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# Iconicity and Productivity in Sign Language Discourse: An Analysis of Three LIS Discourse Registers

IN THIS ARTICLE I focus on the linguistic features of three Italian Sign Language (*Lingua Italiana dei Segni*; LIS) registers to show to what extent iconic features of signs are relevant to the level of signed language discourse. This work is intended as a contribution to the understanding of iconic phenomena in signed languages through the analysis of different sign language registers.

Before defining broad concepts such as “iconic” and “iconicity,” I would like to discuss the relevance of iconicity for an understanding of sign language linguistic structure.

Recent literature presents at least two main perspectives on iconicity in signed languages: One of these maintains that, although iconic features of signs play a significant psychological role in the storing and memorizing of signs, they are not linguistically relevant. Proponents of this position disagree with the idea that signed languages are similar to pantomimes or other nonlinguistic iconic forms of communication. Klima and Bellugi, for example, in their influential work (*The Signs of Language* 1979), discuss the “insignificance of

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iconicity in processing signs” (27), and a large number of well-known studies of signed language (SL) grammars (e.g., Supalla 1982; Wilbur 1987) draw similar conclusions. This point of view has recently been reiterated by Baker, Dye, and Woll (2001).

On the other hand, a second position has recently demonstrated the relevance of iconic features of signs at different levels of the grammatical and lexical structure of signed languages (Taub 1998; Wilcox 2000). This position is influenced by works in the functionalist and cognitivist frameworks, which stress the role of iconicity as a central feature in the study of human language (Haiman 1983, 1985; Givón 1979, 1989; Dressler 1995; Du Bois 1987; Waugh 1993; Fónagy 1983). Armstrong, Stokoe, and Wilcox (1995), for example, in their study of the role that sign languages might have played in the origin of human language, underline the role of the iconic features of sign language phonology in their “semantic phonology” proposal. Recently, in a different framework, Crasborn, van der Hulst, and van de Kooij (2000) also stress the relevance of iconic features at the interface between phonology and morphology.

I suggest that, by determining optional choices regarding the connection of signs in a particular utterance, iconicity is a relevant linguistic feature of signed languages not only at the morphophonological and lexical levels but also at the level of discourse. From this point of view the different role that iconicity plays in vocal and signed languages cannot lead, in any sense, to questioning the linguistic status of signed languages; on the contrary that role can help us extend our knowledge of the similarities and differences between two different language types, spoken and signed, both of which iconic features affect to some extent.

### Iconicity in Spoken and Signed Languages

The current literature on spoken and signed languages offers many contrasting definitions of the term *iconicity*. In the philosophical tradition (at least from Plato’s *Cratylus* [1995, p. 422e]) the term *iconic* primarily indicates a relation of similarity between the expressive form and the referent of a sign, regardless of whether linguistic or nonlinguistic. The linguistic tradition generally distinguishes between two different kinds of iconic signs: (1) onomatopoeic/

phonosymbolic signs of different types and (2) motivated signs. Onomatopoeic signs, such as the English word *meow*, which refers to a cat's cry, refer to a concrete perceptual object that is evoked via the acoustical image suggested by the expression of the sign. Motivated signs, on the other hand, are generally considered iconic only in a much more mediated way.

Motivated signs are signs whose expressive form mirrors the existence of semantic associations that are active either in the language system or in the grammar. For example, nouns belonging to the same lexical paradigm are often distinguished only by the derivative termination, as with the English words *meaningless* and *meaningful*. They share a common portion of expressive form (i.e., *meaning-*), and their similarity of form in this case reflects a connection of meaning.

According to Saussure (1916, 181–84), motivation, which is a limitation of the arbitrariness of the linguistic sign, is mainly a principle of rationalization that facilitates the association between different signs whose meanings are connected. We can say that motivation can be conceived, from this point of view, as a mapping of the semantic level onto the level of the expressive forms. Motivated signs are not iconic in the philosophical sense: in fact, they do not share any resemblance to any particular referent.

Nevertheless, in the recent cognitive-functionalist tradition, motivation is considered as a form of iconicity (Haiman 1980, 1985; Givón 1989; Anttila and Embleton 1995). Scholars of this tradition generally regard iconicity as a principle that governs the relationship between expressions and meanings via regular mappings that assist the processing efforts of the language producer and/or the language receiver. According to Talmy Givón, for example, “a coded experience is easier to store, retrieve and communicate if the code is maximally isomorphic (iconic) to the experience” (1989, 97).

In the framework of the cognitivist functionalist tradition, motivation thus plays a very important role and cannot be considered as just a form of iconicity but also as one of the more significant and prototypical forms. On the other hand, phonosymbolic and onomatopoeic signs are often seen, from this point of view, as special kinds of iconic signs in which the mapping between the expressive form and the meaning is extended to either the referent or the image schema of the referent (Dressler 1995; Anttila and Embleton 1995).

With regard to sign languages, iconicity has mainly been considered in terms of the relation between the expressive form of a sign and its referent, while the motivated relations between the form of the different signs or sign subcomponents and their semantic and/or grammatical meanings have generally been underestimated (exceptions are Boyes-Braem 1981, 1998; Wilcox 2000; and recently Crasborn, van der Hulst, and van de Kooij 2000). Many studies<sup>1</sup> nevertheless emphasize that the relation between the iconic form of a sign and its referent is not a direct one: The iconic mapping between the expression and the referent (or the mental image of the referent) is always mediated by cultural conventions, modality factors, and language-specific (etymological and semantic) conventions.

Building upon the cognitive functionalist tradition, I assume a definition of iconicity that highlights the central role played by the mapping of meaning onto expressive forms in iconic signs.

By iconicity I thus refer to a regular mapping between some formal features of the expression of a sign (or of a sublexical component of the sign) and aspects of the meaning of this sign (or sublexical component), a correspondence that is generally inherent to the language system but can also be productively established in a set of particular utterances. For the meaning of the sign I intentionally select a very broad definition of iconic: From this point of view the referent, implied as a part of the meaning of the utterance, is only indirectly involved in the iconic relation between the expressive form of the sign and the meaning.

### Two Major Kinds of Linguistic Iconicity: Frozen and Productive

The notion of iconicity can be applied at different levels of language structure—from the sublexical level to the morphosyntactic and the textual levels. At each level it is possible to distinguish between two kinds of iconicity: *productive* (or *dynamic*) and *frozen* (or *dormant*). Productive iconicity affects the correlation between forms and meanings and can be established in particular utterances, according to a particular textual context and situational context. Frozen iconicity affects the correlations between form and meaning and can be found in the sublexical, lexical, and grammatical structures when they are abstracted away from a particular utterance and considered in their citation form. I now reexamine some relevant examples of iconicity

and motivation in spoken and signed languages to show that this distinction can apply to both spoken and signed languages.

*Linguistic Iconicity in Spoken Languages: Phonetic and Phonological Levels*

The issue of the iconic correlations between form and meaning that affect the phonetic and phonological level has been raised many times (see, for example, Jakobson 1960, 1965, 1966; Fónagy 1983; Waugh 1993; Hiraga 1998). In the following paragraph I focus on three kinds of well-known phenomena: onomatopoeic forms, phonestemes, and phonosymbolism.

*Onomatopoeic Forms.* Many Indo-European and non-Indo-European languages (Cardona 1985) have lexical areas in which onomatopoeic forms are particularly present (e.g., areas related to animal cries, animal names, and human body parts). For these, the form-meaning correlation is limited to a correlation between a particular form and a particular prototypical mental image connected to a referent, in local and delimited portions of the lexicon.

The relation between meaning and form, which is apparent in so-called phonestemes (Waugh 1993), is much more generalized and systematic. Waugh suggests that English shows correlations between meaning and form that affect some phonemic sequences and semantic domains. Examples of this kind of correlation are those between English /gl/ and the domain of “brightness and light,” as in the English words *gleam*, *glow*, and *glamour* or English /fl/ as in words like *flee*, *flicker*, and *fly*, which are related to the particular visual aspect of some moving objects. An interesting feature of phonestemes is that the correlation between meaning and form, although generalized, can be absent in other words that belong to the same language and share the same phonemic pattern. For example, words such as *glide* and *flower* do not address the same semantic domains as the words beginning with /gl/ and /fl/ that I have already mentioned. In addition, both phonestemic and onomatopoeic (although to a lesser extent) correlations are culturally and language dependent (cf. Cardona 1985).

Onomatopoeic and phonestemic forms that are present in spoken language phonology are a clear case of frozen or *established* iconicity: The mapping between form and meaning is evident to the language

speaker in the citation forms of the signs as well. A case of productive or *discursive* iconicity of the phonological level is apparent in another phenomenon: *phonosymbolism*. Phonosymbolism implies a correlation between a meaning and a sublexical unit that is established in a particular situational and textual context. This kind of iconicity evidently exploits the relations between a particular phonetic sequence and the meaning of a particular utterance. Examples of phonosymbolic correlations are evidenced in many studies of poetic language such as those by Jakobson (1960, 1970) and Fónagy (1965, 1983). In poetic texts the poet follows particular formal constraints that often lead to a textual structure that heightens a particular form–meaning relationship; these relationships can be established between a particular rhythm and theme or between a particular set of frequently repeated phonological features, such as syllabic groups, and a particular meaning.

For example, in *The Raven*, by Edgar Allan Poe, the regular repetition of the word *nevermore* is related to the main theme of the poem, “death,” which is also symbolized by the raven (cf. Jakobson 1960). The alliteration and the chiasmus between the words *raven* and *never*, both of which share the phonetic elements *r-v-n*, are regularly used by Poe at the end of each strophe in order to enhance the feeling of the presence of death

Ghastly grim and ancient *Raven* wandering from the nightly shore  
Tell me what thy lordly name is on the Night’s Plutonian Shore?  
Quoth the *Raven: Nevermore*.

. . . And the *Raven*

. . . and my soul from out that shadow that lies floating in the door  
shall be lifted—*nevermore*

(Poe 1845, 1074; emphasis added)

The poet establishes this kind of iconic mapping between meaning and form by the structure of the particular poem, and the mapping is thus not extendible out of this context.<sup>2</sup> We can define this phenomenon as an example of dynamic iconicity at the sublexical level of spoken languages. At this level of analysis it is thus possible to find, in spoken languages, both kinds of iconicity, frozen and dynamic-productive.

*Iconicity in Syntax and Discourse*

In dealing with grammar and syntax it is also possible to distinguish between frozen and productive iconicity. With regard to frozen iconicity, many grammatical structures are analyzable in terms of a functional correspondence between the expressive resources of the code and the processing efforts.

Some syntactic structures, for example, seem to be iconically motivated. In Givón's terms, for example, the SVO order common to many languages can be interpreted as deriving from a general hierarchical principle in the presentation of information, such as the one Sridhar formulates: "[N]ominals denoting figure of state and agent-of-action precede those denoting ground and patient" (cf. Sridhar 1980; Givón 1989, 121).

According to Givón this iconic principle may be a constraint on the grammaticalization processes that took place in many modern Indo-European languages (e.g., in the derivation of Italian from Latin) and determined the existence of grammaticalized SVO orders. From Givón's point of view, SVO order is an example of frozen or grammaticalized iconicity.

However, in actual utterances of many SVO languages the subject may often be postponed to the object position. This happens, for example, in particular syntactic patterns, as, for example, in so-called left dislocation in spoken (rarely also written) Italian:

La mela,	Giovanni	mangia
O	S	V
The apple	John	eats

Although Italian is an SVO language, the relative positions of subject, object, and verb in this case follow a topic/comment structure with the topic in the more prominent position, irrespective of the case marking. Clauses following a topic/comment structure can also be considered as iconic. Dressler (1995, 32) considers the topic/comment word order as another instance of the iconicity of figure and ground, in which the figure is foregrounded at the beginning of a sequence and the ground is backgrounded at the end.

This kind of example shows that it is sometimes possible to find iconic principles and constraints that underlie a particular grammatical structure, as is the case with the frozen iconicity of syntactic structures such as SVO. Nevertheless, the same kind of iconic motivation may be found as competitively active at the level of optional linguistic choices in actual utterances (cf. Du Bois 1987), as, for example, in the case of the topic/comment structure in languages with flexible word order. We can call this last kind of iconicity dynamic iconicity of the word-order level. These kinds of iconic phenomena are typical of the textual level: At this level the role of context is particularly relevant and can determine optional linguistic choices.

It is thus interesting to look at the different kinds of iconic constraints that are active at the interface between syntax and discourse in spoken and signed languages.

#### Linguistic Iconicity in Sign languages

The issue of iconicity has been dealt with most frequently in sign languages as frozen iconic phenomena and at the lexical and phonological levels.

#### *Iconicity of Parameter Elements and Citation Forms of Signs*

Many studies of the lexicon and phonology of signed languages point out that some formal features of signs and sign parameter elements are iconically related to particular semantic domains. Penny Boyes-Braem, in particular, emphasizes the possibility of establishing a comparison between the iconicity of parameter elements (i.e., locations, configurations, orientations, and movements) and the phonemes of vocal languages (1981, 56).

Boyes-Braem (1981) and Klima and Bellugi (1979) also stress that iconic features of signs are language and culture dependent. In general, access to the form of a sign is not a sufficient hint to understanding the meaning of the sign. For example, hearing subjects who are exposed to signs without knowing their meaning and who try to guess their semantic content succeed at less than chance percentages. In a different experimental test (1976) Bellugi and Klima showed that subjects exposed to signs without knowing them could identify the ground on which the meaning-form relation was established if the



testers spelled out the meaning of the sign (more than 50 percent of the subjects agreed on the possible basis). Klima and Bellugi's term for signs whose relationship between meaning and form a nonsigner can detect if the meaning is spelled out is "translucent signs."

The existence of translucent signs can be explained in terms of culture dependent and language dependent iconicity: These signs are not universally iconic, but they are iconic to the language users who have access to their meanings. Access to the meaning of a particular sign provides an insight into the language dependent conventions according to which a particular expressive form can be iconically related to a particular meaning in a particular signed language. Connections between form and meaning in signed languages are thus very often not universal, and the same parameter can acquire different iconic meanings in different cultures and according to different language-dependent internal conventions (cf. Boyes-Braem 1998).

Pizzuto and Volterra (2000) and Boyes-Braem (1998) recently set up an intercultural analysis to determine how iconic constraints between form and meaning support the understanding of a sign's citation form by hearing nonsigners and by deaf signers from different European countries who are not competent in a particular sign language.

Their analysis interestingly suggests that the understanding of a particular sign is related to different kinds of constraints: (1) constraints on form-meaning relations that are culturally dependent; (2) more general constraints that are peculiar to the visual-gestural modality and to signers; and (3) universal constraints on the way signers and nonsigners formulate hypotheses about the meaning of signs.<sup>3</sup>

Transparent and translucent signs are thus a particular type of frozen iconic forms belonging to the lexicon and whose iconicity is determined by different kinds of constraints, from language- and culture-specific constraints to modality and universal constraints. Klima and Bellugi's analysis (1979), as with studies by Boyes-Braem (1998) and Pizzuto and Volterra (2000), was limited to the frozen lexicon.

In general, very few studies have been made on the lexicon or the sublexical components of signed languages from the point of view of dynamic or productive iconicity, although many unsystematic observations have been made about the role that iconicity plays both in

the creation of new lexical items and in poetry (see Klima and Bellugi 1979; Wilcox 2000; Russo, Giuranna, and Pizzuto 2001). In the case of poetry it is sometimes suggested that particular lexical choices can enhance iconicity, but no particular study (cf. Russo, Giuranna, and Pizzuto 2001) has compared the iconic features of poetry to those present in other registers.

*Frozen and Productive Lexicon: At the Boundaries between Lexicon and Discourse*

In the analysis of extended signed texts many difficulties arise from the fact that it is hard to distinguish, in a neat and definite way, between frozen and productive lexical forms.

Some interesting observations have been made on the iconicity of the productive lexicon. For example, Johnston and Schembri note that, in discourse, signers “revitalize” the “dormant iconicity” of the frozen lexicon (1999). Brennan (1992, 2001) also notes that iconicity plays an important role in what she describes as “polymorphemic productive forms.” These are forms that speakers can create as required in discourse and that are usually not listed in a dictionary, despite the fact that they can occur very frequently in signed texts. As Brennan notes, one prominent feature of productive forms is that they are visually motivated, hence iconic.

This article focuses on the comparison between frozen and productive iconicity in different registers and takes into account the role of iconic “polymorphemic productive forms”: forms that are not stable components of a sign language lexicon but that combine minimal building-block elements at the level of parameter elements to fill lexical gaps or to create lexical items fitting a particular context (see Brennan 1992 and 2001 for an extended discussion of this kind of “ready made” productive forms). These forms are very interesting when analyzed in the light of the relationship between iconicity and productivity in different contexts and language registers.

At the lexical level I am referring to frozen iconicity when I talk about the iconicity of frozen lexical forms, and I am referring to productive iconicity when I talk about the iconicity of productive polymorphemic forms. Is iconicity a relevant feature of productive

polymorphemic forms? Are productive iconic forms present in a comparable manner in different registers? In this analysis I give some preliminary answers to these important questions.

### *Simultaneous Syntax and Coarticulation*

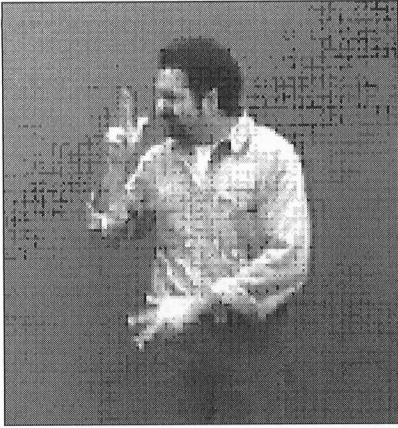
Polymorphemic productive forms generally exploit the simultaneous features of sign language structure and the possibility of coarticulating signs, which leads us to an examination of coarticulated signs.

The use of one-handed signs brings with it the possibility of coarticulating different signs in the same time unit. This phenomenon has been noted across signed languages not only in signed poetry but also in conversation and/or ordinary prose (see, among others, Miller 1994; Padden 1983, 1990; Pizzuto and Corazza 1996). Miller (1994) and Engberg-Pedersen (1993), distinguish between coarticulation and simultaneous syntax. One form of this consists of the anticipation or the maintenance of one or more articulatory features of a sign while a second sign is articulated with a different hand. A second form consists of the articulation of two different signs with two hands to stress the semantic and syntactic relation between the signs.

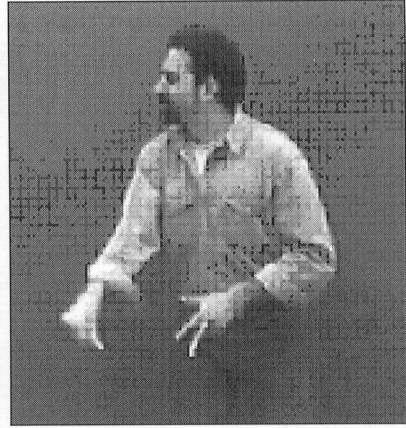
In the sequence shown in figures 1a and 1b, coarticulation between signs is evident: The signer's left hand maintains a 3 configuration belonging to the already-articulated two-handed sign SIGNS while he signs the one-handed sign DEFEATED with his right hand. Although coarticulation is a feature that spoken and signed languages share, simultaneous syntax seems to be unique to signed languages. In Figure 1c simultaneous syntax is evident: This asymmetrical two-handed sign results from two one-handed signs. The signs ROLLING-BALL and BASKET are simultaneously articulated to create the complex sign ROLLING-BALL-IN-BASKET.

It may be crosslinguistically relevant to determine which kinds of iconic phenomena can be related to the special simultaneous features that characterize sign language morphosyntax and syntax.

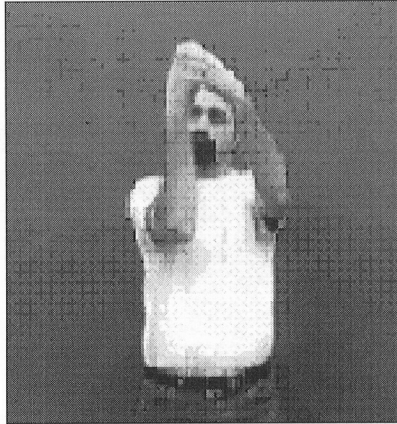
Very few studies, in fact, have examined the frozen and productive iconicity of signed languages at this level. An important exception is the group of studies by the French researcher Paul Jouisson, whose 1995 work focuses entirely on the issue of discourse-level iconicity in French Sign Language.



a. SIGNS



b. DEFEATED



c. ROLLING-BALL-IN-BASKET

FIGURE 1.

In this article I deal with the issue of iconicity in SL morphosyntax primarily in relation to simultaneous syntax, and I will not consider other kinds of iconic relations and constraints that can be present at the level of larger units of analysis. I focus especially on simultaneous syntax because the hypothesis of a particular preferential relation between iconicity and simultaneity in signed language structure has been raised many times (i.e., Klima and Bellugi 1979; Armstrong, Stokoe, and Wilcox 1995; Crasborn, van der Hulst, and van de Kooij 2000).

Even though many studies of iconic features of signed languages are based on both the lexicon and a prototype representation of the sign, called the citation form, I instead focus on the inflected and modified forms that signs acquire in discourse and examine in particular the iconicity of signs articulated with simultaneous syntax. I assume that simultaneous syntax and polymorphemic productive forms are an important key to understanding the structural role of iconicity in SL grammars at different levels.

### Methodology and Aims

This analysis stems from the assumption that different kinds of iconic relations between form and meaning can be established in signed language discourse by exploiting the syntax of the signs and the simultaneous co-occurrence of the sublexical constituents of signs. While I believe that some of the more relevant and specific properties of signed language discourse are related to nonmanual articulators, in this preliminary exploration I limit my analysis to manual articulators.

Dynamic iconicity in SLs is a particular form of iconicity that is apparent in the combination of signs in discourse and is related to the particular situational and textual context in which signs are used. I hypothesize that the iconic properties of signs may be exploited differently according to the different language uses that characterize different registers, thus different kinds of dynamic iconicity can show up in different registers. I explore the relationship between dynamic iconicity and the particular discourse contexts in which iconic forms occur through a cross-register analysis that makes it possible to relate different kinds of dynamic iconicity to different kinds of discourse registers.

I analyzed the presence of dynamic iconicity in three different kinds of texts: poetry, narrative texts (dramatized narratives), and conferences. This analysis includes different types of iconicity and structural regularities in a corpus of 823 different manual signs and/or signed constructions<sup>4</sup> (a total of 1,491 sign tokens) produced by native LIS signers. The signs were extracted from three subcorpora of comparable duration (approximately eight minutes each), representing different types of LIS texts. These texts were as follows:

1. five LIS poems
2. three texts characterized as “dramatized narratives,” that is, monologues in which a particular event (such as a motorbike accident or the perception of music via a display of light-emitting diodes) was narrated in a “dramatized prose” that clearly differed from the ordinary prose observed in lecture texts (or in everyday conversation) but which did not exhibit the regular rhythmic patterns found in the poems
3. three excerpts from lectures on various topics (e.g., bilingual education, research on LIS, sociocultural aspects of the deaf community)

As a preliminary observation to this analysis, I have identified three major kinds of iconic relations that can occur in discourse:

Type 1. iconicity recast in discourse (IRD)

Type 2. iconicity of parameters in discourse (IP)

Type 3. iconic reverberation (IRV)

I will illustrate the different kinds of dynamic iconicity with examples taken from our corpus.

#### *Different Kinds of Dynamic Iconicity*

Iconic features of signs in which the signs’ parameters may assume different semantic specifications according to contextual and cotextual constraints are labeled “iconicity recast in discourse” (IRD).<sup>5</sup>

In the case of signed languages some of the visual features of parameter elements suggest particular iconic relations (iconic mappings) between the phonological form and a particular referent. For example, the B handshape is often related in the frozen LIS lexicon to referents and meanings related to objects with a “spread” surface (as in the signs TABLE, ROOF, etc.). One can say that a particular visual feature of the hand (the formal feature of the hand: +spread) has been mapped onto a particular feature of the meaning of each sign (the semantic feature “+spreadness” is a feature pertaining to the meaning of signs such as TABLE, ROOF). This kind of iconic mapping is dynamically and productively recast in polymorphemic forms in sign language discourse.

In discourse, the particular features of the hands can be related to particular semantic features of a referent in many different ways: For example, if a LIS signer is talking about a “leaf that is falling,” he may produce a 5 classifier form to talk about the referent, exploiting the iconic relationship between the “spread” form of a leaf and the “spreadness” of the 5 hand. This iconic relationship, however, is not sufficient to discriminate between a leaf and many other referents that can be characterized as “+spread” and which are not leaves (things such as roofs and flags). Only the context and the co-occurrence of the handshape with movements, orientations, and places of articulation can indicate to the receiver which particular referent is related to the use of that particular handshape. Although a very general feature (a feature like “+spread” relating the 5 handshape and a particular referent such as a leaf) can help establish which referent the signer is addressing, it may not be sufficient, and the copresence of other features related to the other parameters can reinforce this relation.

That is, the similarity between the 5 handshape and the leaf can be reinforced in a particular text by additional iconic features related to the movement of the handshape (as, for example, “+slow weaving with downward directed movement,” a movement that is also present as a semantic feature in the semantic representation of a falling leaf).

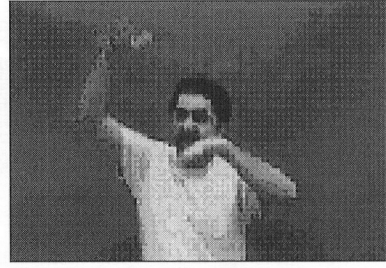
The greater the number of common features the two objects share (i.e., the greater the number of common features between the semantic representation of the referent and the fully articulated sign), the more effective the iconic relation will be. In addition, the particular linguistic and nonlinguistic context of the utterance will add further information useful to understanding which referent the particular sign refers to. If the signer is talking about trees, for example, this information increases the understanding of the iconic relation between the handshape and the leaf (in our example, the semantic feature “+spread” will be added to the contextual semantic information “+related to trees,” reinforcing the iconic relation between a leaf and the particular articulatory unit we are examining). In the present corpus we find many interesting illustrations of iconicity recast in discourse. One example is related to a leaf and a newspaper page.

The signs schematically illustrated in Figures 2a–h occurred in a context in which the signer described the visions experienced by a





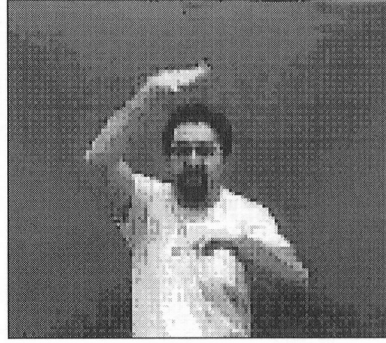
a.



b.



c.



d.



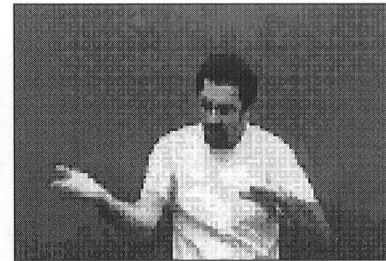
e.



f.



g.



h.

FIGURE 2.



motorcyclist lying unconscious on the ground after hitting his head in an accident with his motorbike. The two complex signed constructions that are illustrated describe two images that appear in the motorcyclist's mind: "A leaf falls and then lies on the ground" (2a–2d) and "a newspaper lies on a flat surface and a page turns over" (2e–2h). The handshapes in the two signed constructions are the same: The signer articulates with his right hand a 5 handshape, which identifies first the falling leaf (2a–2d), then a page of a newspaper that turns over (2e–2h). The signer's left hand assumes (2a) a G handshape to specify a branch from which the leaf is falling. While the right hand is moving, the left hand suddenly assumes and retains throughout a B handshape that specifies first the ground on which the leaf falls (2b–2d), then that part of the newspaper that remains still while a page turns over (2e–2h). There are iconic relations of visual resemblance between the 5 handshape and objects with flat, thin surfaces (such as leaves or newspaper pages) and between the B handshape and objects with flat, compact surfaces (such as the ground or a bound newspaper). The point here is that the same handshapes are used to specify different sign-referent relations (e.g., the B handshape that iconically symbolizes the ground in pictures 2b–2d is also used to symbolize the newspaper in pictures 2e–2h). This is the reason we say that the iconicity of these signed constructions is recast in the specific contexts in which they occur.

The recasting or respecification of the sign's meaning is accomplished primarily via the different movements that co-occur with the handshapes implicated. I wish to stress that the signs illustrated are all productive forms and differ remarkably from the conventional LIS signs that are used in ordinary prose to refer to a leaf or a newspaper. For example, the standard LIS sign for a leaf is made in neutral space with two symmetrical L handshapes (thumb and index finger extended) that face each other and are closed and moved apart as the sign is articulated. In contrast, the polymorphemic sign that represents the falling leaf in Figures 2b–d is articulated with a 5 handshape, palm oriented toward the ground. The meaning of this sign is underspecified: The same sign can represent the falling of any flat, light object (e.g., a sheet of paper, an envelope, a piece of cloth). The sign

can also refer specifically to the falling of a leaf, in the context in which it occurs, because it is framed in a context appropriate to favoring this interpretation over other possible interpretations (e.g., the preceding signs referred to a tree branch). One can make similar observations about the sign used to identify the newspaper and its turning page. The iconic relation binding a particular handshape as a B handshape or a 5 handshape to different objects is accordingly recast in relation to the different co-occurring parameters and the different contexts of occurrence.<sup>6</sup>

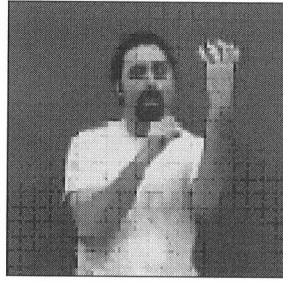
It is important here to distinguish between what is creative and what is conventionalized in this kind of polymorphemic form. The formal features of the handshapes, movements, and locations are all conventionalized, noncreative features of LIS phonology. In addition, the relationship of each parameter element with a general semantic domain is also linguistically conventionalized. As mentioned, 5 handshapes are generally related to the semantic domain of flat, thin surfaces, and downward movements are usually related to downward-moving objects.

What is creative here is the global construction in which the single form-meaning relationship of the sign's parameter elements helps form a general iconic construction whose overall meaning is not simply the sum of the meanings of the single components but is also determined by the linguistic and nonlinguistic contexts.

#### *Iconicity of Parameters in Discourse*

This category of iconicity comprises iconic features that are identifiable primarily in the location and partially in the movement or the orientation of a sign or signed construction that, in discourse, somehow mirror one or more aspects of the relation between the referents or events that are represented.

An example of the iconicity of parameters in discourse is shown in the relation between an open 4 handshape and an open 5 handshape, which is established in a narrative sequence from the present corpus. When talking about traffic and cars stopping at a crossroad, the signer performs two coarticulated signs in a two-handed, asymmetrical, signed construction. The meaning of this sign is expressed more or less by "A car stops at a traffic light."



CAR-STOPS-AT-A-TRAFFIC-LIGHT

FIGURE 3.

The form corresponding to the meaning “car” is not the same as the LIS sign for “car” as shown in the dictionary. The latter is made with two symmetrical closed fists that alternate in a half-circular up-and-down movement, iconically resembling a “steering wheel action.” The form in Figure 3 is characterized by a 4 spreading hands-hape that can be analyzed as a productive morpheme; it can be used (with different orientations) in a variety of constructions to refer to many different moving objects, including vehicles, people, and other objects moving rapidly in a sequence, one after the other.

The referential meaning of “cars” can be unambiguously attributed to this form simply because it is embedded in a narrative context focused on vehicles, crossroads, and traffic lights. The form used for “traffic light,” on the contrary, is much more conventionalized and is listed in dictionaries (see Radutzky 1992, 481). This second category of iconic sign units thus differs from the first category because it can involve nonproductive lexical signs and because the iconic relations are established primarily by exploiting spatial relations between sign components.

Figure 3 shows that the location and the orientation parameters of the two handshapes exhibit clear iconic features: The spatial relation between the two objects is mirrored in the spatial arrangement (and orientation) of the two handshapes that symbolize the car and the traffic light.

#### *Iconic Reverberation*

The recurrence or the regular opposition of the same parameters in symmetrical patterns is labeled “iconic reverberation” (IRV). This is

the phenomenon that Klima and Bellugi's framework describes as a feature of ASL poetic internal structure (1976, 1979).

Russo (2000) and Russo, Giuranna, and Pizzuto (2001) argue that the resemblance within and across signed patterns that is realized via IRV and the fact that this stylistic device is frequently used to emphasize thematic units or to provide particular semantic connotations can be analyzed as a form of discourse-related iconicity. In signed poetry signers often systematically stress meaning and thematic relations between different portions of a poem exploiting similarities and differences in the parameter elements of the signs. This phenomenon, as Klima and Bellugi (1979) point out, is very similar to rhyme and alliteration in spoken language poetry (see Cappello 1990; Fónagy 1965), as a particular kind of textual iconicity, comparable to phonosymbolism. For example, in a sequence of sixteen signs at the beginning of a poem in our corpus, "Thanks," the poet systematically exploits the same handshape in couplets and triplets of thematically related signs, building a symmetrical structure (see Figures 4a–c and 5a–c).<sup>7</sup> This formal structure is evidently related to the thematic structure of the poem, that is, signs that share the same meaning but a different semantic connotation (e.g., positive vs. negative) share the same handshape but have movements in opposing directions (e.g., upward vs. downward), and each sequence of two or three signs sharing the same handshape is related to a particular issue discussed by the two protagonists of the poem.

The different types of iconicity classified here are not mutually exclusive, and many individual signs or signed constructions exhibited in the corpus exhibit more than one, or even all, of the different types of dynamic iconicity identified, which in turn can co-occur

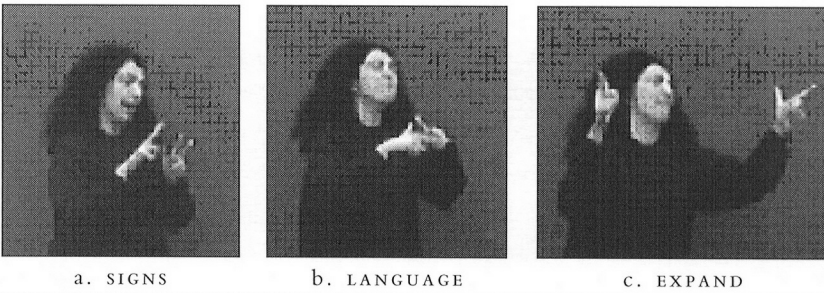


FIGURE 4.

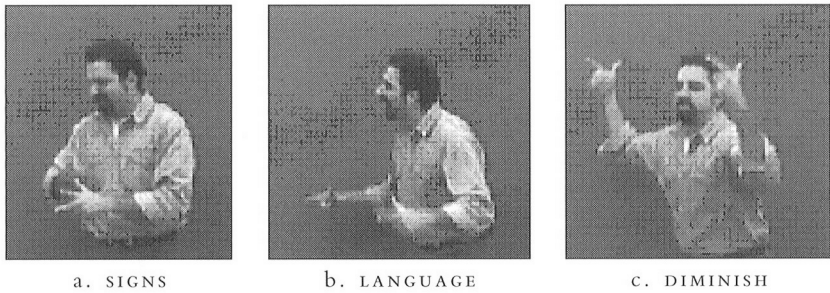


FIGURE 5.

with frozen iconic features. It is important in particular to note that iconicity of types 1 and 2 can occur together.

#### *Co-Occurrence of Iconicity of Types 1 and 2*

In many cases, instances of dynamic iconicity of type 1 (IRD) and 2 (IP) can occur together. In discourse it is possible to find many signs in which both iconicity recast and iconicity of parameters co-occur. For example, in a particular section of one of the narrative texts that I analyzed, an articulatory unit meaning EAT-WITH-CHINESE-STICKS + CUP was produced. In this combination the C handshape is iconically recast as a “cup for rice,” and the V handshape is iconically recast as meaning “two Chinese sticks” (i.e., chopsticks). In addition, the two handshapes are bound up in an iconic unit evident in the relation between the forms of the handshapes and in the relation of the loci of the signs EAT-WITH-CHINESE-STICKS and CUP. I call this kind of dynamic iconicity IR + IP (iconicity recast + iconicity of parameters).

#### *Articulatory Features of Productive Forms*

As mentioned earlier, I hypothesize that some of the peculiar features of dynamic iconicity in signed languages are related to the way signs or sign subcomponents are articulated in discourse. It was thus important to analyze the articulatory features of the signs in the corpus at the manual level.

I also examined the major articulatory features of the signs produced in the different types of texts described earlier. Analyses

focused on the distribution of one-handed vs. two-handed (symmetrical vs. asymmetrical) signs and on the presence and proportion of coarticulation phenomena, including simultaneous syntax. In this analysis, coarticulation is defined as the overlapping in a single articulatory unit of features pertaining to two distinct signs, and *simultaneous syntax* is defined as every coarticulated unit in which the overlapping of the features of two distinct signs carries a particular semantic and syntactic function. Simultaneous syntax in this view is thus a subset of coarticulation.

The aim of this analysis was to observe the following:

1. whether the presence of dynamic iconicity in a particular text is related to the presence of simultaneous syntax or coarticulation
2. whether a major or minor presence of the different kinds of dynamic iconicity is related to the three different kinds of text
3. whether some kinds of text show a higher percentage of dynamic iconicity
4. whether frozen iconicity is present in comparable or diverging percentages in the lexical items pertaining to each register

A transcription system to determine the following characteristics was developed to code and analyze the particular features of signs:

- a. whether the signs were articulated with one or two hands
- b. whether they shared the same or different handshapes, orientations, loci, and movements in one articulatory act (i.e., whether they were symmetrical or asymmetrical signs)
- c. whether a particular parameter (e.g., a particular locus, handshape, or movement) was maintained across different signs while other parameters changed for the dominant and the base hand.

Each combination of parameters was transcribed and coded according to the following coding table:

MA: manual articulation

2s: two hands symmetrical

2a: two hands asymmetrical

1: one hand

Co: coarticulation

SS: simultaneous syntax

FI: frozen iconicity

FIH, FIM, FIL: frozen iconicity of handshape, movement and locus

DI: dynamic iconicity

IP: iconicity of parameters (e.g., when two parameters are bound in a larger iconic structure)

IRV: iconic reverberation (i.e., when a particular handshape is maintained across different signs in a poetic text to enhance a form-meaning correlation)

IRD: iconicity recast in discourse

IRD + IP: the co-occurrence of IRD and IP

### Analysis Results

#### *Dynamic and Frozen Iconicity*

Analysis of the 823 signs shows interesting distributions of regularities, similarities, and differences among the different discourse registers. First, dynamic iconicity, as a sum of the four different kinds of iconicity described earlier, was particularly prevalent in both poetic texts (53.4 percent) and, although in lower percentages, in dramatized narratives (43 percent), whereas it rarely occurred in lectures (13.5 percent).

In addition, consistencies occur in the distribution of the different kinds of dynamic iconicity in the three discourse registers, while iconic reverberation is a specific feature of poetic texts (poetic: 36.3 percent; drama: 2.4 percent; lecture: 0 percent). Iconicity recast in discourse is much more relevant in dramatized narrative texts than in the two other discourse registers (poetry: 5.4 percent; drama: 20.5 percent; lecture: 3.5 percent). Finally, iconicity of parameters is present in comparable proportions in dramatized narratives and poetry (drama: 5.2 percent; poetry: 4.9 percent) and is present in a comparable but more consistent way in lectures (7.5 percent). The interrelationship between iconicity of parameters and iconicity recast in discourse is particularly present in dramatized narratives (poetry: 6.9 percent; drama: 14.9 percent; lecture: 2.2 percent).

Frozen iconicity is present in the poems to a markedly higher degree than in the dramatized narratives and the lectures: Seventy-seven percent of the signs in the poems present some form of frozen iconicity compared to 64 percent of dramatized narratives and 47



percent of the signs in the lectures. It is interesting to compare these data with Pietrandrea's (1998, 2002) findings on the incidence of frozen iconic features in a corpus of 1,944 different signs listed in three LIS dictionaries. Pietrandrea reports that there are iconic form-meaning associations in 50 percent of the occurrences of the handshapes and in 67 percent of the occurrences of body locations of the signs she analyzed; although she detected no iconic associations for signs performed in neutral space (see Pietrandrea 1995 for more details and an interpretation). Pietrandrea's study cannot be easily compared to the present study because of relevant differences of data sets and analytic methodologies. Nevertheless, at a global level the results reported here confirm and extend to a corpus of signs produced in discourse Pietrandrea's findings on the relevance of iconic features in the established dictionary lexicon of LIS.

#### *Iconicity, Coarticulation, and Simultaneous Syntax*

With regard to the relationship between iconicity and the simultaneous features of sign articulation, the current data show that a consistent percentage of iconic forms in all registers occurs in the articulations of signs in which simultaneity plays a major role. As mentioned earlier, iconicity of parameters and iconicity of parameters plus iconicity recast in discourse are, by definition, two kinds of dynamic iconicity that are strictly related to sign units that exploit the possibility of coarticulating sign parameters with both hands. These two categories together represent a relevant part of the entire dynamic iconicity present in the lecture texts (71 percent) as well as nearly half (46 percent) of the entire dynamic iconicity present in dramatized narratives, whereas they represent a consistent but much lower percentage in poetic texts (22 percent).

Simultaneous syntax and coarticulation are present in a comparable way in all three registers in a proportion of approximately one fifth of the global signs for simultaneous syntax (poetry: 17.2 percent; drama: 20.5 percent; lecture: 18.1 percent) and between one fourth and one third for coarticulation (poetry: 22.1 percent; drama: 26.1 percent; lecture: 29.5 percent). This consistent and generalized presence of coarticulation and simultaneous syntax suggests that these features are independent of the particular register.



*One Hand versus Two Hands*

Finally, the distribution of one- and two-handed signs differs markedly in the poems compared to the dramatized narratives and the lectures. One-handed signs are in much smaller proportion in the poems (19 percent) and in dramatized narratives (22.1 percent) and in much larger proportion in the lectures (around 40 percent). Conversely, two-handed (and for the most part also symmetrical) signs account for the large majority of the signs employed in the poems (48.5 percent: two hands symmetrical; 10.3 percent: two hands asymmetrical). Two-handed symmetrical signs are in fact represented in the poems in a proportion that is almost twice as large as that noted in the lectures (49 percent of the signs in the poems fall in this category, compared to 21 percent in the lecture texts) and in a larger proportion compared to the dramatized narratives (41.4 percent).

## Discussion

This analysis reveals interesting differences among the three types of texts. Poetic texts and dramatized narratives are consistently affected by dynamic iconicity but in two very different ways. Whereas poetic texts show a very consistent presence of iconic reverberation in order to evidence thematic units in a particular poem (cf. Russo, Giuranna, and Pizzuto [2001] for a discussion of these data), in dramatized narratives the presence of dynamic iconicity seems to be mostly due to iconicity recast and only secondarily due to iconicity of parameters. Finally, in lectures, iconicity of parameters is the most relevant category of iconic signs.

The correlation between the different kinds of dynamic iconicity and the different registers appears to confirm the hypothesis of a strict relation of dynamic iconicity and different styles and contexts of utterances.

According to this interpretation, the three kinds of iconicity are all related to an at least partially autonomous, semantic status of the sublexical components of the signs.

In poetry these autonomous features are not fully exploited but are simply emphasized by the symmetrical recurrence of the parameters and their semantic connotation. The connotations of the parameter forms appear to be mediated by a poem's general thematic

structure (see Russo, Giuranna, and Pizzuto 2001). For example, in a particular poetic fragment we consistently find that upward movements can connote a positive emotional state, while downward movements connote the opposite emotional state across different signs. In this case, as in general in most of the poetic texts that were analyzed, the iconic value of the single parameters is influenced by the lexical choices and is not exploited to create productive forms but to enhance symmetries among different poetic sequences. Further analyses on different poetic texts may demonstrate whether these results are related to the particular poetic style of the poets that were chosen for analysis.

In the poetic texts of this corpus a significant number of citation forms are also apparent. In poetry, dynamic iconicity is not generally utilized by modifications of the sign features but rather much more by the individual position of a particular sign in the global poetic structure. Lexical choices are thus very important in poetic texts and can be used to consistently enhance the connotation of a particular sublexical feature. This point of view seems to also be confirmed by the higher incidence of frozen iconicity in the poetic lexicon.

On the other hand, in dramatized narratives the semantic vagueness of certain parameters such as handshapes is productively exploited in discourse. For example, a particular handshape such as the G hand, which is semantically related to the meaning of something long and thin, appears in many free combinations in the same text, with meanings as different as “street lamps,” “tree branch,” “speed indicator,” and “water pipe.”

This kind of productive use of handshapes is usually called “classifier construction” (Supalla 1982, Mc Donald 1982, Schick 1990) or, in quite different terminology, “polymorphemic productive form” (Brennan 1992, 2001; Engberg Pedersen 1993; Schembri in press).

These forms have been compared to spoken language classifiers, that is, forms that can co-occur with nouns and indicate a particular class of referent.

As Schembri’s (2003) and Aikhenvald’s (2003) recent comparisons of spoken and signed language classifiers point out, although some functional overlapping occurs between signed language classifiers and certain types of spoken language classifiers (in particular verbal classifiers), many differences also appear. In particular, signed language

classifiers are not redundant, as many kinds of spoken language classifiers are. They have multiple lexicogrammatical functions (i.e., they have verbal functions as well as adjectival and locative meanings, and they can always be used as proforms), and they are not a limited, closed set because virtually every handshape can be used as a classifier. Most importantly, these forms have dynamic iconic qualities that are related to the visual-gestural modality of signed languages.

From this point of view, it is important to note that, in the present corpus, each particular use of these forms iconically exploits the correlation of the handshape with the other parameters of the same hand and, when they occur in two-handed articulatory units, with the parameters of the other hand.<sup>8</sup>

Even though this discussion focuses on handshapes, it is easy to see that the argument also extends to the other parameters, in particular movement and place of articulation.

In Brennan's (1992) terminology, these kinds of forms are "productive compositions" that appear in discourse and are only partially governed by the semantic specifications of the sign parameters. If this definition is tenable then we can suggest that the presence of dynamic iconic relations between parameters plays an important role in the disambiguation of these kinds of productive forms in discourse. These kinds of forms, moreover, as opposed to classifiers in spoken languages, can exploit the simultaneous properties of the sign components to build an iconic sign composition (i.e., complex signs made with two asymmetrical handshapes). In addition, from this corpus it appears that polymorphemic productive forms are creative forms that signers produce to fill lexical gaps in a stretch of discourse. It is possible to hypothesize that iconicity in these polymorphemic forms contributes to the understanding of the audience with respect to these signs. In lectures, therefore, which require a much more standardized terminology, dynamic iconic forms and in particular iconic recast forms are present in a much smaller percentage.

We can thus view dynamic iconicity as a particular semantic resource that adds transparency to the form/meaning relationship of productive forms and can be exploited to support the needs of signers with regard to discourse comprehension tasks.

## Iconicity, Standardization, and Normlike Features of Sign Languages

There may also be a sociolinguistic side to these data and analyses: Registers that deal with arguments in which terminology is not standardized show a more extended use of the productive forms and consequently of the first kind of dynamic iconicity. The data reported here, for example, show that in lecture texts productive lexicon and iconic recasting occur in much smaller percentages.

Lectures, as noted earlier, employ a more standard terminology. Also, so-called classifier forms, in this kind of text, are used much less frequently and are nearly always specified by a more standardized term. In addition, iconic, productive polymorphemic forms occur much more frequently in dramatized narratives. I suggest that this higher occurrence of iconic productive forms is related to the presence of less standardized terminology.

As noted earlier, dynamic iconicity seems to also be related to the simultaneous combination of sublexical components of signs in two of the three registers analyzed (71 percent of dynamic iconic signs in the lectures and 46 percent of the signs in the dramatized narratives exploited coarticulation).

On the one hand, the different registers share a comparable percentage of coarticulation and simultaneous syntax. Thus we can infer that dynamic iconic forms variably exploit coarticulation and simultaneity, whereas simultaneity and coarticulation are normlike features in signed discourse and are independent of iconic constraints.

Simultaneous syntax and coarticulation are thus two normlike features of Italian Sign Language, whereas dynamic iconicity is a much more variable and noncategorical feature in sign production.

To tentatively answer some of the questions that I raised at the beginning of this article, I suggest that iconicity, and dynamic iconicity in particular, are in part related to some structural features of signs (i.e., coarticulation and simultaneous syntax) but also vary consistently along the dimension between variability and standardization and in relation to the different discourse registers.

Iconic constraints on discourse structure in vocal languages such as those found by Haiman (1980, 1983), Givón (1979, 1989), Du Bois (1987) and Dressler (1995) and those that we find in the discourse

and grammar of signed languages thus share some common features: Both occur freely in discourse and can be grammaticalized and lexicalized in different ways and in different degrees but are always related to maximizing the transparency of the form–meaning relationship in ways that are useful to the language producer and the language receiver.

Although these common features are shared, differences between signed language and spoken language iconicity arise in the role played by iconicity in the productive lexicon and in the possibility that sign modality factors and in particular simultaneity of visual–gestural articulators may favor iconic combinations of signs or sign lexical sub-components.

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### Notes

1. These begin with Klima and Bellugi's test of the understanding of signs by nonsigners (1976), which has been recently extended to an interlinguistic and intercultural framework by Pizzuto and Volterra (2000; see the discussion later in "Iconicity of Parameter Elements and of Citation Forms of Signs").

2. Ivan Fónagy (1983), in addition, applied the notion of phonosymbolism also to nonpoetical utterances to show that when speakers plan their act of speaking they often choose a particular form from among different synonyms just because its sound "fits" with the overall meaning of the utterance. Fónagy observes that in other cases, such as in baby talk or when talking under the pressure of emotion, Hungarian and French speakers

sometimes slightly change the pronunciation of a particular word to build an iconic correlation between meaning and form.

3. Cf. especially Boyes-Braem (1998) for an interesting model of the way hearing nonsigners and deaf signers of other signed languages try to guess the meaning of an unknown sign.

4. The term *signed construction* here refers to morphologically complex, polymorphemic signs consisting primarily of productive forms (Brennan 1992). Illustrative examples of these signs are given in the text.

5. Part of this paragraph is a reelaboration of pages 93–96 of a previous article about iconicity in Italian Sign Language poetry (Russo, Giuranna, and Pizzuto 2001).

6. In some cases the semantic recasting can also involve a metaphor, but we do not deal here with this particular topic.

7. In this sequence from the poem “Thanks,” the two performers (Rosaria and Giuseppe Giuranna) produce signs that share certain parameters but are opposed in a particular parameter. For example, DIMINISH shares the same configuration, movement, and locus as EXPAND but has an opposite orientation.

8. For example, the complex sign BRANCH-LEAF-FALLS (represented in Figure 2a) is composed of the left hand articulating a G handshape, with palm down, in the neutral space at chin level, with no movement, and the right hand articulating a 5 handshape with palm toward the signer slightly moving downward from a point near the left hand, in a waving pattern. In this sequence the possibility of recognizing a “branch” and a “leaf” as referents of the two handshapes is made possible first of all through the reference to the previous sequence of signs, in which a TREE and WIND-STORMING were mentioned. In addition, the existence of an iconic relation between the loci, the movements, and the handshapes, which is simultaneously established in the articulation of the sign productive unit, reinforces and contributes to the understanding of the sign-referent relation.

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2000). This is the first national estimate that fully utilizes the distinction between children having deaf parents and hard of hearing parents, as well as hearing parents. The authors propose that the key demographic to report, other than that the *overwhelming majority* of deaf and hard of hearing students have hearing parents, is whether the child has one or two deaf parents. The annual survey findings indicate that *less than five percent* of deaf and hard of hearing students receiving special education are known to have at least one deaf parent, which is less than half of the presumed ten percent. Reasons for the difference between the present and previous estimates are suggested.

### Iconicity and Productivity in Sign Language Discourse: An Analysis of Three LIS Discourse Registers

In this article the linguistic features of three Italian Sign Language (Lingua Italiana dei Segni, or LIS) registers are analyzed focusing on iconic phenomena. Previous treatments of iconicity and motivation in spoken and signed language are discussed. Iconicity is defined as a regular mapping between expressive form and meaning that can be active in the citation form of signs and/or in discourse. Accordingly two major kinds of iconicity are devised in spoken and signed languages: (1) Frozen Iconicity, which affects citation forms and (2) Dynamic Iconicity, which is active in discourse. Three different kinds of LIS texts (poems, narrative, and conferences) are compared to assess to which degree Frozen Iconicity and different types of Dynamic Iconicity are present in each register. Articulatory features of signs in discourse such as two handedness, one handedness, coarticulation and simultaneous syntax are also examined. Analysis demonstrates differences in the presence of frozen and dynamic iconic features in the three registers: frozen iconic forms prevail in Poems and Dynamic Iconicity is particularly prevalent both in Poems and in Narratives. A comparable presence of coarticulation and simultaneous syntax affects the three different kinds of texts. Conclusions are drawn which point out that iconic features of signs are an important structural resource of SLs that can be enhanced in discourse according to different textual and situational contexts.