

CATEGORIES IN QUEBEC SIGN LANGUAGE: REFLECTIONS ON CATEGORIZATION ACROSS MODALITIES

DENIS BOUCHARD, COLETTE DUBUISSON, AND ANNE-MARIE PARISOT

Université du Québec à Montréal

Contents

Abstract	381
1. The categories of lexical items	382
2. Traditional categorization applied to LSQ	384
2.1. Nouns and verbs	387
2.2. Pronouns and definite determiners	387
3. Pronouns in oral languages and in sign languages	388
3.1. The effects of perceptual substances on linguistic forms	389
3.2. Explaining the different properties	390
3.2.1. Participant deixis	390
3.2.2. Inclusion/exclusion of the speaker or hearer	391
3.2.3. Spatial deixis: proximity, distance, visibility (for third person)	391
3.2.4. Number	391
3.2.5. Class/gender	393
3.2.6. Case markings	394
3.2.7. Summary	396
4. Consequences for linguistic categorization and universals	396
References	398

Abstract

Our goal in this chapter is twofold. First, we describe some basic properties of categorization in *Langue des Signes Québécoise* (Quebec Sign Language: LSQ). Second, properties of the gestural modality of a sign language seem to bring about a categorization different from that induced by the modality of an oral language; therefore, we explore some consequences for the categorization of linguistic material in general and the nature of “universality” in linguistics.

1. The categories of lexical items

One method of analysis has dominated western grammar: the units of language are assigned to categories. These categories are described by sets of features that determine the co-occurrence possibilities of the units [see, e.g., Travis (this volume)]. This method is based on an old assumption that it is easier to describe phenomena if we assume that a term like *destruction* belongs to the same syntactic category as the term *dog*. This kind of approach can already be found in the work of Varro and Apollonius (2nd century) and Priscian (5th century). It raises several questions, which we will only briefly review here.

First, what are the criteria for any particular category? The standard answer is that there are three kinds of converging criteria (already in Varro's *De lingua latina*):

- (1) a. morphophonological: common inflections, derivational marking
- b. syntactic: an element of category A combines with one of category B
- c. semantic: differences in the way of signifying (Modists in Middle Ages)

A problem with these criteria is that, on the surface, some languages have very few morphophonological markings, and compensate with a very rigid linear order in syntax, whereas others have very free syntax and a lot of morphophonological markings¹. More directly related to our concerns is the fact that these criteria are quite intimately tied to the modality of oral languages. How valid are they for sign languages?

A second question raised by categorization concerns is the problem of what is actually stored in the mental lexicon. There are two main polarizations here:

- (2) a. Categorized forms, which are selected according to their category;
- b. Noncategorized forms, where categorization expresses the particular function the item holds in a particular use.

The first view is quite standard, but the second one is proposed to account for the categorization of words like English *up*, which seems to fit into several categories, as illustrated in (3).

¹ As for the semantic criterion, it is notoriously difficult to use. The Modists tried to show that there is a correlation between grammatical categories like noun and verb, and ways of signifying (cf. *dolor* ("pain") and *doleo* ("I suffer")). The Port-Royal grammarians used the criterion to distinguish nouns (substances) from adjectives (properties). However, they pointed out problems with French words such as the noun *blancheur* ("whiteness"), which expresses a property that has an autonomous existence, and *humain* ("human") used as an adjective, where we find the opposite situation of an adjective expressing a substance. Despite the difficulties encountered with this semantic criterion, it has such an intuitive appeal that it endures. For instance, Jackendoff (2002, pp. 257–258) maintains the noun–verb distinction mainly on the basis of a similar distinction in the way of signifying: "Nouns can express any semantic category whatsoever: not just objects but situations (*situation, concert, earthquake, perusal*), times (*Tuesday, millennium*), and so on. But verbs can express only situations (events, actions, and states)." In Generative Grammar in general, following the structuralist tradition in this case, the morphophonological and syntactic criteria have been more widely used because they are more easily formalized. However, the casual intuition behind the traditional semantic criterion has underlain categorization from the outset: "The question of substantive representation in the case of the grammatical formatives and the category symbols is, in effect, the traditional question of universal grammar. I shall assume that these elements too are selected from a fixed, universal vocabulary ..." (*Chomsky (1965, pp. 65–66)*)

(3) Noun: the **ups** and downs.

Preposition: He ran **up** the stairs.

Adverb: She stood **up**.

Verb: They **upped** the prices.

The view that lexical items are not marked for grammatical category has been given much exposure in recent years in the Distributed Morphology framework [Halle and Marantz (1993), Marantz (1997), Harley and Noyer (1999), Barner and Bale (2002)]. For instance, in such a grammar, lexical roots like $\sqrt{\text{grow}}$ and $\sqrt{\text{destroy}}$ are category-neutral: “when placed in a nominal environment the result is a ‘nominalization’; when the roots are placed in a verbal environment they become verbs” [Marantz (1997)].

The question then is, of course, what is a “nominal environment” or a “verbal environment”? Distributed Morphology provides a formal answer to this question. It assumes that, like phrases, words are built in the syntax. Roots are inserted into syntax, where functional heads determine their status as nouns or verbs. In turn, phonological forms are inserted based on the featural status of roots in context. However, this is not a very satisfactory answer, as it complicates the system without really answering the question; it merely postpones it.

First, the categorial distinctions are not dispensed with, but actually duplicated: the lexical items themselves are marked as being selected by certain functional/categorial heads; in addition, the functional heads are names of constructions in a syntactic environment. The duplication is clear if we compare this with a similar approach already found in Chomsky’s “Remarks on Nominalization” (1970, p. 21), which did without these functional heads.

Moreover, special lexical rules such as conversion are replaced by special phonological rules of late insertion: this is not much of a qualitative improvement. Worse, the system has a problem of compatibility with Bare Phrase Structure (BPS). As Barner and Bale (2002) acknowledge, this view requires “a syntactic system that allows for complex heads in the phrase structure (consisting of the root plus the functional head).” They give two candidates: $[_{X\text{-head}} R F]$ and $[_{X\text{-head-1}} R [_{X\text{-head-2}} F]]$, which they say are compatible with BPS. Not so: labels have no status in BPS, whereas here they seem to have one.

This model basically says that when an item appears in a certain syntactic (and semantic) context, it takes form Y. There is no need of a functional category (FC) for this: for each functional head identifying a category, it is necessary to determine in what syntactic (and semantic) context it may appear; this is sufficient to “identify” the category of the item. There is no need of a label or functional head: this just postpones the answer to the question of categorization: criteria are then needed to determine the category of the functional head. So why not apply them directly to the lexical items in context? Under this view, classical categories are a bit like the notions of subject or object: they are convenient names for a relation, but have no status in the theory itself.

Syntax is the theory of the relational properties. Once these properties are properly identified by the theory, categorial labels may also be merely convenient names for a relation. A theory with functional heads that determine categorial status produces a hybrid system in which some elements are noncategorized forms – the lexical roots – and other elements are categorized forms – the functional heads. The latter are redundant and

therefore should not be maintained in the grammar. Moreover, by dispensing with these categorization heads, we avoid a pitfall of functional categories: they quickly lead to taxonomic theories, to a grammar of lists. Thus, if we look at additions made to the traditional inventory in the last two decades, many new “functional” categories have been introduced on the basis of casual intuitions similar to those behind the traditional semantic criterion for categorization. For instance, Cinque (1994) proposes the categories Quality, Size, Shape, Color, Nation, and Speaker-oriented (see Section 2.2). Beghelli and Stowell (1997, pp. 74–75) suggest WhP, NQP (negation), Distributive Phrase, Ref Phrase, and Share Phrase (“interpreted with ‘dependent’ specific reference”). Munaro and Obenauer (2000) introduce EvCP (Evaluative CP = a kind of “Opinion Phrase”). Munaro et al. (2001) assume the categories Interrogative Force, Focus, Operator, and Topic. This use of functional categories that extend to discourse notions, like various illocutionary forces, and pragmatic notions, such as speaker attitudes, suffers from the same general weakness as Generative Semantics: the reliance on casual intuitions is too unconstrained and too vague, as indicated in Bouchard (2002, p. 334). The common characteristic of these analyses is the methodology of listing positions by means of functional categories and listing placements of constituents by means of uninterpretable features². But lists are merely assertions of existence: they are inventories of facts, they tell us what is. Lists do not deal with modalities of existence: they do not tell us what is possible. In the current absence of constraints on possible uninterpretable categories or features, a list like the nonsubstantive part of the lexicon reveals nothing about what variations are possible in languages or crosslinguistically, nor what the limits on variation are. In short, no deductive science is possible under these conditions. Categorization heads fall into this general pattern of listing: they constitute a list of convenient names for the relations that occur between items, but they provide no indication about why these should be the relations that are possible in language.

In addition to this foundational problem with lists of categories, there is also a methodological difficulty in comparative grammar that Humboldt had already raised: we must be careful in applying to an unknown language the categories of a known language that express a similar notion. We would add that this is especially true when the physiological means of combining elements are different, as in sign languages. In order to gain a better understanding of how modality may affect categorization, at least in part, we now turn to basic categorization data in *Langue des Signes Québécoise* (LSQ).

2. Traditional categorization applied to LSQ

In sign languages, numerous noun–verb pairs that are related by meaning also have the same formal features (configuration, orientation, place of articulation, and contour of movement). In early studies on American Sign Language (ASL), this led scholars to conclude that noun–verb pairs are phonologically identical [Stokoe, Casterline and Croneberg

² Often, the functional categories and uninterpretable features are ad hoc to the point that they are not even provided with particular categorial identification – they are just placeholders labeled as FP or triggers labeled F.

(1965/1976)]. However, others have remarked that noun–verb pairs are phonologically distinct [Supalla and Newport (1978)]: for nouns, the movement is repeated and reduced, whereas for verbs, the movement is long, possibly repeated, and continuous or held. In LSQ, some semantically related noun–verb pairs are phonologically distinct in this way³:

- (4) a. CHAIR/TO-SIT
 b. CAMERA/TO-FILM
 c. AIRPLANE/TO-FLY [in an airplane]

However, most noun–verb pairs are phonologically identical:

- (5) a. HELP/TO-HELP
 b. TEACHING/TO-TEACH
 c. INTERPRETER/TO-INTERPRET

A noun–verb categorial distinction cannot be made for these forms in isolation. It is only in the context of their use that they can be distinguished, as in (6).

- (6) a. TO-INTERPRET/INTERPRETER[identical forms]
 b. YESTERDAY PIERRE INTERPRET ALL-DAY
 ‘Yesterday, Pierre interpreted all day.’
 c. YESTERDAY INTERPRET INDEX BE VERY-SICK
 ‘Yesterday, the interpreter was very sick.’

Phonologically identical pairs are also frequently found for other categories, and here too the only way to determine the category of an element is by its context of use:

- (7) Phonologically identical pairs of nouns and adjectives
 a. COMPETENCE/COMPETENT[identical forms]
 b. FOR WORK TEACHER MUST HAVE COMPETENCE
 ‘For a teaching job, you must have competence.’
 c. TEACHER COMPETENCE INDEX GO
 ‘The competent teacher is leaving.’
- (8) Phonologically identical pairs of verbs and prepositions
 a. TO-CONTAIN/IN [identical forms]
 b. COURSE LSQ INDEX IN WHAT
 ‘What does the LSQ course contain?’
 c. MANY CAKE INDEX HAVE NUT IN
 ‘Many cakes have nuts in (them).’
- (9) Phonologically identical pairs of adjectives and adverbs
 a. ORAL/ORALLY [identical forms]

³ This phonological distinction does not hold for all such forms in a discourse context. It is more regular for items produced in isolation, and even more so when they are produced in noun–verb pair contexts [Johnston and Schembri (1999)].

- b. FRENCH LANGUAGE ORAL BELONG QUEBEC
'In Quebec, French is the oral language.'
- c. TEACHER UQAM INDEX TEACH ORAL
'All UQAM professors teach me orally.'

Pronouns and definite determiners also have identical phonological forms⁴. In a sign language, a noun is introduced by producing a sign that corresponds to it. Sign languages make extensive use of space to refer to individuals within a discourse. So typically, a noun corresponding to a third-person referent is assigned a locus in the signing space by a *pointer* (glossed as INDEX). It is this pointer that functions either as a definite determiner or a pronoun, depending on the context of use. The pointer can take the form of signing the noun in that location (10a), pointing at the locus with the index finger (10b), or directing the gaze at the locus, or inclining the body toward the locus.

- (10) a. PEN_(loc) MARY TAKE
'Mary takes the pen.'
- b. PEN INDEX MARY TAKE
'Mary takes the pen.'

When a pointer is used to initially assign a locus to a noun in this way, it functions as a determiner. The assignment of a locus makes the noun definite (11a), whereas if the noun is not localized, as in (11b), it is indeterminate:

- (11) a. CAT INDEX I-WANT
'I want the cat.'
- b. CAT I-WANT
'I want the cat/a cat/the cats/cats/cat.'

Once a referent is established at a location in the signing space, a pointer directed toward that location is interpreted as referring back to that specific referent, in which case we could say that the pointer functions like a pronoun. For instance, a signer can reuse some loci by signing a verb from one locus to another to express distinct grammatical functions, as in (12), in which the verb is signed from the locus of LAWYER to the locus of JUDGE. A locus can also be reused by pointing to it as the verb is signed, as in (13), in which the signer first points to the locus of GIRL, and then to the locus of BOY.

- (12) JUDGE LAWYER GO-EXPLAIN
'The lawyer goes to explain something to the judge.'
- (13) BOY INDEX_a GIRL INDEX_b LOVE INDEX_b INDEX_a
'The girl loves the boy.'

⁴ This seems to be a general property of sign languages. Interestingly, it has long been observed that pronouns and definite determiners also have identical phonological forms in many oral languages. This is too common to be accidental. Bouchard (2002, ch. 4) gives a detailed analysis of French *le/la/les* and argues that the reason why these forms function both as pronouns and as definite determiners is that both categories perform the same function, but with respect to different elements, i.e., a tensed verb and a noun, respectively.

A generalization emerges from the comparison of the various phonologically identical but functionally distinct pairs compared above: the category of an element is usually determined not by its phonological form, but by its function in a particular context of use. We illustrate these differences in the way elements function by looking more closely at two pairs: noun–verb and pronoun–determiner.

2.1. Nouns and verbs

Nouns and verbs generally behave identically in space, but they function differently. Four important characteristics distinguish them.

- (i) Nouns generally identify a locus, verbs relate to the established loci of their arguments. This is what we just saw in the discussion of examples (10) – (13).
- (ii) Negation applies only to verbs (verb phrases), not to nouns alone⁵:

- (14) a. *JEAN_(neg) COOK NOT-KNOW INDEX
 b. JEAN COOK NOT-KNOW_(neg) INDEX_(neg)
 ‘The cook does not know Jean.’

- (iii) A possessive marker may be used with a noun, but not a verb:

- (15) a. BOSS POSS LAUGH
 ‘His boss is laughing.’
 b. BOSS LAUGH POSS
 *‘It’s the boss laughing.’
 ‘It’s the boss’s laugh.’

- (iv) Aspect applies only to verbs, not to nouns:

- (16) a. STUDENT WORK TO-WRITE-LONG
 ‘Students’ work is long.’
 b. STUDENT TO-WORK-LONG
 ‘The student worked for a long time.’

2.2. Pronouns and definite determiners

Though they have identical phonological forms, pronouns and definite determiners are distinguished by the way they function:

- (i) As we saw above, determiners assign a locus, and pronouns reuse a locus.
- (ii) Determiners express number, pronouns do not agree in number.

The distinction between a collective reading and an atomic reading – between plural and singular – is made at the initial assignment of a locus: if the pointer is directed at a

⁵ In (14), (neg) indicates that a headshake occurs simultaneously to the sign to which it is attached.

point in the locus, the noun gets an atomic/singular reading; if the pointer traces a circular movement, indicating a zone in the locus, the noun gets a collective/plural reading⁶.

(17) STUDENT INDEX(singular) BOOK 3-GIVE-1

'The student gives me a book.'

(18) STUDENT INDEX(plural) BOOK 6-GIVE-1

'The students give me a book.'

However, a locus initially established as a plural may be reused with a singular pointer:

(19) CATa INDEX(plural) MARYb LOVE INDEXb(singular)-INDEXa (singular)

'Mary loves the cats.'

Pointers used to refer back to a previously established referent, i.e., used as pronouns, never agree in number. This absence of number agreement appears to be the case in sign languages in general. This is an interesting and revealing property: it suggests that the presence of number agreement in oral languages and its absence in sign languages is somehow tied to distinctions between the oral and gestural modalities. The correlation is strengthened by the fact that there are actually quite a few differences between pronouns in oral languages and in sign languages.

3. Pronouns in oral languages and in sign languages

Certain features are typically found in the pronominal systems of oral languages. Here is a representative list of properties for which there are often particular pronominal forms [adapted from Givón (1984, p. 354)]:

- (20) a. Participant deixis: speaker, hearer, nonparticipant
 b. Inclusion/exclusion of the speaker or hearer
 c. Spatial deixis: proximity, distance, visibility (for third person)
 d. Number: singular, dual, plural
 e. Class/gender
 f. Case markings

Interestingly, in LSQ (and other sign languages), pronouns do not exhibit these standard properties of oral languages. The first three properties are expressed in sign

⁶ There are other ways to express a zone. For example, the index finger can make a linear movement (i), or there can be a series of index pointings (ii), or again several nouns may be signed on the same locus, like MARY, PAUL, and JOHN in (iii):

(i) DOOR INDEX(linear movement) MAN CLOSE CLOSE CLOSE

'A man closes all the doors.'

(ii) SHOE INDEX ++ (series of index pointings) MARY 3-GIVE-1

'Mary gave me some shoes.'

(iii) PAULx JOHNx MARYx (on the same zone) BOOK 1-GIVE-6

'I give a book to Paul, John, and Mary.'

languages, but there are no particular pronominal forms to do this. As for the last three properties, they are wholly absent from pronouns in sign languages. Since there is such a clear-cut modality based demarcation between languages that do and do not have this cluster of properties, the most likely place to find an explanation for the split is in the different physiological substances that the oral and gestural modalities use.

3.1. The effects of perceptual substances on linguistic forms

In language, elements of two orders – the perceptual substance and the conceptual substance – combine [Saussure (1916)]. Since it stems from the combination of elements from these two substances, a linguistic form is determined by them. This makes it possible to establish the basic notions of linguistics by following a method used in other sciences: some propositions are considered to be generally valid – axiomatic – because they are logically prior to linguistic theory, in the sense that they must antedate linguistic theory since its object of study presupposes them. This is true of propositions concerning the two substances that combine to generate a linguistic form: the conceptual substance has its own properties, which are dependent on the structure of the human brain. The brain in which the language system is actualized resides in a human body that has a particular sensorimotor system that determines the properties of the perceptual substance. If different sensorimotor systems are used, as is the case with oral and sign languages, these systems determine perceptual substances with different properties, and these perceptual substances determine different linguistic forms. The different perceptual substances underlying oral languages and sign languages have two principal effects on linguistic forms [see Bouchard and Dubuisson (1995), Bouchard (1996)].

First, the perceptual substances affect the possibility of simultaneity in the languages. For instance, the articulatory system used in oral languages does not allow two words to be produced simultaneously. This is due to the physics of articulation and is explained by biological science. As far as linguistics is concerned, it is an unquestioned observation. When Tesnière (1959) [following Saussure (1916, p. 170)] and Kayne (1994) argue that many properties of syntactic hierarchical structure derive from the fact that words occur in an irreversible, asymmetric temporal sequence, they take this fact for granted and assume that its explanation must be logically prior to the syntactic properties they are studying. On the other hand, the perceptual substance of a sign language does not impose such strong constraints of linearity, in particular because there are several independent articulators: both arms and hands, the whole body (its orientation, inclination), and the head (its orientation, inclination, direction of gaze, facial expressions). Consequently, while simultaneous expressions are quite restricted in oral languages (modulations of intonation superimposed on a sentence to express statements, questions, or exclamations, or intonations on a constituent to express grammatical functions, as in some tone languages), they are very frequent in sign languages. For example,

[s]imultaneous manual and nonmanual actions in a sign language may function as do the sequential concatenation of a verb and adverb in spoken language; but in speaking, one word must be spoken

before the other; in ASL and other sign languages, what may be referred to, with considerable latitude, as “the manual verb” and “the nonmanual adverb” are visible at the same time. Like spoken verbs and adverbs, they can be separated, but separation must be a spatial, not a temporal, operation.

Armstrong, Stokoe and Wilcox (1995, p. 86)

The second effect of perceptual substances on linguistic forms concerns the dimensions involved. The auditory-oral substance is restricted to the single physical dimension of time, whereas the visual-gestural substance involves more dimensions: in addition to the temporal linearity that it shares with the auditory-oral substance, it also involves the three dimensions of space. An effect of this difference in dimensionality is that sound, which is limited to the dimension of time, is ephemeral, whereas signs such as spatial loci have a certain permanency: thus, they may remain indexed and be reused in a discourse.

3.2. Explaining the different properties

With this much background, we can now account for the split between oral and sign languages concerning the properties of pronouns listed in (20). We must determine (i) what contributions these properties make to grammar, (ii) how the perceptual substance of sign languages allows a signer to express the first three properties – participant deixis, inclusion/exclusion, and spatial deixis – without having recourse to special forms, and (iii) why pronouns in sign languages do not need the contributions made by number, class/gender and Case markings.

3.2.1. Participant deixis

The distinction between speaker, hearer, and nonparticipant is a very useful one from a general cognitive perspective, and this is likely the reason why it is expressed in all languages. In an oral language, any possible phonic realization may be connected with the concepts SPEAKER or HEARER. This follows from the general observations of Saussure (1916, pp. 105–110): nothing prevents any particular *signifié* from being associated with any *signifiant* to form a sign, because the phonic substance and the conceptual substance provide no logical or natural reason for a language to make any particular association. For instance, there is no inherent reason why a subject SPEAKER is *I* in English and *je* in French. Nothing in the concept SPEAKER or in the phonic realizations *I* and *je* induces these associations: they are arbitrary conventions in these languages. In other words, the perceptual substance of oral languages is such that arbitrary lexical forms are required to express distinctions such as speaker, hearer, and nonparticipant.

In a sign language, there are no specific lexical forms for these distinctions. Since the substance is spatiotemporal, the body of the speaker and the body of the hearer are part of it and can be directly used as *signifiants* for the *signifiés* SPEAKER and HEARER: thus, there is a natural reason for a sign language to make these particular

associations. The nonparticipant is dealt with in a manner that is more similar to what takes place in oral languages: the pointer is directed at a particular locus in the signing space that has been arbitrarily assigned to a noun/actant earlier in the exchange between the signers. However, this arbitrary assignment differs in an important way from what happens in oral languages: the spatiotemporal substance, i.e., the locus, is not assigned to a pro-form, but to a noun/actant that remains actualizable and can be reused by pointing at it. So this is not a case of associating perceptual and conceptual substances anew to produce a sign, as in oral languages, but of associating conceptual substance with “old” perceptual substance, which has a certain permanency in the signing space. Therefore, here too there is a natural reason to make this particular association, namely, the permanency of the locus in the spatiotemporal substance.

3.2.2. *Inclusion/exclusion of the speaker or hearer*

As in the previous case, there is nothing in the substance of any possible phonic realization that provides a logical or natural reason for it to express inclusion or exclusion of the speaker or hearer, so arbitrary lexical forms are required. On the other hand, in a sign language, there are no specific items for these distinctions since they can be directly expressed by means of the body of the speaker and the body of the hearer, which are part of the spatiotemporal substance.

3.2.3. *Spatial deixis: proximity, distance, visibility (for third person)*

The reason why specific lexical items are required to express these notions in oral languages is the same as in the two previous cases. Here again, there are no particular items for these distinctions in sign languages since they can be directly expressed by spatial means. This is clear in the case of distances from the body of the speaker and the body of the hearer. For nonparticipants, the distance can be expressed with respect to an established locus, or by taking advantage of the multiple articulators. In the latter case, two articulators, typically the two hands, are localized with respect to each other; alternatively, in role-playing, the signer’s whole body may represent one actant and one hand can express the distance between it and another actant.

3.2.4. *Number*

An interesting and revealing property of sign languages is that there is never any number agreement⁷. As we have seen in (17) and (18), when a locus is initially assigned to a referent by a determiner, it is established either as a point (singular) or as a zone (plural). This is a kind of inflection. Yet when a locus is reused, it is always with a point

⁷ The discussion in this section expands on the proposals made by Parisot (2003) and Bouchard and Parisot (2003).

marking, never a zone marking, even though the locus will retain its plural interpretation if it was originally assigned a zone marking⁸. This lack of agreement is not an accidental property: it derives from the composition of the visual-gestural substance.

To understand why there is no number agreement in sign languages whereas pronouns in oral languages generally agree in number with their antecedent, we must understand the place of agreement in the linguistic system. Agreement is a constraint on the features of an element imposed by the features of another element. This constraint does not require that the material forms be identical, but that they express identical values of abstract features in a paradigmatic domain.

In oral languages, agreement is required when we want to say something additional about a referent because these languages are highly restricted to temporal chains of elements that have no permanency. All *signifiants* are ephemeral: once pronounced, they cannot be reused. For instance, once we have pronounced *The Count* in a sentence like (21), we cannot reuse that *signifiant*, that physical object: if we want to say something else about the Count, we need a new *signifiant*.

(21) The Count left at five o'clock.

We must either utter a new token of the phrase *The Count*, or introduce a new *signifiant* that reactualizes the information conveyed by *The Count*, such as the pronouns *he* and *him*. So there is a conflict between the newness of the phonic realization and the anteriority of the referent. The perceptual substance is such that there must be a new *signifiant*; yet at the same time there must also be some indication of permanency, of a recall of a previously established actualization of a referent. It is the paradigmatic domain that introduces this permanency: membership of a paradigm of abstract features is a permanent property of a word (as far as synchronic grammar is concerned). So in our example, the pronouns *he* and *him* can reactualize the Count because they share some distinctive features in a paradigm with the phrase *The Count*, i.e., [+MASC; +SING; 3PERS]. Since these features can correspond to several elements, additional discourse strategies narrow the possibilities by making one element more salient at a given moment in a given speech situation.

The situation is quite different in sign languages. The visual-gestural modality inherently has such permanency through its use of space: the initial assignment of a locus is permanent (for as long as the signing exchange lasts), so that the locus can be used to reactivate a discourse element and also to indicate the relation that this element holds with others (by starting or ending a verb on the locus, for example). Since a referent can be reactualized by a perceptual substance that has some permanency, i.e., a locus in space, there is no conflict between the newness of the perceptual realization and the anteriority of the referent, and therefore number agreement is not necessary. That is why when a referent is reactualized through the locus initially assigned to it, there is no

⁸ A locus may be reused to indicate different types of zones, but each zone-type expresses an additional distinction of quantification, such as distributivity or partitivity; these zones never express a simple plural.

need to indicate the singular/plural distinction and the pointing is always to a point, not a zone⁹.

The paradigmatic membership is a subcomponent of Saussure's *rappports associatifs*, which he opposes to *rappports syntagmatiques*. For instance, *seventy-nine* is related associatively to *seventy-eight*, *sixty-nine*, etc., and syntagmatically to its elements *seventy* and *nine*.

Words which have something in common are associated in the mind [...] These links are of a totally different nature from syntagmatic relations. They do not rely on an expanse; their base is in the brain [...] The syntagmatic relation is *in praesentia*; it resides in terms which are all present in a series. On the contrary, the associative relation links terms *in absentia* in a virtual, mnemonic series.

Saussure (1916, pp. 170–171 [our translation])

An associative relation such as number agreement is not necessary to provide a virtual presence for a referent in sign languages because the spatial locus assigned to the referent already has a certain permanency – it remains *in praesentia*. In sum, reactualization of a referent is a linguistic universal. However, the frequency of abstract features (i.e., agreement) as a means of reactualization seems to derive incidentally from the fleeting nature of the acoustic substance of oral languages.

3.2.5. Class/gender

A third-person pronoun may potentially reactualize innumerable nonpresent referents, and class/gender markings help to narrow down the possibilities. We have an indication that this is the motivation for class/gender markings in the fact that they usually appear only on third-person pronouns, and not on first- or second-person pronouns in oral languages: first- and second-person pronouns provide sufficient information to identify the proper referent, because their referents are usually human and face to face, with their spatial deixis and class/gender well established from the context.

The absence of class/gender markings in sign languages can be correlated with the general absence of gender on first- and second-person pronouns in oral languages. A referent is reactualized by pointing to a locus that was previously assigned to it. Since the initial assignment of a locus lasts for as long as the signing exchange, reusing this locus provides sufficient information to identify the proper third-person referent and no additional means need to be added to the grammar.

So, as in the case of the absence of number agreement, the absence of class/gender markings in sign languages derives from the composition of the visual-gestural substance. Its spatial properties ensure a certain permanency of locus assignment, so the identity of proper referents remains very salient. In contrast, the substance of oral languages has no permanency: a new phonic realization has no inherent link with a

⁹ Since there is an unlimited number of locations in space, Lillo-Martin and Klima (1990) conclude that there is a potentially infinite number of distinct pronominal forms in a sign language. The foregoing discussion suggests another conclusion: that there are no pronominal forms in sign language.

previously actualized referent, and class/gender markings help limit the numerous possibilities.

3.2.6. Case markings

There are no morphological markings for Case in sign languages, either on nouns or on any pro-like forms. To understand why this is so, we must determine the role of Case markings in the grammar of oral languages, how they relate to properties of the substance of oral languages, and what difference in the substance of sign languages makes them unnecessary.

Morphological Case markings are a means of indicating what grammatical function a phrase has in a sentence. It has long been observed that there is a trade-off between the diverse means used to encode this information. For instance, as Meillet (1949, 1950), Keenan (1978), and many others have observed, the richer the Case-marking system is in a language, the less rigid is the order of major constituents, and vice versa. This is because Case markings and order are two means which can equally appropriately encode information about grammatical functions.

There are two broad strategies to account for this kind of functional covariation. The first one relies mainly on formal properties: it provides a formal representation of order and Case, assumes for reasons of parsimony of the theory that one of the two is more basic, and accounts for the variation across languages by proposing formal operations which can derive the secondary means from the more basic one. The second strategy derives the variation from properties of the perceptual substance: this substance provides equally valid means to encode grammatical functions, and each language chooses among these means.

Consider the analysis based on formal properties. The currently dominant proposal is that the primary means of encoding grammatical functions is by fixed positions in a phrasal structure, based on the intuition that there are natural positions for the interpretation of major constituents¹⁰. Deviations from this structural encoding, such as the use of Case markings, are assumed to be superficial: at some deeper level, all relations between predicates and arguments in all languages are encoded by fixed positions in a phrasal structure. There is a universal list of positions that are used to express certain grammatical functions such as subject and object. Major constituents can appear fairly freely in several different positions in Case-marking languages because these languages have special displacement strategies. For instance, Chomsky (2000, p. 145) assumes that Case-marked elements happen to have “a scrambling feature [which] induces pied-piping even after Case assignment, with the pied-piped element ‘attracted’ by a higher probe.” What distinguishes English from Latin, in this view, is

¹⁰ The traditional view (influenced by studies of Latin) that functional case markers express grammatical functions is revived in Neeleman and Weerman (1999), but it is marginal in mainstream generative grammar. Quite patently, the means of encoding that is assumed to be primary is whichever one prevails in the language which, for some reason, in the theorists’ view, is assumed to be dominant.

that English does not have such “scrambling” features. A language has “scrambling” features whenever it happens to have constituents that are overtly marked for Case. *Why* this correlation holds is a mystery. A Case-marking language just happens to have extra mechanisms that conspire to give the impression of a freer order. To say that some languages have a list of uninterpretable scrambling features while others do not is just a restatement of the facts. This approach does not say anything about why these choices exist. Moreover, contrary to the claims, it is not economical to assume that one means of encoding is more basic. As pointed out in Bouchard (2002), this view actually requires two extra sets of theoretical tools: tools to translate each secondary means into the primary means – such as scrambling features and a displacement operation – and tools to prevent the computational system from directly accessing Case markings for interpretation, although it can access them for translation into structural positions.

The second strategy to account for this kind of functional covariation offers a more promising basis of explanation. As indicated in Bouchard (1996, 2001, 2002, pp. 382–389), temporal linearity and Case marking are two of the four modes of expression of a relation allowed by the perceptual substance of oral languages (the other two being intonation and marking of the head rather than the dependent, as in polysynthetic languages). These modes are functionally equivalent: there is no reason in their nature or in logic to assume that one is more basic than the others. The options do not constitute a list of disconnected coding modes that happen to be used by language nor are their effects the result of imperfections such as displacement. The choices are not fortuitous, but are determined by the perceptual substance. Functional covariation between Case marking and rigid order is not an aberration that requires costly additions to the theory. On the contrary, its absence would be an aberration, given the initial conditions arising from the perceptual substance: we would have to explain why no language makes use of an option that the perceptual substance provides for the language faculty.

If Case marking is linked to the nature of the perceptual substance in oral languages, as assumed under this view, a close look at the perceptual substance of sign languages should explain why such marking is not required in these languages. The visual-gestural substance involves not only the physical dimension of time, but also the three dimensions of space. An effect of this difference in dimensionality is that the visual-gestural channel has a greater potential to code information by means of a physical relation. In addition to the juxtaposition found in oral languages, in which the temporal edges of two elements are in contact, “information may be coded by physically relating two elements in space, by having them share a spatial edge, as when a directional verb shares one of its edges with a sign in locus A and is directed towards another sign in locus B with which it shares a second edge” [Bouchard (1996, p. 111)]. Note that, since a locus has a certain permanency, these spatial edges need not coincide with temporal edges: a noun may have been signed and been attributed a locus earlier in the discourse, and then several signs may have been produced before the verb is signed. As we indicated earlier, the use of loci in this way is extremely frequent in sign languages, because

it avoids the need to produce a new sign each time a referent is reactualized. Because of this inherent permanency of loci due to the spatial dimension, the additional cost of paradigms can be avoided. Paradigmatic domains introduce permanency in grammar. Thus, membership in a Case-marking paradigm identifies a particular, fixed grammatical function. As in the case of number and class/gender paradigms, there is no need for this means to introduce permanency since permanency is already available through the loci: a locus can be used to directly indicate the relation that a discourse element holds with a predicate. In Saussurean terms, an associative relation of Case marking is not necessary to provide a virtual identification of a grammatical function in sign languages because the spatial locus assigned to the referent already has a certain permanency, it remains *in praesentia*¹¹.

3.2.7. Summary

The perceptual substance of sign languages has multiple articulators and spatial dimensions which allow a signer to directly express the first three properties of (20) – participant deixis, inclusion/exclusion, and spatial deixis, whereas the perceptual substance of oral languages cannot express these properties without recourse to special forms. Number and class/gender participate in the identification of actants in oral languages, particularly to reactualize an actant; Case markings identify the actant's role. These properties all introduce permanency through membership in a paradigm. Sign languages do not categorize elements with paradigmatic properties such as number, class/gender, or Case because the permanency of the spatial substance allows actants to be directly reactualized and their roles identified, so there is no need for paradigms to manifest permanency.

In our view, it is no accident that oral and sign languages exhibit differences in the functioning of pronouns (reactualization) such as those listed in (20). These differences are related: they all depend on certain differences in the perceptual substances of oral and sign languages.

4. Consequences for linguistic categorization and universals

Since each modality has different physiological features and since these affect certain properties that are relevant for categorization, we have to reconsider in what sense such categories are universal. If certain categorial traits are modality-dependent, then it cannot be the case that all languages have them; even to say that some of those

¹¹ Whatever status grammatical functions may have with respect to universality, it is inappropriate to define them in terms of notions that derive from one particular property of a perceptual substance, to the detriment of others. Thus, it is odd to define them in terms of Case markings or of structural relations such as sisterhood and immediate dominance (which derive from temporal ordering): these are equivalent means that the perceptual substance provides to express grammatical functions.

categories are covert in some cases makes little sense. It appears more likely that our physiology and the language faculty provide a “toolbox” from which each language can choose.

A related question is what the criteria are for establishing any particular category. Traditionally, they fall into three classes: morphophonological, syntactic, and semantic. Many scholars have already noted that semantic criteria are very hard to use with any accuracy. Moreover, some languages have very little morphophonology to rely on, while others make very little use of syntactic ordering. This becomes even more critical when different modalities are considered, since the means of expressing syntactic combinations are determined by physiological properties. What emerges from the study of sign languages, and in particular LSQ, is that what is stored in the mental lexicon is not categorized forms selected according to their category, but rather noncategorized forms. Categorization then expresses the particular function the item has in a particular context of use. Thus, numerous signs have the same formal features (configuration, orientation, place of articulation and contour of movement) whether they function as a noun or as a verb because their behavior in space indicates which purpose they serve in the sentence. Similarly, the distinction between the definite determiner and pronoun functions of a pointer is simply a difference between the initial assignment of a locus and its subsequent reuse.

Each mode of coding information in the sensorimotor apparatus is subject to extralinguistic constraints imposed by human motor, perceptual, and cognitive limitations. By assuming a grammatical system that narrowly reflects the properties of one particular perceptual substance, one is imposing on the whole of grammar limitations that are due to extralinguistic properties of that substance. For instance, the temporal linearity of oral languages is often presented as being more “basic,” and other properties of that substance such as morphological marking or intonation are “translated” into phrasal structural notions deriving from temporal linearity. This can create confusion between linguistic mechanisms that are innately determined and contingent properties of the interfacing systems. The risk of confusion increases if the “translation” takes place between languages with different modalities like oral and sign languages.

We are not saying that sign languages are very different from oral languages. On the contrary, we are saying that, despite the huge perceptual differences, if we clearly understand the import of each particular substance, we can see how both types of languages are equally determined by properties of their respective perceptual substances. We believe that this is where the similarities lie, not in “translating” properties of sign languages into properties of oral languages – an effort that is of limited value when these properties arise from the perceptual substance.

In sum, oral and sign languages are actually very similar in the fundamental principles of their syntax, but important physico-perceptual differences between their modalities determine the surface realizations of these principles in ways that make them appear very different.

References

- Armstrong, D., W. Stokoe and S. Wilcox (1995), *Gesture and the Nature of Language* (Cambridge University Press, Cambridge).
- Barner, D., and A. Bale (2002), "No nouns, no verbs: Psycholinguistic arguments in favor of lexical underspecification", *Lingua*, 112: 771–791.
- Beghelli, F., and T. Stowell (1997), "Distributivity and negation: The syntax of *each* and *every*", in: A. Szabolcsi, ed., *Ways of Scope Taking* (Kluwer Academic Publishers, Dordrecht) (71–107).
- Bouchard, D. (1996), "Sign languages and language universals: The status of order and position in grammar", *Sign Language Studies*, 91:101–160.
- Bouchard, D. (2001), "The concept of "universal" and the case of Japanese", *Lingua*, 111: 247–277.
- Bouchard, D. (2002), *Adjectives, Number and Interfaces: Why Languages Vary*, (Elsevier Science, Oxford).
- Bouchard, D., and C. Dubuisson (1995), "Grammar, order and position of WH-signs in Quebec Sign Language", *Sign Language Studies*, 87:99–139.
- Bouchard, D., and A.-M. Parisot (2004), "Properties of number in Quebec Sign Language", *Workshop on Numerals in the World's Languages* (Leipzig, Germany).
- Chomsky, N. (1965), *Aspects of the Theory of Syntax* (MIT Press, Cambridge).
- Chomsky, N. (1970), "Remarks on nominalization", in: R. Jacobs and P. Rosenbaum, eds., *Readings in Transformational Grammar* (Ginn and Co., Boston) [184–221].
- Chomsky, N. (2000), "Minimalist inquiries: The framework", in: R. Martin, D. Michaels, and J. Uriagereka, eds., *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik* (MIT Press, Cambridge, MA) [89–155].
- Cinque, G. (1994), "On the evidence for partial N movement in the Romance DP", in: G. Cinque, J. Koster, J.-Y. Pollock, L. Rizzi, and R. Zanuttini, eds., *Paths towards Universal Grammar* (Georgetown University Press, Georgetown) [85–110].
- Givón, T. (1984), *Syntax: A Functional-Typological Introduction*, vol. I. (John Benjamins Publishing Company, Amsterdam/Philadelphia).
- Halle, M., and A. Marantz (1993), "Distributed morphology and the pieces of inflection", in: S.J. Keyser and K. Hale, eds., *The View from Building 20* (MIT Press, Cambridge, MA) [111–176].
- Harley, H., and R. Noyer (1999), "Licensing in the non-lexicalist lexicon: nominalization, roots and the encyclopedia", *MIT Working Papers in Linguistics*, 32:119–137.
- Jackendoff, R. (2002), *Foundations of Language. Brain, Meaning, Grammar, Evolution*. (Oxford University Press, Oxford).
- Johnston, T., and A. Schembri (1999), "On defining a lexeme in a signed language", *Sign Language and Linguistics*, 2:115–185.
- Kayne, R. (1994), *The Antisymmetry of Syntax* (MIT Press, Cambridge, MA).
- Keenan, E. (1978), "Language variation and the logical structure of universal grammar", in: H. Seiler, ed., *Language Universals* (Gunter Narr Verlag, Tübingen) [89–123].
- Lillo-Martin, D., and E.S. Klima (1990), "Pointing out differences: ASL pronouns in syntactic theory", in: S. Fischer and P. Siple, eds., *Theoretical Issues in Sign Language Research. Linguistics* (The University of Chicago Press, Chicago) [191–210].
- Marantz, A. (1997), "No escape from syntax: Don't try morphological analysis in the privacy of your own lexicon", *University of Pennsylvania Working Papers in Linguistics*, 4:201–225.
- Meillet, A. (1949), *Caractères généraux des langues germaniques* (Hachette, Paris).
- Meillet, A. (1950), *Les dialectes indo-européens* (Champion, Paris).
- Munaro, N., and H. Obenauer (2000), "On underspecified wh-elements in pseudo-interrogatives", *Venice Working Papers in Linguistics*, vol. 9, 181–253.
- Munaro, N., C. Poletto and J.-Y. Pollock (2001), "Eppur si muove. On comparative French and Belunese Wh-movement", in: P. Pica and J. Rooryck, eds., *Linguistic Variation Yearbook* (John Benjamins Publishing, Amsterdam/Philadelphia) [147–180].

- Neeleman, A., and F. Weerman (1999), *Flexible Syntax. A Theory of case and Arguments* (Kluwer Academic Publishers, Dordrecht).
- Parisot, A.-M. (2003), "Accord et cliticisation: le cas des verbes à forme rigide en langue des signes québécoise", Ph.D. Dissertation (UQAM, Montreal).
- Saussure, F. (1916), *Cours de linguistique générale* (Payot, Paris).
- Stokoe, W.C., D.C. Casterline and C. G. Croneberg, (1965/1976), *A Dictionary of American Sign Language on Linguistic Principles* (Linstok Press, Silver Spring).
- Supalla, T., and E. Newport (1978), "How many seats in a chair? The derivation of nouns and verbs in ASL", in: P. Siple, ed., *Understanding Language Through Sign Language Research* (Academic Press, New York) [91–131].
- Tesnière, L. (1959), *Éléments de syntaxe structurale* (Editions Klincksieck, Paris).
- Travis (this volume)