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Emergence and Development of Signed Languages: From a Semiogenetic Point of View

IN THE CURRENT SCIENTIFIC LITERATURE on signed languages (SLs), two major theoretical orientations can be identified.[1] First, there has been a tendency to promote the legitimacy of SLs by highlighting their structural similarities to vocal languages. There has also been a second trend (the point of view presented in this article), one that advances the idea that certain characteristics of SLs are likely to shed new light on the phenomena of the creation, emergence, and development of human languages in general and signed languages in particular. Given some atypical conditions in the transmission and development of SLs, as well the existence of a variety of types of SLs—from homesigns, or emerging signed languages (ESLs), to microcommunity and macrocommunity SLs—it is productive to consider the process of emergence and development of SLs from both synchronic and diachronic perspectives.

Some linguistic structures of all SLs will share a certain number of characteristics owing to the visuo-gestural modality. The four-dimensional nature of the visuo-gestural channel leads to the existence of a set of resemblances among SLs. The arguments set forth here are based on a global theoretical framework known as a semiogenetic model (Cuxac 1996, 2000, 2001, 2003, 2004), in which the inherent iconicity of signed languages is regarded as a foundational and an organizational principle.

This model assumes that all SLs currently used in the world have had the same starting point. They are presumed to have emerged

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from the same cognitive-communicational process defined by iconization of experience's devices anchored in the practical-perceptual world. This development appears in the first gesture creations of deaf children (of hearing parents) and could be followed in the structural ontogenetic evolution of ESLs used by deaf adolescents and adults living in hearing communities. This same process reaches different structural levels of diachronic evolution with the constitution of deaf microcommunities and with the widespread institutional experience, following the establishment of schools for deaf pupils, in which deaf children and adults eventually create deaf macrocommunities (Cuxac 2005). According to this model, the study of ESLs can bring new insights to the understanding of the initial stage (first scenario) in the emergence of all SLs.

Specific Aspects of the Transmission and Development of Signed Languages

Before beginning a discussion of the fundamental principles of the semiogenetic model, I would like to identify and highlight some of the unique conditions governing the transmission and development of all signed languages:

- delayed onset of acquisition of a signed language as the natural language of a deaf child (except in the case of a deaf child born to deaf parents): Because at least ninety percent of deaf children are born to hearing families, the majority of these children undergo a delay in the language acquisition process when compared to hearing children. However, lack of access to an established linguistic model does not prevent them from developing a gestural communication system exploiting linguistic principles similar to those found in infant language in general and in the signed languages of deaf children in particular (Volterra and Erting 1994; Goldin-Meadow 2003).
- lack of geographic unity for deaf communities: Regional concentrations of deaf people give rise to discontinuities with respect to community activities and educational practices.
- lack of integration of deaf adults into the general society, particularly in the educational sector: The majority of professionals specializing in deafness are hearing people who, even when they have mastered

some of the lexicon of sign languages, generally do not have a thorough grasp of their linguistic organization.

• degree of awareness in deaf communities about their linguistic and institutional history: The more a deaf community is conscious of its past (linguistic and institutional), the more its attitudes about language will motivate the community members to preserve and study their language.

Taking this set of conditions into account is fundamental to and indispensable for launching an investigation into the phenomena of emergence and development among signed languages.

A Semiogenetic Model to Analyze Signed Languages

The semiogenetic model proposed by Cuxac (2000, 2001) assumes that because SLs in actual use (taking into account different levels of performance and competence) utilize a visuo-gestural modality, they share certain formal and functional characteristics:

• These languages emerge through the same cognitive process—iconization of experience's devices—tied to the world of practical action and to a semiotic communicative intentionality.

• Two structural semiotic branches (involving more or less illustrative intent) develop out of this initial process of iconization and are observable in the subsequent evolution of these languages. One the one hand, a *nonillustrative intent* converges on a categorical perspective that consists of "telling without showing," giving rise to lexically stabilized forms. On the other hand, an *illustrative intent* makes visible everything that is being said, "telling while showing" through highly iconic structures (HIS) and giving rise to what is known as transfer structures. The model identifies three principal types of transfers:

  1. form and size transfers involving parametrical components (proforms—handshapes, movement, and facial expressions) that describe animate or inanimate entities in relation to their size or form

  2. situational transfers (ST) involving two hands expressing a process by an entity (dominant hand) in relation to a stable locative or a point of reference (nondominant hand) to convey an utterance

3. personal transfers (PT) involving a role (agent or patient) and a process; signers ''become'' the entity they are referring to

• These structures are the visible traces of cognitive operations that transfer references into the sign space of discourse. Three types of iconicity—imagistic, diagrammatic, and degraded—are involved in the structural relationship between theses two branches (Cuxac 2004). In French SL, these three categories of transfers can be combined in discourse and attain a complex level of linguistic organization into more than twenty structural categories (Sallandre 2003).
• These two branches carry on formal and functional relationships at different linguistic levels: morphological, syntactic, semantic, and discourse.
• At the level of internal structure, all signed languages have at least two fundamental components: semantic specialization of parameters and meaningful use of space (i.e., a visual–spatial grammar) (Cuxac 2000; Liddell 2003).

The Evolutionary Continuum among Different Types of Signed Languages

This model leads to a theoretical framework that enables us to study the structural and functional relationships among different kinds of SLs. By taking into account certain factors (e.g., social integration, communicative and institutional history), the model postulates the possibility of (a) placing various kinds of SLs currently in use throughout the world on an evolutionary continuum, and (b) providing for synchronic, as well as diachronic, analyses of SLs used at the individual (ontogenetic) or group (phylogenetic) level. Three different evolutionary levels are evident.

The Ontogenetic Level

This level includes gestural systems of communication such as home-signs, which are created initially by deaf children raised by hearing families (Volterra and Erting 1994; Goldin-Meadow 2003). These systems may undergo structural ontogenetic evolution and become ESLs (Fusellier-Souza 2001, 2004) when they continue to be used by deaf adolescents (Morford 1996, 2003) and adults (Kuschel 1973; Kendon 1980; Yau 1992) living at a distance from deaf communities

and having a social role in hearing societies that have positive attitudes toward gestural communication.

The Phylogenetic Level

This level includes SLs involved in community use along two dimensions. On the one hand, noninstitutional signed languages are used in microcommunity settings by small groups of deaf individuals (Jirou 2000; Schmaling 2001; Nyst 2003; Sandler and al. 2005). On the other hand, numerous signed languages are used in macrocommunity settings and have institutional histories during at least two distinct periods:

- those with a long historical base, beginning with the educational systems put in place by the Abbé de l'Épée in France in the eighteenth century (e.g., the signed languages of Europe, the America, and some Asian countries)
- more recently (i.e., arising during the last thirty years), those used in countries or regions with little institutional history (Currently, there is scientific literature on three cases of emerging institutional sign languages: in Nicaragua [Kegl et al. 1999], in Tunisia [at Douz] [Pizzuto 2001], and on the island of Mauritius [Gébert 2003; Adone 2004].)

The Level of Exolinguistic Communication

This level comprises gestural communication used spontaneously (i.e., with no community basis and no history of diachronic evolution) between deaf people of different nationalities. The scientific literature calls this kind of SL "international sign language."

Language Mixing and Pidginization in Signed Languages

Without going into detail, the phenomenon of language mixing and pidginization in signed languages can be analyzed currently according to two types of SL contact.

Contact between Conventional Sign Languages Leading to Communication by "International Sign Language"

In the literature, "international sign language" is defined as a sort of pidgin that is used when deaf interlocutors do not have a conventional sign language in common (Moody 1987; Woll 1990; Supalla

1991). Importantly, however, these authors approach the characteristics of international sign languages as though they were pidgins strictly from the point of view of analyses directed at their grammatical structures.

From another point of view, the research begun by Monteillard (2001), based on Cuxac's semiogenetic model, proposes a new route to comprehension of the linguistic phenomenon of international sign language. Her analysis centers on three types of devices:

- discursive (e.g., the use of pragmatic contexts, including shared knowledge and general knowledge)
- cognitive (e.g., second language learning strategies (reformulation and appropriation, paraphrasing, visual thinking) (Arnheim 1969)
- linguistic (e.g., the use of processes common to the linguistic structures of signed languages generally; the management of various complex pointing functions in referential constructions (Pizzuto 2006); the semantico-syntactic organization of information based on a topic/focus type of structure involving lexical signs; highly iconic structures)

Monteillard's findings show the risk involved in categorizing these kinds of SLs on the basis of formal properties of ''simple codes'' such as pidgins. For her, neither *pidgin* nor *lect* is an entirely satisfactory term ''since neither of them fully encompasses the epistemological object comprising International Signed Language, a self-organizing linguistic strategy developed to enable extremely efficient communication among deaf people from all parts of the world'' (2001, 78).

Contact among Different ESLs Leading to the Formation of a Community Sign Language

The study by Kegl et al. (1999) of the emergence of Nicaraguan Sign Language provides evidence for the hypothesis that a pidginization process occurs through the initial contact of different homesigns used by deaf infants and adolescents brought together in institutional settings. This study adopts a ''creolist'' evolutionary perspective that assumes an *abrupt* appearance of language (Bickerton 1991) and postulates that Nicaraguan Sign Language emerged through four evolutionary stages:

1. initial substrate defined by gestures and characterized by the different homesigns used by deaf individuals, living with their own hearing family, before being institutionalized

2. emergence of an asymmetric pidgin, beginning with contact between the deaf children's lexicalized homesigns and the gestures accompanying the speech of the hearing teachers (this is characterized as a sort of limited and irregular communication system)

3. emergence of a symmetric pidgin arising from contact between the different homesigns of the deaf children and characterized by greater regularity and stability

4. emergence of Nicaraguan Sign Language, which begins to occur when the symmetric pidgin becomes the linguistic input to a new generation of deaf children (who acquire it naturally).

According to the authors, this group of children abruptly gives rise to a new form of sign language that is more structured (similar to the emergence of creoles) and is characterized by the presence of grammatical forms.

This model, as interesting and heuristic as it may be, presents a set of theoretical inaccuracies that should be reconsidered more carefully (for further discussions see Stokoe 1999; Fusellier-Souza 2004; Cuxac 2005; Slobin, in press). The main points missing in the argument are as follows:

- an exclusive and restricted emphasis on (a) the innateness properties of language and (b) the predisposition of deaf children to handle grammatical rules (The analysis focuses almost entirely on formal aspects—lexicalization and grammaticalization—of the language of second-generation children.)
- disregard for functional, pragmatic, and social factors, such as environmental influences
- dismissal of the possibility that the homesigns themselves might have linguistic organization (The verdict concerning their characteristics is categorical and reductionistic. They are considered to be idiosyncratic, pantomimic, continuous, and highly variable and to show little distinction between gestural and iconic elements on the one hand and lexicalized elements on the other.)

Recent research on ESLs (Fusellier-Souza 2004) considers these languages from a broader perspective and voices several criticisms of this model's characterization of homesigns. This study, based on a semiogenetic model, presents evidence that, after undergoing onto-genetic evolution through use by their deaf inventors, ESLs can become quite complex and sophisticated. The next section outlines this research and focuses mainly on the process of lexical stabilization.

Linguistic Study of Three ESLs Used by Brazilian Deaf Adults

To better explain the nature and organization of the early stages of iconization in ESLs, I have followed a "functionally downward" approach (i.e., from function to form). After taking into account elements of communication situations (discursive and contextual ones), I then focused on semantic and syntactic devices in order to elucidate some of the formal and functional principles characterizing ESL structure.

Informants

The study involved three different ESLs used by Brazilian deaf adults integrated into the general society but outside of any deaf community. Table 1 contains brief biographical information about each person.

It is important here to emphasize some points of similarity in the backgrounds of the informants. They are all profoundly deaf adults who have had little schooling. Each has a privileged interlocutor (a family member) with whom the language is shared, and each one is employed or has an active social life.

Levels of Analysis

In order to disentangle the functional from the formal aspects of these ESLs, I propose two levels of descriptive analysis:

1. a morphosemantic level (This involves an analysis of the internal sublexical organization of the gestural signs in these languages and devices for constructing meaning and creating a lexicon [Fusellier-Souza 2004, 2006].)
2. a semantico-syntactic level (This involves an analysis of referential construction devices in three referential domains: person, space, and time.)

Table 1. Informants' Biographical Information

Name	Jo	Ana	Ivaldo
Age	26	20	53
Educated in special educational systems	no	no	no
Degree of deafness	profound	profound	profound
Family's region of origin	northeast	northeast	northeast
Number of members in the family	8	10	8
Privileged interlocutor	brother	sister	wife
Social and professional integration	yes; works in a pizzeria	no, but very active at home with a large family	yes; fruit juice salesman

Processes of Stabilization and Standardization in Signed Languages
Literature Review: Typology of Gestural Signs

Three features can be found in the structure of all SLs: (1) quadridimensionality of the visuo-gestural channel; (2) morphemic compositionality of internal segments; and (3) the cognitive capacity of deaf signers to reconstruct reality in an iconically and visually sophisticated manner. The existence of these features implies the co-occurrence of two types of gestural signs in SL structure: ''productive'' signs (nonconventionalized) and ''lexicalized'' signs (conventionalized). The former are characterized roughly by the use of highly iconic elements via an illustrative intent; the latter by the deactivation of illustrative intent and the economical conservation of morphemic forms through the generalized construction of concepts.

All of the SLs currently in use throughout the world are characterized by the concurrent use of these two types of gestural signs.

Various terms have been used in the scientific literature to denote the distinction between them, and these are summarized in Table 2.

The Role of Productive Signs

In scientific literature, the primary role assigned to productive signs has previously been described through a functional analogy with classifiers in spoken languages. However, in the last five years, some researchers (see Emmorey 2001; Schembri 2003) have shown that productive signs can be studied most usefully as elements in a polymorphemic organization deployed at several different linguistic levels. Schembri (2003) points out the importance of not limiting the functions of productive signs to a subsidiary role exclusive to morphosyntactics. He cites a relevant observation made by Schick (1990):

‘‘These forms do not simply have a supplementary role in sign language, but are instead at the heart of word formation devices and as such represent one of the most enduring aspects of language, the ability to create new lexical items’’ (Schembri 2003, 20). Productive signs have been formalized as highly iconic structures in Cuxac's model, and their role in the emergence of lexicalized signs has been discussed in depth.

TABLE 2. Summary of Proposed Typologies of Gestural Signs

Authors	Gestural Sign Typology	
Mandel (1977)	iconic signs	frozen signs
Supalla and Newport (1978) Frishberg (1975)	classifiers	frozen signs
Johnston (1989)	productive signs	standardized signs/ lexemes
Yau (1992)	descriptive lexical sequence	economic lexicon
Collins-Ahlgren (1990) Engberg-Pedersen (1993)	polymorphemic signs	monomorphemic signs
Cuxac (1996, 2000)	highly iconic structures	standardized signs
Slobin et al. (2003)	polycomponential signs	monocomponential signs

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Highly Iconic Structures in the Formation of Lexical Signs: A Structural Relationship

The originality of Cuxac's (1996, 2000) semiogenetic model rests on the assertion that HIS have been formalized through a semantic segmentation of body functions in the construction of meaning and the signers' semiotic intent to illustrate their utterances. This model postulates that HIS are presented at all levels of structure in SLs and that they play different roles at both the sign formation level and the semantico-syntactic level.

Cuxac highlights the existence of a structural relationship between HIS and lexical signs and hypothesizes that numerous standardized signs of French SL emerged initially from HIS and then underwent a process of "economical" evolution from HIS to standardized forms through language use (ibid.). Starting with this hypothesis, we have instigated a more in-depth analysis of the use of HIS in the formation and stabilization of lexical signs in ESLs.

Brief Review of Quantitative Data

The study of three Brazilian ESLs is based on a data corpus of spontaneous discourse (taken from daily life) between each deaf subject and one of the hearing members of the subject's family.[2] We transcribed (using a multilinear transcription system) forty-four relevant sequences produced by the three subjects. This detailed transcription allowed for the extraction of more than three thousand instances of different gestural signs produced in segments of discourse lasting about forty-five minutes (fifteen minutes per subject) (Table 3).

The transcription of the data is based on a typology of signs divided into four general categories following Cuxac's model:

TABLE 3. Raw Data on Gestural Sign Production per Subject during Discourse

Corpus	Corpus analyzed (min./sec.)	Number of sign occurrences in productive discourse
Ana	15/43	935
Jo	15/02	1,026
Ivaldo	15/50	1,113
Total	46/35	3,074

- gestural signs with generalized meanings (stabilized or lexical signs)
- highly iconic structures
- gestural pointing signs
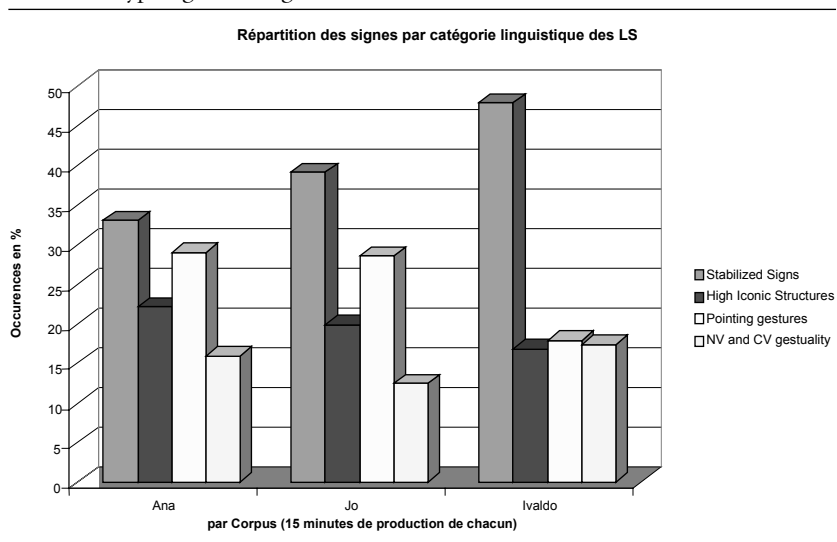- gestural signs similar to gestures that accompany speech in Brazil

A quantitative analysis allows for the identification of correlations among the different categories of signs in each fifteen minutes of discourse per subject. The percentages in each corpus pertaining to each category of sign are illustrated in the graph in Table 4.

Mechanisms of sign formation in Three ESLs

To shed light on the mechanisms of sign formation in these ESLs, I first looked for the existence of lexical creation devices for French Sign Language proposed by Cuxac (2000), who identified three types:

1. iconic restitution of forms
2. restitution of gestures from the surrounding culture
3. concatenation of illustrative images

TABLE 4. Distribution (in Percentages) of Gestural Signs of Three Different ESLs into Four Typological Categories from Cuxac's Model

Répartition des signes par catégorie linguistique des LS

Legend:
- Stabilized Signs
- High Iconic Structures
- Pointing gestures
- NV and CV gestuality

Y-axis: Occurences en %
X-axis: par Corpus (15 minutes de production de chacun) — Ana, Jo, Ivaldo

Sign Formation through Restitution of Iconic Forms. Three kinds of iconic relationships in the formation of signs through *iconic restitution of forms* are global iconicity, iconicity of action, and partial (metonymic) iconicity. Here are some examples:

• global iconicity: All of the formational parameters are directed at a gestural representation of a referential form to be categorized (Figure 1).
• iconicity of action: These signs are derived from the imitation of an action (e.g., by the use of "handle" proforms representing the manipulation of some entity). They may appear in the context of an illustrative intent in which the signer can "tell by showing" by means of HIS—*personal transfers* or *double transfers* (combinations of two types of transfers: situational and personal). See figure 2.
• partial (metonymic) iconicity: These signs employ one or two parameters in the restitution of meaning through stereotyped actions or borrowings from gestures used by hearing Brazilians (see Table 5).

Formation of Signs through Metaphorical Conceptualization of Gestures from the Surrounding Culture. The ESLs of two of the deaf informants contain signs with stabilized meanings that seem to be metaphoric extensions of expressions used in spoken Portuguese or the common gestures of Brazilians. Figure 3 presents two examples.

ANA_SEQ_03: (103;107;108)	ANA_SEQ_06: (92)	JO_SEQ_07: (49)	IV_SEQ_09: (1;10)
SUN: restitution of entire spherical form	PASTA: restitution of entire lengthened, thin, and flexible form	COOK/COOKED: restitution of the spherical form of the gas plates	TELEPHONE: restitution of telephone headset form

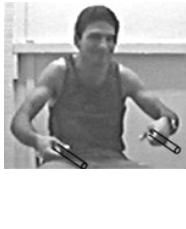FIGURE 1. Signs formed through restitution of iconic form (global iconicity).

ANA_SEQ_03: (21 ;23)	IV_SEQ_10: (10)	IV_SEQ_08: (87)	JO_SEQ: 09: (17)
TO SWEEP: PT of action: handle morpheme + movement	MIXER: DT of action + recovery of form morpheme	TO DRINK COCO-NUT WATER: handle morpheme + movement	WORK ON DISTRI-BUTION: PT of action: handle morpheme + movement

FIGURE 2. Signs formed by restitution of iconic forms (iconicity of action).

Concatenation of Illustrative Images. The three deaf informants revealed a significant capacity for creating meaningful constructions by assembling illustrative images into the forms of HIS. Concepts are constructed through an accumulation of referential specifications, whether by a string of size and shape transfers (SST) or situational transfers (ST) in the representation of entities or by personal transfers or double transfers in the representation of actions or functions characteristic of individuals:

Ana_SEQ_08: ''Dresses for a wedding day'': In this sequence, Ana presents three representations of dresses that she and her sisters will wear to her cousin's wedding. A group of SSTs represents each dress. The example here represents a prototype of the concept used in a global description of the different models. These fragments are complemented by other SSTs to give the details of the length (to the knees or only to midthigh) or of the type of sleeves (close to the body or puffed with small stripes).

Stabilization Processes: Evidence for Lexical Stabilization in Discourse

In some of the passages in the corpus, it is possible to detect a process of lexical stabilization by following the thread of the discourse. Beginning with the first description of a referent by means of a sequence

TABLE 5. Signs Formed by Restitution of Iconic Forms (Partial Iconicity)

Hand Configurations		Hand Movements		Body Placement	
HOUSE	POULTRY	UNDULATING GROUND	TO TAKE	TO EAT	HEART
PHOTO ALBUM	COW	TELEVISION	TO INCREASE	TO DRINK	BRAIN
ANGEL	PRISON	VIDEO JOYSTICK	TO FALL	TO SPEAK, TO TELL	WORK
MELON	BOOK	TO LEAVE	FINISHED	TO SEE, TO LOOK	DEAF PERSON
BALLOON	BOX	TO GO AWAY	TO SELL	TO REMEMBER	INTELLIGENCE
		TO LAUNCH, TO	TO GIVE	TO LISTEN	DIFFICULT
		THROW	TO OFFER	TO THINK	
		TO COME, TO			
		APPROACH			

IV_SEQ_09: (01)	IV_SEQ_13: (60)	IV_SEQ_08: (23)	IV_SEQ_08: (44)
Duration: 0.1 and 1 sec.	Duration: 0.2 sec.	Duration: 0.3 sec.	Duration: 1 sec.
Value of meaning: PETTY Metaphorical extension: TO CATCH A PENNY, SKINFLINT		Value of direction: ENVIOUS Metaphorical extension: TO HAVE LARGE EYES	

FIGURE 3. Signs formed through metaphorical extension from the surrounding culture.

Ana:SEQ_08: (10) et (11)
"Model of a dress for a wedding day" 2M: layout of low neckline + tightened form on the waist going down to the knees

FIGURE 4. Construction of concepts by concatenation of illustrative images.

of transfers, I observed that the signer brings into play a process by which the sequence is reduced during discursive reconstruction. Following are two examples:

Jo_SEQ_14, fragments 37–39: construction of the referent "video game." This example illustrates the concatenation of forms using

HIS, followed by the repetition of a form that has become more economical morphologically. This economy is shown by (a) the suppression of peripheral and redundant elements, as well as the maintenance of a single form, and (b) a reduction in the time needed to produce the sign.

Iv_SEQ_13 and SEQ_14: In the first two sequences shown in Figure 6, the signer refers to the job of "selling sugar-cane juice." In its first occurrence (157–159), the concept is constructed by means of three illustrative actions. Then, in the second occurrence, one of the actions is suppressed. Finally, in the third occurrence during the same sequence, the signer uses a single characteristic action by reducing the movement and eliminating the aspectual (duration) facial expression of the action.

Discussion

It appears from this analysis that an initial process of iconization of experience, evidenced in these languages, follows a structured course. The existence of gestural signs representing HIS and stabilized forms demonstrates that the bifurcation of the signers' intents into two

JO_SEQ_14: (37)	JO_SEQ_14: (38)	JO_SEQ_14: (39)	JO_SEQ_14: (47)
Duration: 3 sec. and 0.6 sec.			Duration: 0.9 sec.
PT (action): han-dle handshape: TO HOLD THE JOY-STICK + move-ment of the inches TO PRESS THE BUT-TONS	ST: the square shape of a screen + PT	PT (action): han-dle handshape: TO HOLD THE JOY-STICK + move-ment TO PRESS THE BUTTONS	PT (action): han-dle handshape: TO HOLD THE JOY-STICK

FIGURE 5. Stabilization of signs in discourse: "video game."

SEQ_13 (157)	SEQ_13 (158)	SEQ_13 (159)	SEQ_14 (14)	SEQ_14 (15)	SEQ_13 (18)
Duration: 2 sec. and 0.1 sec.			Duration: 1 sec.		Duration: 0.5 sec.
Double transfer Left hand (lengthened and round form): A STEM OF SUGAR CANE Right hand (cutting form + movement): TO PEEL THE STEM OF THE SUGAR CANE Situational transfer Left hand (fixed locative): higher part of the machine to press the stem of the sugar cane Right hand (form restitution): lengthened and round form: A STEM OF SUGAR CANE + movement (downward) indicating introduction into the machine and the process of conversion (aspectual facial expression or duration) Pseudo personal transfer (PPT): end of the movement (downward) with configuration change (transformation of the solid matter into liquid) + movement prolongation (upward) to the mouth (to drink)			Suppression of double transfer Situational transfer movement (downward) indicating introduction into the machine and the process of conversion (aspectual facial expression or duration) PPT: end of the movement (downward) with configuration change (transformation of the solid matter into liquid) + fast movement prolongation (upward) to the mouth (to drink)		Situational transfer Movement (downward) indicating introduction into the machine: fast and short downward movement while going up toward the mouth. Prototypic form stored up for SUGAR-CANE JUICE

FIGURE 6. Stabilization of signs in discourse: ''selling sugar–cane juice.''

structural branches (''telling while showing'' or ''telling without showing''), a process identified in the evolution of SLs used by deaf communities, is already at work in these three ESLs.

I have observed that the illustrative branch permits these signers not only to construct a concept in an illustrative intent when they do not have a stabilized sign but also to elucidate, in a metalinguistic manner, a stabilized sign that has been topicalized in discourse. In the following example, Ana's sister announces a topic of discussion: ''play volleyball.'' Then Ana turns to the interviewer and explains in an illustrative fashion what kind of game they are talking about.

Figure 7 illustrates the dynamic descriptive power of these ESLs, in which the signer can produce a statement with or without explicitly illustrating it.

Synthesis

The construction of an utterance in an ESL is done by means of HIS and signs that are already stabilized or in the process of becoming so. Highly iconic structures take an active part in the construction of utterances on three structural levels:

- construction of utterances with generic meaning: By means of different kinds of transfers, potential candidates for lexical stabilization can be moved into the set of categorical signs characterized by an economical morphological structure.
- metalinguistic elucidation of a concept or a stabilized sign: By means of HIS, signs or concepts can be explicated through illustrative intent.
- construction of specific references: By means of HIS, real-world experiences can be reconstructed by illustrative intent through description and narrative discourse.

This analysis supports the existence of two ways of signing in SLs through an alternate semiotic process of telling while showing (directly illustrating an entity or event) and telling without showing. These two ways of presenting information are revealed in a double correlation. I have observed that the organization of signs in a discursive sequence in these ESLs has a basic structure of the type ''say-show-say.'' These languages seem to have a linguistic organization

Ana_SEQ_05			
(1)	(2)	(3)	(9) and (26)
Duration: 3 sec.			Duration: 0.7 sec.
Topic of discussion: "play volleyball"			Restating topic by a morphologically economical sign: PLAY VOL-LEYBALL

Explicative sequence by means of HIS

(20)	(21)	(22)	(23)	(25)
TS: fixed locative (sport net) + pointing and showing a court having two sides	TS: fixed locative (sport net) + proform "team" playing on one side	TS: fixed locative (sport net) + proform "team" playing on the other side	TS: fixed locative (sport net) + pointing and showing the placement of the teams	PPT: perspective of the player who bumps the ball + TS: path (movement) of the ball

FIGURE 7. Metalinguistic interactions of HIS and stabilized signs in a descriptive sequence.

based on principles of topicalization/focalization displayed in the semantico-syntactic interaction between the two semiotic intents (Monteillard 2001; Sallandre 2003; Cuxac 2003).

The creation of meaning in SLs and the process of the stabilization of signs, considered from a semiogenetic perspective, leads us to reflect on the nature, function, and structure of SLs from a new point of view. This research provides evidence that the process of lexical stabilization and standardization emerges from an ongoing need for referential construction driven by general cognitive mechanisms at work in pragmatic communicative situations.

Conclusion

The dearth of linguistic studies focusing on the interaction between (a) form and function and between (b) internal mechanisms (cognitive) and external (discursive and social-cultural) ones seems to be the principal barrier for those who want to pursue research on the linguistic functioning of emerging SLs.

The results and discussions presented in this article are as follows:

1. Deployed at an ontogenetic level, SLs can undergo structural evolution as a result of internal and external variables such as cognitive development (maturity, meta-activities, visual cognition) and the social use of language (integration into the hearing society, communicative interactions).
2. At the synchronic level, the semiogenetic model shows that the study of emerging SLs can highlight what could have been the first stages in the creation and development of historical and institutional SLs.
3. Further crosslinguistic studies of SLs (in both the ontogenetic and the phylogenetic dimension) are needed, and we should also reconsider the hypothesis that, before community and institutional grouping, deaf gestural languages lacked linguistic structure (Schaller 1991; Sacks 1996; Kegl 1997; Kegl et al. 1999).

With respect to both functional and structural evolution, investigation of the emergence and development of SLs calls for a more expansive scientific framework that takes into account the fundamental role of:

1. visual-gestural signs (Armstrong et al. 1995; Wilcox 1999)
2. the universal role of gesture in human communication (McNeill 1992; Volterra and Erting 1994; Goldin-Meadow 2003)
3. specific functions of the visual-gestural channel, which support the use of communicative strategies that utilize ''showing or making visible'' (These have roots in mental/cognitive imagery and, when manifested via the visual-gestural channel, can be realized through authentic linguistic structures [Cuxac 1996, 2000, 2004; Pizzuto and Volterra 2000].)

Finally, the linguistic analysis of SLs—considered as nonwritten languages based largely on face-to-face interactions—requires consideration of the following: cognitive factors (maturity, meta-activities, visual cognition); social factors (social integration, community life); and the essential relationship between language and experience (shared knowledge, context) specific to the pragmatic aspects of language.

Notes

1. This article is based on the paper ''Linguistic Variation and Pragmatic Aspects in Signed Languages Considered from a Semiogenetic Point of View'' presented at the International Colloquium on Verbal and Signed Languages: Comparing Structures, Constructs, and Methodologies, Rome, October 4–5, 2004. http://host.uniroma3.it/dipartimenti/linguistica/pgs/colloquio_ott/english/first_page_en.htm.

2. These data come from a large corpus of ESLs gathered in Brazil in April 2001 with the financial aid of an LS-COLIN research project (http://www.irit.fr/LS-COLIN) as part of the Cognitive Program: Language and Cognition.

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