC]}$ follows the stages sketched in (36) above. The transition from stage I to stage II is triggered by the following distributional property of the noun PERSON: when PERSON is the object of a verb, it can be interpreted anaphorically. Consider the sentence in (37).

(37) MALE $PERSON_3$ $INDEX_3$ – $INDEX_1$ KNOW bC(PERSON?/ PRO_3?) $INDEX_3$, $INDEX_3$ STRANGE PERSON
'That person, I know that person/him. He is a strange person.'

The postverbal object NP 'that person' can be interpreted as co-referring with the noun introduced at the beginning of the sentence. Hence it can be translated either as 'that person' or as 'him'. Notice, though, that the sign in question still functions as a noun, since it is modified by INDEX. In the next stage of grammaticalization, the existence of coreferentiality makes it possible for the sign to function as a pronoun in certain contexts. The sign's phonological form also contributes to its change in function. Since PERSON is not a body-anchored sign, it can be signed in various locations in space.[10] When its location is identical to the R-locus of a previously introduced NP, the location specifications of PERSON become meaningful: they indicate the

[10] I thank Jens Hessmann for this point.

coreferentiality with the nominal. The pronominal function of PERSON is illustrated in (38), where the sign in object position is not accompanied by INDEX, as is typical of pronouns.

(38) MALE PERSON$_3$ ONE$_{3\ 3}$APPROACH$_1$. INDEX$_1$ KNOW PRO$_{[bC]3}$. INDEX$_3$ SIGN FAST
'A person approached me. I know him, he signs so fast!'

Thus the transition from II to III involves both the restriction of the pronominal interpretation to object position, and a category shift, from a full noun to a pronoun. Once PRO$_{[bC]}$ has grammaticalized as a pronoun, it enters into paradigmatic relationship with the more general pronominal form, INDEX. Since the distribution of PRO$_{[bC]}$ is much more restricted than that of INDEX (as the latter is not restricted only to object position and is less restricted with respect to the verbs it can co-occur with), PRO$_{[bC]}$ becomes the marked member of this paradigm. The distributional markedness spreads to the semantics as well, in that PRO$_{[bC]}$ can refer only to human objects of certain classes of verbs. This semantic differentiation is responsible for the transition from stage III to IV. The association of PRO$_{[bC]}$ with a specific syntactic function and certain semantic characteristics makes the distinction between the two pronominal forms a case distinction.

3. Grammaticalization and modality

Instances of grammaticalization are abundant among the languages of the world (see references in fn. 1). Sign languages are no exception. The grammaticalization of PERSON (in ISL) into a case-marked pronoun provides another example for the fact that languages use old means in order to create new meanings and new structures. Together with other instances of grammaticalization in sign languages mentioned, it demonstrates that such a mechanism is modality independent.

Yet, the particular case where a lexeme denoting 'a person' triggers the initial development of a case system is unique. Case markers in spoken languages have been reported to evolve mainly from spatial adpositions. These adpositions in turn are related to nouns denoting body parts with salient location or orientational features, or certain verbs of motion and transfer. The development of PRO$_{[bC]}$ as a case-marked pronoun is different. While nouns such as 'person' serve as sources for agentive morphemes (e.g. Thai class nouns, in Bisang 1996: 546), classifiers (e.g. Malay, in Hopper & Traugott 1993: 118) or pronouns (e.g. French *on*, which developed from Latin *homo* ('man/person'), Heine et al. 1991a: 35),[11] I have not found any

[11] Sign languages other than ISL seem to use a noun meaning PERSON as the source for an agentive suffix (ASL, in Supalla 1998), a noun classifier (Swedish SL, in Bergman and Wallin 1998) and a person agreement marker (German SL, in Rathmann 2000).

evidence for such nouns as sources for the development of a case marker or a case-marked pronoun. It should be pointed out that the sign PERSON does have a spatial component in its PHONOLOGICAL form. It is not signed on the body, but rather in the space in front of the signer. Hence the sign may be articulated in various locations in space, which is a fundamental property of pronominal signs in the language. In other words, the spatial component in the sign's phonological form is a pre-requisite for the sign to function as a pronoun. However, the MEANING of PERSON is non-spatial; it does not denote spatial relations such as 'in', 'on', 'behind', 'to' or 'from', and it does not have any salient spatial meaning components. This is in contrast with the spatial adpositions, which are the straightforward source for spoken language case systems. It seems, then, that ISL uses a different kind of word as a possible source for the development of case markers from those attested in spoken languages. Why should this be so? Why doesn't ISL use nouns or verbs denoting spatial locations and relations as sources for case markers? In order to tackle this issue, let us first take a closer look at the evolution of case markers in spoken languages. This will clarify the possible points of interaction between the structure of a language and the physical modality through which it is transmitted.

3.1 *The evolution of case markers in spoken languages*

Blake (1994: 163–168) describes several possible sources for case markers in spoken languages of the world. These sources are mainly of two kinds: verbal and nominal. Verbs which are potential sources for the development of case markers are those denoting locative or spatial relations, whose arguments bear thematic roles such as source, goal and location (e.g. *come*, *go*, *leave*, *arrive*, *be at*), as well as verbs whose arguments bear the thematic roles of instrument (*take*, *grasp*, *get*), purpose, beneficiary (*give*) and accompaniment (*follow*). Nominal sources for case markers are by and large nouns denoting body parts with salient location or orientational features, such as *guts*, *stomach*, *heart* ('inside'), *face*, *front*, *breasts* ('in front of'), *head*, *surface*, *sky* ('on, above'), *back*, *rear* ('behind'), *hand* ('from'). Such nouns and verbs develop into adpositions, some of which eventually change into suffixes, that is, morphological case markers.[12] The first steps in the grammaticalization path, then, involve the de-categorization of primary lexical categories (nouns and verbs) into a secondary lexical category – adposition.[13] The various

[12] As Blake (1994: 195) points out, case markers are usually suffixes, which developed from postpositions. In contrast, prepositions do not develop into prefixal case markers. However, prepositions can function as analytic case markers (e.g. the preposition *'et* in Hebrew, which is the accusative case marker in the language). Therefore, both postpositions and prepositions will be treated here as possible sources for case markers.

[13] There is a large body of research concerning the development of nouns into prepositions. See, for example, Heine (1989), Rubba (1994), Matsumoto (1999) and references cited there.

stages of the evolution of adpositions from nouns can be described as in (39) (following Rubba 1994):

(39) Body part term > object part term > locative noun > preposition
I II III IV

To take a concrete example, a word meaning 'stomach' may develop into a preposition meaning 'inside' along the following lines (as suggested by Rubba 1994 for Modern Aramaic):

(40) stomach > inner part of a container > the interior, the inside > in

The transition from stage I to stage II involves metaphorical extension, whereby a word denoting a body part is used to refer to a part of a container in general. The transition from stage II to stage III involves a shift from designation of the part to designation of the spatial region near the part. In moving from stage III to IV, there is a category shift, from a word denoting an entity (a noun) to a word whose function is to encode relation (an adposition). Thus the semantic change from ENTITY to RELATION is accompanied by a parallel change of grammatical category.

Matsumoto (1999), examining the evolution of body-part terms into adpositions in Japanese, points out that not all words denoting body parts develop into an adposition. Only nouns denoting body parts with salient spatial or orientational features are involved in such processes. He hypothesizes that

> adpositions are an intrinsically relational category (Langacker 1987, etc.), and spatial adpositions encode spatial relationships. For this reason, nouns whose lexical meaning involves some spatial relationship find it particularly easy to develop into adpositions (Matsumoto 1999: 26).

The development of an adposition into a case marker is usually accompanied by further abstraction and generalization of its meaning, such that an affix whose original function was to mark locative relations may expand its territory to cover some syntactic relations as well, such as direct object, indirect object, etc. An example is the Spanish preposition *a*, which evolved from Latin *ad* 'to'. In Spanish, it retains its locative meaning, but also marks the indirect object, and the direct object when animate and specific (Blake 1994: 173).

In sum, case systems of spoken languages develop by and large on a locative basis. Primary lexemes – nouns and verbs – whose meaning contains a spatial component, serve as sources for morphemes whose main function is to mark spatial relations. Once the expression of spatial relations is grammaticalized in a language, these terms can serve as the basis for the development of morphemes encoding grammatical relations. The existence of spatial adpositions is, therefore, pivotal for the development of case markers in spoken languages.

3.2 *Spatial relations and grammaticalization in ISL*

The evolution of the ISL case-marked pronoun, $PRO_{[bC]}$, does not follow the path described in the preceding section. $PRO_{[bC]}$ is related to a sign meaning PERSON, which does not denote spatial relations. That is, the case distinctions that are emerging in ISL do not seem to have a locative basis. In a way, this is quite surprising. Sign languages, as languages transmitted in space, are endowed with the ability to convey spatial relations in a direct, transparent manner which is unavailable for spoken languages. The motion of an entity in space can be represented by the movement of the hands in the signing space. Locative and spatial relations between entities, or figure-ground relations, can be conveyed by the relationship between the position and motion of the hands relative to one another. Furthermore, metaphorical use of space, to express temporal relations in terms of spatial relations, for example, can be incorporated directly into the phonological structure of the signs.[14]

Space also underlies several grammatical constructions, such as verb agreement. The system of verb agreement utilizes the expression of the spatial notions of source and goal in order to mark agreement with the syntactic arguments of the verb. The locative basis of the lexicon and grammar in sign languages is so important (as has been suggested in many works, e.g. Gee & Kegl 1982; Shepard-Kegl 1985; Johnston 1991; Bos 1998; Meir 1998, 2002, among others) that it seems natural to expect sign languages to use space as the basis for grammaticalization processes as well. Yet this does not seem to be the situation in our case.

The puzzle here is two-fold. First, one needs to explain the observation that while space figures prominently in the grammar and lexicon of ISL, words denoting spatial relations do not lend themselves to grammaticalization in this language. Secondly, the differences between ISL and spoken languages also await an explanation. The question that arises here is the following: Why does ISL not use as possible sources for case markers a particular set of words which is so productively used in a variety of grammaticalization processes in spoken languages? I will tentatively suggest

[14] For example, many sign languages express temporal notions relating to the past or to the future by making use of a metaphor which can be stated as 'FUTURE IS AHEAD' (Taub 2001: 115–118). Signs denoting time in the future, e.g. 'next year', 'in three weeks', etc., are signed in front of the signer and their path movement is forward (away from the signer). Signs denoting time in the past, such as 'last year', 'two weeks ago', are signed next to the ear/cheek, with a path movement going backward. Spoken languages as well use this metaphor, in expressions such as 'the years ahead'. However, in sign languages this metaphor is expressed as part of the PHONOLOGICAL structure of the sign, as demonstrated by Taub's analysis. The area ahead of the signer is the sign's place of articulation, and the direction of the time line is represented by the path movement of the sign. Hence, in sign languages there is no need to use a separate word in order to refer to the area in front of the signer and to a forward movement.

below that both issues are related to the particular ways in which spatial relations are expressed in sign languages.

3.2.1 *The scarcity of spatial adpositions in sign languages*

How are spatial relations conveyed in a manual-visual language? Sign languages, unlike spoken languages, do not need relational-function words (i.e. adpositions) to express spatial relations. They can convey spatial relations more directly, e.g. by what has often been referred to as 'classifier constructions'.[15] In these constructions, the motion of the hands and the relationship between the two hands denote motion in space, location, and locative and spatial relations. Consider, for example, a sentence meaning 'The car went under the bridge'. English needs a verb of motion (*go*) and a preposition denoting spatial relations (*under*) in order to convey such relations. In ISL and other sign languages, however, this meaning is conveyed by one construction. The bridge is represented by the non-dominant hand, the car by the B (flat) handshape of the dominant hand, and the spatial relations between the two is conveyed by the movement of the dominant hand from underneath the non-dominant hand.

Figure 6
CAR-GO-UNDER-BRIDGE

Spatial relations are conveyed as part of a predicate complex, which includes a verbal element denoting motion and location, and a handshape representing a noun (or two nouns, if both hands are active, each representing a different entity as in the example in figure 6). Therefore, independent lexical

[15] There is a large body of research about classifier constructions in sign languages, starting from Supalla (1982) and McDonald (1983). For a comprehensive up-to-date summary of the research on these constructions in various sign languages, see Schembri (in press).

items for conveying such relations would apparently be unnecessarily redundant. This fact can account for the scarcity of function words, adpositions in particular, in sign languages. A grammaticalization chain leading from a concrete noun to an adposition (as presented in (39)) is, therefore, much less likely to develop in a signed language. In other words, since sign languages can represent spatial relations directly, they do not 'need' to develop indirect ways for conveying such notions by, for example, grammaticalizing primary lexical items such as body-part nouns.

In addition, the specific set of words denoting body-parts does not lend itself to developing into adpositions in sign languages. This is due to the fact that signs denoting body parts usually consist of a pointing movement towards the part in question. That is, the sign for 'head' in ISL is articulated by touching the head; the sign for 'stomach' involves pointing to (or touching) the stomach, as is illustrated in figure 7. The form of these signs highlights the actual physical entity and not the relationship between the part and the whole body. Therefore, such signs are not likely to develop into relational morphemes.[16] I shall return to the issue of the interaction between the form of a sign and its behavior in grammaticalization shortly.

Thus, there are two reasons so far why the evolution of nouns or verbs into adpositions is so rare in sign languages: (a) sign languages do not 'need' adpositions to convey spatial relations since they can convey them in other ways; and (b) the form of signs denoting body-parts highlights the actual physical organ rather than its properties, hence such signs do not lend

[16] They can, however, grammaticalize into morphemes denoting non-relational grammatical categories. For example, the signs for perception organs (EYE, NOSE, MOUTH) and HEAD participate productively in the formation of complex verbs in ISL (see Aronoff et al. 2000).

themselves to denoting spatial relations. These factors explain why grammaticalization paths leading from full nouns to adpositions (as in (39)) are much less likely to occur in sign languages.

3.2.2 *Iconicity as a constraining factor in grammaticalization chains*

The preceding section suggested that sign languages are much less likely than spoken languages to develop spatial adpositions. But it did not rule out such a possibility altogether. And in fact, ISL does have a few adposition-like elements denoting spatial relations, e.g. ON-TOP-OF, UNDER, INSIDE, BETWEEN, WITH.

Figure 8
Some ISL spatial 'adpositions'

Such forms are not related to nouns.[17] It is reasonable to expect that such signs would further develop into grammatical morphemes, on a par with adpositions in spoken languages. Yet such a development has not been attested in ISL. I would like to suggest that the factor responsible for preventing this development is the iconicity of these signs. The form of these signs is a direct representation of the spatial relations they convey, as is illustrated in figure 8. Because of the isomorphism between their form and

[17] However, they might have developed from classifier constructions. In classifier constructions, the verb's movement represents spatial motion or location, while the handshape represents the argument in motion or being located. In the adposition-like signs in ISL, spatial relations are indeed represented by the movement of the hands and the relationship between them. But the handshape does not represent an argument. Rather, the handshape used is the B (flat hand) handshape, which can be regarded as an unmarked handshape. I have no evidence to substantiate the hypothesis that these signs have developed from classifier constructions. However, their form, in particular the movement of the hands with respect to one another, is related to the form of classifier constructions with similar meanings. For example, the sign INSIDE and the classifier construction FLAT-ENTITY-BE-IN-CONTAINER (as in 'the book is inside the bag') have the same movement.

meaning, such signs are not free to take on extended, more abstract meanings which underlie the shift from spatial adpositions into case markers. Such a semantic shift (or 'bleaching') is possible in spoken languages, since the form of spoken spatial adpositions is arbitrary and, therefore, does not restrict in any way the possible meanings that these words can assume. The metaphorical or abstract senses which they can acquire are directed by their core meaning (which determines, for instance, that 'from' rather than 'at' is more likely to develop into an agentive or cause marker), but not by their form. In sign languages this is not the case. The form of spatial adpositions is a direct representation of the spatial relations they convey. In the grammaticalization process by which spatial adpositions evolve into case markers, the spatial feature in their meaning is bleached. Since in sign language it is this very feature which is iconically represented by their form, these signs are restricted by their own form from accumulating non-spatial grammatical meanings, which is essential for the evolution of case markers.

Thus, the fact that grammaticalization chains as in (39) have not been attested in ISL may be the result of the combination of two factors: (a) sign languages are less likely to develop spatial adpositions to begin with, because spatial relations can be conveyed by other, more direct means; and (b) if such morphemes do exist in a signed language, they are constrained by their iconic form from gaining a more abstract, non-spatial grammatical function.

An explanation along these lines suggests that the role of iconicity in the grammatical structure of a language is more complex than meets the eye. Sign languages are especially revealing here since the manual-spatial modality allows for a much more extensive use of iconicity than that found in the audio-aural channel of spoken languages. Previous studies on sign languages have focused on the fact that while the vocabulary of sign languages is more iconic than that of spoken languages, iconicity in itself is not relevant to the linguistic structure of the language as it does not facilitate acquisition (Meier 1982) and is often suppressed under certain morphological processes (Klima & Bellugi 1979 and many others). On the other hand, iconicity does seem to constrain certain grammatical processes. For example, many ISL signs (e.g. BALL, PLATE, BOX) may be enlarged in order to convey the meaning 'a big/large X'. However, a metonymic sign such as WITCH, which is represented by a 'hooked nose' sign, cannot be enlarged to mean BIG WITCH, but only BIG NOSE.[18] Iconicity may also play a role in diachronic lexical change. A sign that iconically represents an object or a concept may sometimes be replaced by another sign, if the iconically-represented feature of the referent has changed. For example, the ISL sign for CAMERA used to represent the manipulation of old cameras standing on a tripod. As cameras are no longer manipulated in such a manner, the old sign has been

[18] Such a restriction holds for ASL as well, and presumably for other sign languages. I thank an anonymous *JL* referee for bringing this phenomenon to my attention.

replaced by another, which represents holding the camera against the eye, and clicking the button with the thumb.

These examples, together with the explanation presented above, suggest that iconicity plays a role in constraining the semantic changes that a lexeme can undergo. It is not my claim that an iconic sign is prevented from acquiring metaphorical or metonymic extensions. Rather, I suggest that the following principle is at work:

(41) A lexeme cannot participate in a semantic process which bleaches a meaning component that is iconically represented in the form of that lexeme.

In other words, if in the process of a certain semantic change, what is bleached is a meaning component that is iconically represented, then the semantic change is blocked. In the case of spatial adpositions evolving into case markers, what is bleached is precisely the spatial relations denoted by the adposition. Since the form of ISL spatial adpositions is an iconic representation of the spatial relations they denote, they are prevented from participating in such a process.

4. Conclusions

The findings and the analysis presented in this paper are of significance for several reasons. First, a case distinction as exhibited by $PRO_{[bC]}$ has not been previously attested in a sign language, to the best of my knowledge.[19] Several researchers have suggested that sign languages do mark case distinctions in other ways. For example, Janis (1992) suggests that the ASL verb agreement system, which is manifested morphologically by the direction of the verb's path movement, marks case distinctions. Meir (1998) argues that the facing of the hands (the direction towards which the palm or the fingertips are facing) of ISL agreement verbs is a manifestation of the dative case. What these analyses have in common is that the suggested case distinctions are marked ON THE VERB, by modulating the verb's form (e.g. by modulating the verb's direction of movement, palm orientation, or location). Marking case distinctions on the verb is very different from the more usual mechanism of case-marking in spoken languages, namely, by marking the nominal arguments. In contrast to the sign language mechanisms just mentioned, $PRO_{[bC]}$ is a NOMINAL element marked for case. It is a clitic (or on the verge of becoming one), and it is related to a free word from which it has evolved.

[19] It has been reported to me that in some sign languages, the sign PERSON, when in object position, shows some pronominal properties reminiscent of those of $PRO_{[bC]}$ in ISL. These sign languages are Swedish SL (Inger Ahlgren and Brita Bergman, personal communication), SL of the Netherlands (Heleen Bos, personal communication) and German SL (Rathmann 2000). However, no research has been conducted as yet on the properties of PERSON in these sign languages, and therefore it is not clear whether these constructions are comparable to the one in ISL.

As such, it is much more similar to parallel constructions in spoken languages. Therefore, it provides an opportunity to compare grammaticalization processes, in particular the evolution of case marking, in signed and spoken languages.

This comparison reveals several interesting points concerning the interaction between grammatical structure and modality. On the one hand, it shows that the principles governing grammaticalization processes, e.g. the factors involved in the transition of one stage to another in a grammaticalization path, are very similar in both spoken and signed languages. In other words, such principles are not modality-specific. On the other hand, the analysis points out certain dissimilarities between signed and spoken languages concerning possible source words for grammaticalization. These dissimilarities indicate that modality does play a role in grammatical processes in the language.

Two specific areas have been pointed out in which modality makes a difference. The first has to do with the scarcity of spatial adpositions in ISL. This was attributed to the fact that the visual-spatial modality enables sign languages to express spatial relations in a more direct way than that available for spoken languages, hence there is no need for visual-spatial languages to develop specific words whose function is to denote spatial relations. The scarcity of spatial adpositions in ISL, in turn, makes the language much less likely to develop grammaticalization chains leading to the evolution of case markers.

The second area in which modality seems to play a role is in constraining certain semantic changes. In this case, the role of modality is indirect. The visual modality allows for certain semantic notions to be expressed iconically. However, iconicity in turn restricts the semantic processes and extensions which a given lexeme may participate in. Specifically, it has been suggested that an iconically represented feature cannot participate in a process which involves the bleaching of that very feature.

The theoretical contribution of the analysis presented here is twofold. First, it makes certain testable predictions. The first prediction is that sign languages in general will not use words denoting spatial relations as sources for inflectional and derivational affixes if in the process of grammaticalization their spatial meaning is bleached. Another prediction is that, if a sign language is to develop a case system, it will target non-spatial words as sources. Both predictions are hard to check at present as this phenomenon has not yet been investigated in other sign languages. Comparative studies on case markers or case-marked pronouns in other sign languages are needed in order to check the validity of these predictions.

Secondly, if the explanation concerning iconicity as a constraining factor in semantic change is on the right track, then the theoretical implication is that the notion of iconicity should be incorporated into a model of the

lexicon. It is not clear as yet how lexemes can be tagged as possessing iconic features and how these features can interact with various grammatical processes, such as metaphorical extension and metonymy. Additionally, it is not clear whether such interaction between iconicity and grammatical processes is modality-specific, or whether it can be shown to take place in spoken languages as well. The present study is a first step in exploring these issues. It is my hope that future research on various linguistic areas in which iconicity is somehow involved will shed more light on this issue.

APPENDIX A

A list of ISL verbs that co-occur with $PRO_{[bC]}$

* Verbs which take $PRO_{[bC]}$ obligatorily
\# Verbs which co-occur with $PRO_{[bC]}$ or INDEX
% Verbs occurring with $PRO_{[bC]}$ only for some signers

Psych verbs	Negative affect verbs	Content verbs[i]	Miscellaneous
ADMIRE#	AVOID*	ASK*	BE-A-LEECH*
ADORE#	BAD-MOUTH*	COMPLAIN*	BE-CONSIDERATE-OF#
APPRECIATE*	BEAR-GRUDGE*	DISCUSS*%	DISMISS%
BE-AMAZED-AT#	BE-CONTEMPTUOUS*	LEARN*	ELECT#
BE-ANGRY-AT*	CHEAT-ON#	READ*	ENCOURAGE#%
BE-ASHAMED-OF#	CONVINCE somebody against his will*	RECOMMEND*	EXAMINE/CHECK#%
BE-DISAPPOINTED#	COPY-CAT somebody*%	TALK*	FIND-A-MATE#%
BE-EXCITED-ABOUT*	DISCOUNT*	TELL*	INFLUENCE#%
BE-FED-UP-WITH*	EXTRACT-INFORMATION-AGAINST#	THINK*	KEEP-AN-EYE-ON#
BE-IMPRESSED-WITH*	GOSSIP-ABOUT*	WHISPER*	LOOK-AT#%
BE-'MAD'-ABOUT*	HURT (someone's) feelings*	WRITE*	RELY-ON*
BE-MAD-AT*	INFORM-ON*		SAVE#%
BE-PLEASED-WITH*	INSULT%		WATCH#%
BE-PROUD-OF*	INTERROGATE#%		
BEWARE#	LIE-TO*		
ENVY*	MAKE-FUN-OF#		
FANTASIZE-ABOUT*	(intentionally) MISLEAD*		
FEAR#	PESTER*		
FORGET#	SPREAD-RUMOURS*		
HATE#	SUSPECT#		
HAVE-ENOUGH-OF* (literally: 'to be nightmared by')	TAKE-ADVANTAGE-OF#		
'HEAD-ACHE' ('to have enough of')*	TEASE#		
MISS#			
PITY#			
REMEMBER#			
SHED-TEARS-ON*			
SHOW-AFFECTION#			
SHOW-DISGUST*	SCOLD*		
TAKE-CARE-OF#			
UNDERSTAND#			
WORRY*			

[i] All the content objects in this group are marked by $PRO_{[bC]}$.

APPENDIX B
Notational conventions

Since there is no standard transcription system for ISL, the following notational conventions are used:

1. Signs are represented with English glosses in capital letters.
2. The gloss POSS represents the possessive pronoun.
3. For signs that are articulated in a specific location in space, the location is indicated by a subscript which follows the sign. Articulation at 1P (signer's) locus is indicated with a 1 subscript. Articulation at the location of the addressee is indicated with a 2 subscript. Articulation at various 3P locations is indicated with a 3 subscript.
4. For signs which have a path movement (i.e., the articulation of the sign involves moving from one location to another), the subscript which precedes the sign indicates its beginning point, and the subscript which follows the sign – its end point.
5. The subscript [$\times$3] indicates that the sign is iterated three times.
6. The notation $\overset{\text{top}}{\text{SIGN}}$ indicates that the sign is topicalized and its articulation is accompanied by non-manual markers indicating topicalization.
7. Handshapes are referred to by capital letters. The following handshapes are mentioned in the text:

Figures taken from: Prillwitz, Siegmund et al. (1989). *HamNoSys. Version 2.0; Hamburg Notation System for Sign Languages. An introductory guide* (International Studies on Sign Language and Communication of the Deaf, 5). Hamburg: Signum. (By permission of Signum Press, Hamburg, Germany.)

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