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Emerging Sign Languages of Mesoamerica

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Abstract

In this article, I briefly explore recent investigations regarding the emergence of sign languages in Mesoamerican contexts and examine some features that facilitate their emergence. In recent years, many studies have been documenting emerging sign languages around the world. Mesoamerica provides an interesting comparative field, since several of these sign languages appeared within the Mayan area while others emerged in communities belonging to a different spoken language family. A comparison based on the first available reports and studies conducted in this area reveals that there are many similarities but also crucial differences clearly linked to the cultural and linguistic backgrounds of the surrounding communities in which these sign languages emerged. Prominent features that help and, to some extent, shape the sign language are the use of multimodal communication in the surrounding hearing community (i.e., the significant use of conventional gestures and nonverbal behaviors), the (positive) attitude toward deafness, and the shared material culture as well as cultural and communicative practices. Also, contexts of sign language use vary according to the type of speech community. For instance, there will be differences in terms of vocabulary size and degrees of conventionalization between home sign languages or sign systems (with one deaf individual), village sign languages (with multiple deaf individuals with a shared background), and community sign languages (with multiple deaf individuals without a shared background) (Meir et al. 2012).

EVEN IF THESE emerging languages are new, they are already complex. In this article, I show how there is syntactic systematicity

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and that word order (although variable) is present from the beginning. Interestingly, in several emerging sign languages considered in this article, the sign language word order differs from that of the surrounding spoken language. A second issue is word class distinction. I considered only the noun vs. verb division. Although many documented emerging sign languages make a distinction (Haviland 2011; Safar and Petatillo Chan forthcoming; Tkachman and Sandler 2013), in many cases it is done through compositionality (we could also talk about derivation) and is not always obligatory. This fact reminds us that noun versus verb is not such a natural distinction, and in many spoken Amerindian languages this distinction is not as obvious as many grammars would lead us to believe (see Lois and Vapnarsky 2006 for a discussion on this point in spoken languages of the Americas).

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Typological Interests of Emerging Sign Languages

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Many emerging sign languages show unusual features rarely or never before described for spoken as well as institutional sign languages (also called notional languages—such as American Sign Language, ASL; Mexican Sign Language, LSM; and French Sign Language, LSF), such as the absence of third-person pronouns (de Vos 2012b) or the use of various unusual counting systems (Zeshan et al. 2013; Safar et al. 2018). Within the typology of sign languages themselves, emerging sign languages have developed new and unanticipated ways of making use of the signing space.

At the syntactic level, de Vos found that in Kata Kolok, directionality in the signing space for verbal agreement is not obligatory for certain verbs—in contrast with how institutional sign languages work (de Vos 2012b). The use of entity classifiers (i.e., the handshape representing a type of entity), which has been claimed to be universal in sign language (Emmorey 2003; Pfau, Steinbach, and Woll 2012), does not exist in Adamorobe Sign Language (Nyst 2007), although, as in Yucatec Maya Sign Language (YMSL), there are some size and shape classifiers and a few examples of what could be considered classifiers.

In order to talk about time, many sign languages productively use space to create a timeline. In most documented sign languages, the space in front of the signer refers to the future and behind the signer refers to the past, but there are examples of the reverse strategy, as in

Urubu Ka'apor sign language (Ferreira-Brito 1984), in which the front refers to the past and the back to the future. However, many village sign languages around the world only differentiate between now versus not now, such as Kata Kolok (de Vos 2012b) and YMSL (Le Guen 2012) (see also Kendon 1993 for Warlpiri alternate sign language).

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The Emerging Sign Languages of Mesoamerica

When considering emerging sign language in Mesoamerica, several clarifications should be made. First, we do not include institutional (or sometimes called established or national) sign languages in the "emerging" category. Second, we want to distinguish between known emerging sign languages and the ones that have not been documented or identified in the past. This is an important consideration since there are numerous settings throughout Mesoamerica in which sign languages are created and used, but very few have been described to date. In this sense, the sample presented in this paper is far from being representative of the (potential) variety of sign languages in this area. Finally, since work on these languages is mostly incipient, relatively few studies have been published yet.

The Documented Emerging Sign Languages of Mesoamerica

Because very little information is available on the emerging sign languages in Mesoamerica, I present a rapid sketch of the communities that have been documented so far and some relevant information regarding the researchers who have been documenting these languages. Many researchers have provided me with some information through personal communication, and I wish to thank all of them for their generosity.

Before examining all the languages, I will define the Mesoamerican area. For linguists and anthropologists, the Mesoamerican area is roughly outlined as the territory between northern Mexico and Nicaragua (sometimes including northern Costa Rica). This criterion is used in this paper more to enable comparison of various sign languages that emerged in this part of the world than being motivated by specific features (although the question is important and remains to be answered through a more extended comparison). The languages presented in this paper are (from north to south): Chatino

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FIGURE 1. Map of the documented emerging sign languages in Mesoamerica († = extinct).

Sign Language, Zinacantan home sign, and Yucatec Maya Sign Language in Mexico; Nebaj home systems and K'iche Sign Language of Nahualá in Guatemala; Bay Island sign languages in Honduras; Nicaraguan Sign Language in Nicaragua; and Old Costa Rican Sign Language (OLESCO) in Costa Rica. Figure 1 provides a map of the documented emerging sign languages in Mesoamerica.

Chatino Sign Language, or San Juan Quiahije Chatino Sign Language, as it has been called by Lynn Hou and Kate Mesh, who described it, arose among a community of Chatino speakers in the state of Oaxaca in Mexico. The signing community is constituted by eleven deaf signers (five of whom are children) and just more than twenty hearing signers. The total population of the village of San Juan, along with its outlying hamlet Cieneguilla, is 3,628, according to the Instituto Nacional de Estadística y Geografía (INEGI 2015); however, there is a high rate of emigration to the United States, possibly lowering the actual number of people living there. The incidence of deafness is around 0.3 percent (11 out of 3,628).

Although the community is small, it comprises two generations (in some families). The researchers classify them into interactional

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groups (following Kisch 2012). Since 2012, Hou, using methods from ethnography and linguistics, has mainly been working on language acquisition and language socialization (Hou 2016, 2018), while Mesh's focus has been on the importance of cospeech gestures in the creation of the sign language (Mesh 2017). Jointly, they also looked at the comparative semiotics of negation signs and gestures in the local language ecology.

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Zinacantan home sign, or "Z," as John Haviland terms it, is a home sign language that arose in Zinacantan, in Chiapas, Mexico, among a community of Tsotsil speakers (Tsotsil is the surrounding Mayan language). The sign language is used by a small number of signers—three deaf siblings along with twelve other people. The home sign system was developed among the three deaf and one hearing sibling as well as a niece who grew up together with them and became fluent in the sign language. In contrast with YMSL, deaf people are not really integrated in the Zinacantan community. Because of its restricted social network, Zinacantan Sign Language can be considered a home sign system. It is, however, being transmitted to a second generation, as one of the deaf siblings has a hearing baby who is learning to sign.

John Haviland has been working for many years on everyday and multimodal communication among the Tsotsil speakers. His main research interest is to understand how a communication system emerges in a micro-community like the one using Zinacantan Sign Language (Haviland 2011, 2013a, 2013b, 2015, 2016, forthcoming).

Although limited to a small signing community, Zinacantan Sign Language shows some interesting linguistic features, which make it an already complex and efficient linguistic system for communication with identifiable parts of speech and syntax (Haviland 2011, 2013b, 2015, forthcominga, German 2018). However, it is not free from misunderstanding and specific sociolinguistic ideology, as with any language of the world (see Haviland 2013a for a discussion).

Yucatec Maya Sign Language, or YMSL, has been studied since the 1980s. Shuman and Cherry-Shuman (1981) were the first to use the name YMSL. Le Guen defines YMSL as "a signed language that develops in a Yucatec Maya speech community" (Le Guen 2012; Safar and Le Guen forthcoming). This implies that YMSL signers share a

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cultural background with Yucatec Maya speakers and that spoken Yucatec Maya and YMSL are two languages actively in contact. YMSL is then a cover term to designate several sign languages that emerged in the Yucatec peninsula. Thus far, the sign languages of two communities have been described: Chicán and Nohkop, both in the state of Yucatan. More signing communities are known and have been visited by Escobedo Delgado and/or the YMSL Project team: Trascorral and Cepeda Peraza (including various identified isolated home signers). Chicán has a population of 720, including seventeen deaf people between 14 and 82 years of age (Escobedo Delgado 2012). Deaf signers in Chicán can be divided into seven "interactional groups" (Le Guen 2012, 216). A family with five siblings, four of whom are deaf and between 15 and 22 years old, lives in Nohkop. Around thirty hearing signers are in the extended family and vicinity. Cepeda Peraza has around 700 inhabitants with ten deaf people from different families who are between 26 and 45 years old. In Trascorral, a small community of 300 inhabitants, lives a family of five deaf siblings . A map is available at http://ymslproject.org/map_no_Kopchen.html.

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The YMSL signing community that has received most attention in the past is undoubtedly Chicán. Johnson (1991) gives a very detailed overview of the sociolinguistic situation in the late 1980s and focuses especially on how the sociological context of a village sign language and ideologies toward deafness differ from urban institutional sign language settings.

Shuman (1980) presents a first sketch of the language at the syntactic and lexical levels, while Shuman and Cherry-Shuman (1981) provide a vocabulary of 180 signs based largely on the Swadesh list. However, those two studies exhibit important methodological limitations (poor use of stimuli resulting in many lexicons elicited as pointings, use chain of translation English-Spanish-Maya-YMSL and reverse, etc). Fox Tree (2009) offers a comparative study between the sign language of Chicán and K'iche sign language of Nahualá (Guatemala), but as he only used some videos from Chicán, his comparison remains superficial and does not consider any grammatical features. More recently, Escobedo Delgado (2012) offers a short sketch of the sociolinguistic situation. Safar (2014) has been examining how language attitudes and language ideologies about the sign language of

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Chicán, considered an endangered minority sign language, are constructed and established through discourse. She critically examines the ways in which the language and its community are represented in different contexts and identifies diverging and often contradictory attitudes and values that underlie the representations. Safar (2017) also provides updated information regarding the sociolinguistic contexts and ways in which signers from different communities and hearing people recruit various linguistic strategies to communicate.

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Since 2009, the Yucatec Maya Sign Language Project, a documentation and research project coordinated by the author, has been working on documenting and comparing sign languages from the communities mentioned above (Safar and Petatillo Chan forthcoming; Safar and Le Guen forthcoming; Le Guen, Petatillo Balam, and Kinil Canché forthcoming). Online vocabularies of both Chicán and Nohkop are available at http://ymslproject.org/. Note that all examples from YMSL are provided with a link so the reader can watch them online. Safar joined the YMSL Project in 2015, and her Ph.D. thesis deals with variation in YMSL (Safar forthcoming). Safar and others have also conducted some recent comparative work on numeral strategies in three communities (Chicán, Nohkop, and Cepeda Peraza) (Safar et al. 2018).

Nebaj home systems is thus called because it was created by deaf and hearing signers in the town of Nebaj, Guatemala. Nebaj is a large rural town with 18,484 individuals in the urban center and 53,617 when including the neighboring area (*aldeas*), according to the 2002 census. There are at least four families with more than one deaf family member. Approximately twelve deaf students, some with other disabilities, are in the local school. As with other village sign languages, other family members and neighbors in the vicinity are competent in the sign language (with highly variable proficiency), adding another thirty people to the signing community. Due to the large size of the town, it is difficult to provide an accurate estimate of the incidence of deafness.

There are two families that have two generations of signers. However, the families are distributed across a fairly wide space, and, according to the knowledge of Laura Horton, who has been studying the language since 2012, they do not interact with each other. Horton's

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work has focused on issues of phonology, morphology, acquisition, and language emergence and development (Horton forthcominga, forthcomingb).

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K'iche Sign Language of Nahualá, is used the town of Nahualá in Guatemala (department of Sololá). Nahualá is a large town of 65,000 inhabitants, but the urban center only has approximately 5,000 inhabitants. Fox Tree (2009) does not specify the exact number of deaf people, merely reporting a "high incidence of deafness" and mentioning that one local informant estimates the bimodal-bilingual population to comprise around 10 percent to 20 percent. No linguistic description of the language is available apart from the anecdotal reports presented by Fox Tree (2009).

Old Costa Rican Sign Language is a language that belongs, according to the typology mentioned in this article, to the category of community sign language, as it was invented by deaf people from different backgrounds in the urban setting of San José, Costa Rica. It was only superficially documented in the 1990s by Woodward (1991, 1992) while it was already in contact with modern Costa Rican sign language, a language heavily influenced by ASL (Woodward 1991, 331). Woodward realized during his inquiry that the older generation of signers, in their 40s at the time, was using a different language. It seemed to have followed a pattern similar to Nicaraguan sign language (i.e., home or village signers gathering in schools and clubs in the capital). Old Costa Rican sign language seems to have been influenced by Spanish sign language as some deaf members of the community went to Spain and brought back some of the language, which then mixed with the local Hispanic signing (Woodward 1991, 334–35).

Brunca and Bribri Sign Languages are two indigenous sign languages documented by Woodward (1991) and that arose in the southern part of Costa Rica in native (non-Hispanic) communities. The author refers to the first as Brunca Sign Language, a language that emerged in a village of 800 inhabitants with eight deaf people. Bribri Sign Language is briefly discussed in the same paper but was already extinct at the time of Woodward's investigation; it arose in a smaller village with 300 inhabitants and three deaf people. In both villages, as with many other village sign languages, many of the hearing

residents also used the signed language, which was different from the spoken language in the community. Deaf people were integrated in the majority of daily activities, and there was no special deaf culture and no discrimination against deafness.

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Bay Island Honduras Sign Language (BISL) is a sign language that emerged due to a high incidence of deafblindness in the communities of French Harbour and Jonesville, Honduras. Deafblindness has been present in these communities for at least 100 years and is a result of Usher syndrome, which causes a person to be born profoundly deaf and then to gradually lose their vision later in life. In Roatan, the largest of the three islands, several deaf and deafblind people live in the village of French Harbour. The language is signed in both the visual and tactile modalities, depending on the sightedness of the interlocutors. When addressing a blind interlocutor, one or both hands are usually in contact. However, the language is not likely to remain in use much longer, since the youngest deafblind signer is now 51 years old and there are no younger people who have Usher syndrome. Although younger deaf people live nearby, BISL is not being passed onto them. Rather, some have learned LESHO (Honduran Sign Language) or ASL through missionary organizations and others have only homesigns.

Research conducted by Braithwaite and colleagues in August 2016 found that an indigenous sign language was used by deaf people and their friends and family members in French Harbour. In Guanaja, where a deaf man provides honey and other products to the whole of the island, this language is used very widely by hearing inhabitants. A small documentation project is currently under way by Ali, Braithwaite, Dhanoolal, and Elvin, with the aim of creating a corpus of natural and elicited data and a lexical database (see Ali and Braithwaite forthcoming).

Nicaraguan Sign Language (NSL, or as it is called in Spanish, *Idioma de Señas de Nicaragua*, ISN) is a community sign language that arose in the city of Managua in Nicaragua. In the late 1970s, the Nicaraguan government gathered deaf children into a deaf school to teach them written, oral, and fingerspelled Spanish. Many young children brought with them their own home sign system, resisted the teaching,

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and instead started creating a sign language to communicate among themselves outside of the classes. This system rapidly evolved into a more grammatically complex sign language.

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The NSL today counts several cohorts and quite a large community—in comparison with other emerging sign languages of the region—of 3,000 native signers. For scientists, NSL is a wonderful example of a language that has been well documented almost since its birth. Among the researchers that have been and are still working on the language are Judy Kegl, Richard J. Senghas, Ann Senghas, Marie Coppola, Laura Polich, and Jennie Pyers. It would take more than this paper to fully describe their work, but I discuss some of their most important findings below. The main interest of NSL, from a linguistic point of view, lies in the generational changes at the sociological and linguistic levels that can be traced back to the language's creation; see Coppola (forthcoming) for a recent study on social factors driving the evolution of the language.

Additionally, it worth noting that some emerging sign languages have been identified but not yet studied. In particular, Purepecha Sign Language. It is used in the state of Michoacán, Mexico (Alexis Salgado, personal communication.).

Conditions of Emergence

While languages like Nicaraguan Sign Language emerged because various deaf people, such as children, got together within the structure of an institution, the rest of the sign languages presented here are primarily based on family networks and are closely connected to the local cultural background.

Fox Tree (2009), taking the example of K'iche Sign Language and YMSL, claims that they are historically related, applying the North American model of a signed lingua franca (like Plains Indian Sign Language, PISL), hence proposing the hypothetical existence of an ancient Maya Sign Language (of the alternate sign language type) used throughout Mesoamerica and even represented in ancient Maya iconography. However, the Mayan situation is very distinct from North America and no such contacts have ever been attested in ancient or colonial sources. Additionally, the current evidence from fieldwork does not support a pre-Hispanic origin of sign language in the Maya

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area. For instance, the oldest deaf signer of the YMSL of Nohkop is 23 years old, and in Chicán the oldest signer is 82. Attempts by Robert Jonson (personal communication, April 2017) as well as the YMSL Project members have all failed to establish previous deaf members in these communities. Finally, at least until the very recent-and still incipient-development of a pan-Mayan identity, Mayan groups have not had any notion of a relationship uniting the different ethnic groups (e.g., people living in Yucatan, Chiapas, or Guatemala). An ancient origin is also unlikely since most emerging sign languages (in particular of the home and village sign language types) usually have short life cycles, limited to the life span of the deaf persons-although it can sometimes last several generations, up to six as in the case of Kata Kolok in Bali, for instance, see de Vos (2012a)-see also Nonaka (2009, 2012) and deVos and Nyst (2018) on this issue. Recent work in Africa shows that parallel inventions are partly due to a common gestural background that provides similar paths to sign languages' emergence (Nyst 2013; Tano Angoua and Nyst 2018; Tano Angoua 2016).

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The sociological context is influential in the emergence of home and village sign languages especially because inhabitants of the same village, namely, deaf people as well as bimodal-bilinguals, share a similar culture and interactional setting. In several village signing communities, as in the case of YMSL, deaf people are completely integrated-they work and get married just as the hearing people do (Johnson 1991). In the case of Chatino Sign Language, attitudes are more diversified and complex, ranging from positive (assuming deaf people may be more intelligent than hearing people) to ambivalent (expressions of pity for the lack of development of spoken speech in deaf people) (see Hou 2016). In Nebaj, it is not uncommon for hearing people to freely interact with deaf students when they are in public (Horton, personal communication, July 2018). Such a positive attitude, although widespread, is not found everywhere in Mesoamerica, and in the case of Zinacantan, the Tsotsil word for "deaf," uma, also means "dumb," and deaf people are essentially isolated from the general community (Haviland 2011, 158). In the case of NSL, deaf people were reluctant to adopt the first system that hearing people designed for their education-a system based on written and spoken Spanish—and instead developed their natural sign language among

themselves in places outside the school (e.g., the school bus, ice cream shops, their houses, markets, or public places) before they started to create deaf clubs (Senghas, Senghas, and Pyers 2005, 291).

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In settings where literacy is high among the wider population (i.e., generally in urban contexts), deaf people who are monolingual in sign language are usually excluded from jobs that require reading and writing skills. In rural settings, in communities in which a big part of the population depends on agriculture or fishing, there is a greater cultural and interactional overlap among hearing (bimodal-bilingual) and deaf people, as well as a larger amount of shared knowledge that eases communication (see Nonaka 2007, 11). Due to these circumstances, there is often no strong social segregation between deaf and hearing people in village signing communities, in contrast with the situation for deaf people in the urban settings of institutional sign languages, who often identify themselves as members of a cultural and linguistic minority, promoting the notion of Deaf culture.

Among the main factors that facilitate the emergence of sign languages in Mesoamerica, the extensive use of multimodal communication among the hearing is probably the most important. Literacy is very recent in this part of the world (even more so in rural settings). Although the Mayas invented a hieroglyphic writing system, it was only used by the elite and had been almost forgotten by the time of the Spanish conquest in the sixteenth century. Since there is no ideology against the use of gesture and strong prosody, speakers tend to recruit the various semiotic channels they have at their disposal-in particular the gestural one. Petatillo Balam (2015) shows that, contrary to U.S. speakers (McNeill 1992), Yucatec Maya speakers seldom use beat gestures and most of their gestures tend to complement the oral utterance. In fact, following Enfield's (2009) terminology, based on Kendon (2004), Yucatec Mayan speakers make frequent use of "composite utterances," namely, sentences that include both spoken and gestural information. One piece of evidence for this complementary use of gesture and speech is the presence of words in many Mayan languages that mean "of this size/shape" and necessarily imply showing the specific size or the shape with the hand(s) (see Le Guen, Petatillo Balam, and Kinil Canché forthcoming for a more detailed discussion). Also, in many languages of Mesoamerica, the use of Size and Shape

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Specifiers (SASS) is fairly common. Le Guen (2011b) shows that, in the case of spatial communication among the Yucatec Mayas, spatial gestures are the only resource for many women to talk about cardinal directions. Although Yucatec Mayas can point to them and accurately show the arrangement of distant entities, the great majority simply do not know the words for north, south, east, and west. Due to the use of multimodal communication and to a similar cultural and material setting (allowing an easy understanding of mimics of everyday action), many indigenous groups possess an extended gestural repertoire that provides a ready-to-use basis for nonverbal communication. In emerging sign languages, many such gestures are recruited and transformed into linguistic symbols (i.e., signs), used with increasing syntactic and semantic complexity.

Sharing a similar cultural setting (i.e., common cultural practices and material culture), greatly helps hearing people decipher the etymology of signs and hence understand their meaning, especially when they are iconic. However, iconicity is not always transparent, and sharing cultural background is sometimes essential. To illustrate this point, consider the following example of the sign for *BAAH* "GOPHER" in YMSL of Nohkop (figure 2). The sign in figure 2 is a metonymic compounded sign, the first sign representing the whiskers of the animal (figure 2a), while the second sign iconically represents the typical trap used to capture the animal (figure 2b). If one is not familiar with this technique, the sign completely loses its iconicity.



FIGURE 2. *BAAJ*"POCKET-GOPHER" in YMSL of Nohkop (a–b). In (c) is the illustration of the trap (drawing adapted from Hunn 1977, 114). See http://ymsign languageproject.org /VIDEOS_datos/baah.mp4.

Domains of use of the sign languages vary according to the respective community. In the case of NSL, the school and school bus were the primary settings of the use of the sign language before it extended to other domains (there are even a dictionary and normative rules that potentially allow the extension of the language to many other, more formal domains). In the case of YMSL, Zinacantan, and Chatino sign languages, people sign at home and on the street with other deaf or bimodal-bilingual people. Signers can use sign language to talk about work, family matters, and, at least in the case of YMSL and probably in other sign languages, more abstract topics such as religion, death, and dreams. In all of these communities (with the exception of NSL), there is no established system of speech-sign translation, and signing does not feature in public events. In Nebaj, the sign languages (or home systems) are primarily used at home, but students at the school sign with each other in class, at school, or in other public places.

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Some Grammatical Features of Emerging Sign Languages of Mesoamerica

Word Order

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Determining word order is not an easy issue in sign language linguistics and turns out to be even more difficult in emerging sign languages, on the one hand because the notion of a "word" in sign language is controversial in the first place (Stokoe 1960; Zeshan 2002), and on the other hand because the elicitation process is generally not straightforward, especially as it does not always provide contexts with anaphoric references, topicalization, or focus processes. Goldin-Meadow et al. (2008) suggests that SOV is the favored word order in the visual modality; it is worldwide the most common word order in spoken languages, too (Dryer 2005). Although this is indeed the case in some emerging sign languages of the world, such as Al-Sayyid Bedouin Sign Language (ABSL) (Sandler et al. 2005), counterexamples can be found. Kata Kolok signers from Bali tend to prefer SVO; however, such complex sentences are actually rare in spontaneous discourse, and instances of SVO, SOV, and OVS can also be encountered (de Vos 2012b).

In Zinacantan home sign, Haviland (2011), using data from a pseudoexperiment, found that word order is not so systematic,

although there is a tendency toward (S)OV order with 76 percent of clauses that follow this pattern (Haviland breaks it down as follows: 37 percent SV, 34 percent OV, 5 percent SOV). Infrequent types are as follows: 11 percent VO, 8 percent VS, and 5 percent SVO, probably due to either a flexible word order or processes of focalization or topicalization.

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For YMSL, Shuman (1980, 168) claims that SVO is the preferred word order; however, his translation method is so problematic that the validity of his results is questionable. This word order has been encountered by members of the YMSL Project. Bimodal-bilingual signers of YMSL produced mainly utterances with SVO word order when asked to translate transitive sentences from Yucatec Maya, following the preferred word order in this language. Although the canonical word order in Yucatec Maya is VOS, this word order is not at all frequent in discourse (Gutiérrez-Bravo and Monforte 2010; Skopeteas and Verhoeven 2011). Through topicalization or focalization constructions, the common word order for transitive sentences becomes $S_{f/t}$ VO (e.g., *Maariya ts'u'ts'ik hWaan/*"it is Mary that kisses John" or *H Waane' tunts'u'uts'ik Maariya/*"As for John, he is kissing Mary"). Actually, younger speakers of Yucatec Maya tend to get confused by the VOS construction, tending to read it backward as VSO.

Careful analysis of YMSL data from elicitated materials with video stimuli as well as natural conversations with deaf signers and bilinguals show that ditransitive constructions are fairly rare and, in general, the preferred word order is SV (or serial constructions like SV-SV). If another argument is explicitly mentioned, the construction becomes SOV; namely, the preferred word order in YMSL, or at least the main tendency, is S(O)V. Other word orders have been encountered, such as SVO, OV, or simply V (in cases in which the arguments were mentioned earlier in discourse). More in-depth analysis is needed in order to identify which factors trigger the use of a non-canonical word order.

Figure 3 presents the preferred SV construction.

What is striking is that SOV is not at all a common word order in Yucatec Maya, but it is the canonical word order in YMSL of both Chicán and Nohkop, although the two villages have never been in contact (note that it is the same as in Zinacantan home sign). These

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"GORGEOUS"

CH'IK TAKE (something)

FIGURE 3. "The girl (lit. "GORGEOUS") takes (something)" (YMSL in Chicán).

results underline the fact that, even though YMSL and Yucatec Maya are two languages in active contact, YMSL is not a signed version of Yucatec Maya but exhibits distinct grammatical structures.

The examples in figure 4 ("Olivier kisses Lorena") and figure 5 ("Lorena kisses Olivier") show that word order is systematic and syntactically meaningful. Note that in this example the signer uses two different signs for KISS, the combination or variation of signs being a common phenomenon in sign language.

It is important to recall that many sign languages are "pro-drop languages" (Chomsky 1996; Perniss, Pfau, and Steinbach 2007), mean-



FIGURE 4. "Olivier kisses Lorena."

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FIGURE 5. "Lorena kisses Olivier."

ing that they productively use zero anaphora. If the subject and the object have been mentioned earlier in discourse, the signer tends to use only the verbal stem without overtly specifying the subject and the object. If the verb is intrinsically transitive (e.g., give, take, murder, etc.), arguments are implicit and do not have to be repeated or specified again (Liddell 2003).

Examples from Zinacantan home sign and YMSL, as well as other sign languages of the world, show that systematicity in syntax occurs at a very early stage in the evolution of the languages; furthermore, they show that the way signers construct their sentences may differ from the surrounding oral language and that there are crosslinguistic differences between sign languages in this regard. Sandler recently proposed that syntax is actually what comes first in language emergence, even before phonology, taking as an example the development of complex syntactic structure in four age groups in ABSL (Sandler 2017).

Nouns vs. Verbs

In linguistic typology and in psycholinguistics, the differentiation between nouns and verbs has been claimed to be universal (Sapir 2004), mainly based on the "natural" distinction between objects (encoded by nouns) and actions (encoded by verbs). Additionally, this putative differentiation allows us to distinguish constituents by their syntactic order in a clause namely, to distinguish an agent, a patient, and object (nouns), and the actions they carry out or undergo (verbs). Goldin-Meadow (1993, 2003) and her colleagues have shown that even in reduced signing communities of homesign users in the United

States, where children receive very poor linguistic and gestural input, a differentiation between nominal and verbal signs is made. Since this seems to be a basic feature of all human languages (but see Lois and Vapnarsky 2006 for a discussion on Amerindian languages), we should expect emerging sign languages to exhibit it as well. Indeed, such a distinction has been found in several languages, in particular Zinacantan homesign and YMSL.

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Haviland (2013b) discovered that signers of Zinacantan home sign have three strategies to distinguish nouns from verbs (none exclusive to emerging sign languages; all can be found in established sign languages). The first, which also occurs in YMSL, is to use the sign depicting an action (verb), considered the "base sign" (Haviland 2013b, 322), adding a Shape and Size Specifier (or SASS) to derive a noun (Suppala 1986; Baker-Shenk and Cokely 1991). In contrast with YMSL, apparently not all SASSs Haviland identified are conventionalized. The second strategy involves a phonological process, which can affect either a handling classifier (in which the hand represents how an object is handled) or an instrument classifier (in which the hand represents the object itself) (see Padden et al. 2013). Haviland notes a phonological reduction of the sign as in ASL (Klima and Bellugi 1979; Supalla and Newport 1978). The final strategy is the addition to the base sign of a copula derived from the sign TO PLACE OF TO PUT meaning "there is this SIGN" (Haviland 2013b, 338).

In YMSL, the addition of a SASS to the base sign can, as in Zinacantan homesign, transform a verbal sign into a nominal one (see Safar and Petatillo Chan forthcoming). What is of interest here is that the same strategy and the same SASSs are systematically used in Nohkop and in Chicán. These forms also occur in the gestural repertoire of Yucatec Maya speakers and are incorporated into the sign language. In particular, two examples of gestures specifying size and shape can be found among Yucatec Maya speakers. These gestures are systematic and mutually exclusive, and I therefore consider them "manual classifiers." The first is a flat hand placed horizontally to represent the size of a person (commonly used to represent the size, indirectly also the age of a child) or a vertical object (e.g., a small tree). It can also be used indexically (i.e., to refer to the actual size of the entity) (figure 6a). The second one is a flat or curved hand used exclusively for four-legged

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FIGURE 6. Manual classifiers used by Yucatec Maya speakers for (a) vertical entities and (b) four-legged entities; (c) exemplification with the animal present.

animals, in which the relevant part is the base of the vertical hand representing the height of the withers (figures 6b, 6c).

The same manual classifiers are also in use for the same purpose in Chatino Sign Language. Living baby chickens are indicated by a base hand with the palm facing upwards and a cupped hand with the fingers slightly bent and touching the other palm (see Hou 2016, 143). In YMSL, the same sign is used in compound with the sign for CHICKEN, as presented in figure 7. The height is indicated by the base



FIGURE 7. "SMALL CHICKEN" in YMSL of Chicán.

of the curved hand. The same strategy is used among hearing people.

In Chatino Sign Language, live adult chickens are also indicated by using a SASS: left and right hand in B- or 5-handshapes with the palms held about ten to twelve inches apart and facing one another (one upward, the other downward) (Hou 2016, 144).

In YMSL, these manual classifiers are incorporated as signs, but with a semantic restriction and function, to specifically be used for nominalization. I consider them in YMSL as specifiers. The manual classifiers used by Yucatec Maya speakers for vertical entities becomes a classifier for human beings in YMSL (at least in its default use), glossed as SPEC-HEIGHT:HUMAN (specifier for human height). It is generally used in combination with a sign for gender and hence identifies a "GIRL" versus a "BOY" or "WOMAN" versus "MAN." The sign is used indexically for small persons, i.e., children; that is, the placement of the hand corresponds (roughly) to the actual height of the child being referred to. Figure 8 shows an example of the sign GIRL formed as a combination of the base sign for FEMALE (figure 8a) and the SPEC-HEIGHT:HUMAN (figure 8b). In this case, the sign would represent



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FIGURE 9. Sign for (a) DEER and (b) WILD BOAR from Nohkop. See http://ymsign languageproject.org/VIDEOS_datos/kéeh.mp4 for DEER and http://ymsign languageproject .org/VIDEOS_datos/kitam.mp4 for WILD BOAR.

the Yucatec Maya gestural repertoire and used in YMSL as a classifier for four-legged animals and glossed as SPEC-HEIGHT: 4LEG (fourlegged animals). Figure 9a presents the sign for a deer and figure 9b the sign for a wild boar. Note that the specifier can precede or follow the lexeme and is not obligatory.

Other SASSs with broader meanings are used to nominalize verbal signs. Consider the following example presented in figure 10. In figure 10a, the sign for WASH-BY-HAND by default represents the action while the addition of a SASS turns it into a noun: WASHBOARD. Note that in YMSL (in both Chicán and Nohkop), again the SASS can appear before or after the base sign. Note that it is not obligatory in nominal contexts.

The use of SASS and manual classifier in the surrounding language represents a key aspect of lexicon creation for emerging sign language, as it allows not only the division between verbs and nouns but also the rapid and productive creation of lexical items through compositionality.

Use of Signing Space

One of the most important properties of signed languages is that they can employ space in a meaningful way to associate referents in discourse and express relations between these referents (e.g., someone giving something to another person). Until recently, the use of a symbolic

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FIGURE 10. Signs (a) for *P'O'* "WASH-BY-HAND" from Chicán and (b-c) BAATEYA "WASHBOARD" from Nohkop (description of the stimuli presented on the photos). See http://ymsign languageproject.org/Vocabulario_LSMY_Chican/Vocabulario_CH .html#B; http://ymsign languageproject.org/VIDEOS_datos/baateya.mp4 for WASH-BY-HAND and http://ymsign languageproject.org/VIDEOS_datos/baateya.mp4 for WASHBOARD.

signing space in front of the signer had been considered a universal (or "natural") and intrinsic property of signed languages (Emmorey 2003; Pfau, Steinbach, and Woll 2012, 158). "Symbolic signing space" refers to the use of space in front of the signer's torso used to situate nonpresent referents and establish relations among these referents.

Le Guen (2011a) considers three types of pointing: "direct," "metonymic," and "metaphoric." Direct pointing implies that the finger (lips or other body parts, as well as objects, can also be used to point) is oriented toward the accurate location of the referent and that the referent is directly cognitively available to the speaker/signer. The referent can be a place, a person, or an object. Importantly, this does not mean that the referent needs to be visible. In metonymic pointing, the finger (or what is used to point) is oriented toward an intended target that stands for the referent. In this case, the target and the referent have a relation of contiguity (e.g., pointing at the White House to refer to the current president of the United States, without the president necessarily being present). Finally, a metaphoric point-

ing implies that the finger (or what is used to point) is pointing to an arbitrary piece of empty air in the gestural/signing space. In this case, the target metaphorically represents the referent. This type of pointing is typically used by most Western signers or speakers and is a common strategy to establish third-person pronouns in institutional sign languages (Lillo-Martin and Klima 1990).

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The symbolic use of the signing space allows referring to referents previously established through metaphorical pointing. Sandler and Lillo-Martin (2006) have called the arbitrary pieces of empty air where referents are placed "R (efferential) Loci." By pointing again to these R (efferential) Loci, signers can refer back to the referents later in discourse without overt lexical specification (Lillo-Martin and Klima 1990).

However, the way signing space is used is not universal but differs cross-linguistically. For instance, the size of the signing space a signer will use could differ. While most institutional sign languages (such as ASL) restrict the signing space to an area in front of the signer's head and torso (Klima and Bellugi 1979, 51), other emerging sign languages have been reported to employ a larger signing space, which can reach down to the ground or even behind the signer's body (Bauer 2014; Marsaja 2008; Nyst 2007).

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A very important feature, which is linked to the structure of signing space, is the choice of perspective taken by the signer. As Perniss puts it: "Signing perspective refers to the way in which signers project the event space being described onto sign space" (Perniss 2007, 63). Perniss distinguishes two main kinds of perspective: *observer perspective* and *character perspective*. In the observer perspective, an event is projected on a small scale, and arbitrary locations in the signing space are associated with the referents. The signer takes the perspective of a "neutral" narrator. In character perspective, the event space is projected directly onto the signer's body, and the projection is life-sized. Perspective choice connects directly to choices of other linguistic devices, such as the use of classifier predicates to depict events. Much work on this issue has been done with NSL (A. Senghas et al. 1997; A. Senghas and Coppola 2001; A. Senghas 1995).

Senghas and her colleagues tested eight participants, four from the first cohort (i.e., socialized between 1977 and 1983) and four from

the second cohort (i.e., socialized in the language after 1983) (Senghas et al. 1997). Each participant watched 32 video clips of action events, such as a woman tapping a man or a man giving a cup to a woman, and was asked to describe each event in NSL. Results indicated that signers from the first cohort relied on word order to specify arguments in the sentence, such as MAN GIVE WOMAN RECEIVE. Among signers of the second cohort, semantic roles were not always unambiguously indicated by word order but instead through the use of space, more precisely, through spatial modifications indicating semantic roles. Senghas and colleagues conclude that these results indicate that first-cohort signers did not use their signing space in a systematic and productive way, while the second cohort showed a pattern more similar to most institutional sign languages and hence resembling more an established sign language. Recent observations in emerging sign languages have shown that some sign language communities productively use a geocentric Frame of Reference (FoR), and this constrains the use of the signing space for pointing (de Vos 2012b; Bauer 2014). Deaf signers generally use the preferred FoR of the surrounding community because it seems natural, and communication about spatial events would otherwise be extremely difficult. In many non-Western rural contexts, the geocentric FoR is preferred (Kita 2009; Levinson 2003) and the use of signing space among signers is constrained. Consequently, in many cases, a rotated representation of events becomes irrelevant, even incorrect, since real-world locations and spatial relations need to be respected.

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The use of real-world locations to refer to entities, persons, or objects is frequent in rural settings in Mesoamerica (see Le Guen 2011a). Figure 11 presents an example of a YMSL signer from Chicán using metonymic pointing to talk about her future husband (ACC). Instead of using his sign name, the signer points to ACC's house (independently of whether he is there or not). This type of pointing is metonymic inasmuch as ACC's house stands for ACC himself.

Recent research by Hou (2016, 216ff) on directional verbs—also known as agreement verbs or indicating verbs in the literature of sign linguistics (Pfau et al. 2012, chap. 7)—indicates that verbs like GIVE are constrained by the referents' real-world orientations in Chatino Sign Language. In an example Hou provides (2016, 228),

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FIGURE 11. "As for me, I don't know, but ACC maybe [knows]."

the signer omits the location of the agent, which was previously specified by a name sign of a person who was not present during the conversation—echoing the signer's body as "default subject" (as discussed in Meir et al. 2007)—and directs the verb GIVE toward the neighbor's house. The signer also uses a metonymic reference, as the house stands for the neighbor himself.

Similar work on YMSL has shown that signers of the second and third generations (the latter being deaf children born to deaf parents) differ in their use of space, the latter tending to use signing space metaphorically (i.e., assigning referent loci to discourse referents) (Le Guen and Safar in prep.; Le Guen 2012). Twenty participants from Chicán (twelve deaf adults, two deaf children of deaf parents, and two hearing codas) and Nohkop (three deaf signers and one bimodalbilingual cousin) were shown two sets of videos, the first containing fourteen and the second one thirteen clips of people giving or taking from things from each other (flower, book, a bucket, etc.). The great majority of the adults and children from Chicán, as well as the young signers from Nohkop, used character perspective and word order to disambiguate semantic roles. Consider, for instance, figure 12a-c. The signer from Chicán first specifies that the agent is a woman (using the sign KI'ICHPAM "GORGEOUS"), then uses "list buoys" (Liddell 2003) to indicate which person she is talking about (in the video stimulus, three persons are present), and finally embodies the action from the perspective of the agent. In figure 12d, the signer from Nohkop situates the characters in signing space (personas 2 and 3 from the video), then uses a character perspective to embody persona 2 to sign "she



FIGURE 12. Strategies using character perspective, the signer embodied the agent (this image is a screen shot from the event described by the two signers).

takes (it)" (i.e., P2 and P2 are here, I TAKE, meaning "P2 takes it from P3") (figure 12e).

Interestingly, only the signers from the third generation (i.e., deaf children of deaf adults) use signing space in a metaphorical way. First, they place the referents in space— as most of the adults did—but then, instead of using word order or character perspective (i.e., impersonating the agent and/or the patient), they inflect the verb in the signing space according to metaphorically assigned locations, as shown in figure 13.

Note that among all generations, the majority of responses correspond to an unrotated representation, and this is not a mistake or a lack of attention but reflects the use of the geocentric FoR. The posi-

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FIGURE 13. Strategy of third-generation signers using signing space metaphorically.

tion of the person in the video is not described from the viewpoint of the signer but can be considered to be placed according to, say, the east and the west. The use of video stimuli, however, has its limitations, since they do not show real people in real life (i.e., in 3D), and locations cannot be proven to be correct or incorrect. The first results about the preference for an unrotated perspective in YMSL needs to be confirmed by further studies (Le Guen and Safar in prep.).

Final Remarks

As mentioned earlier, because research on emerging sign languages is only in its beginnings, very little is known about these languages. There is much work to do but also a very urgent need in terms of documentation. These languages do not only evolve rapidly but also tend to disappear quickly, as in the case of Bribri Sign Language, for instance (Woodward 1991), as their life cycle is directly tied to the presence of deaf people, and they often disappear after one or two generations, especially home and village sign languages (Nonaka 2004, 2012). This serious state of endangerment has been ascribed to various reasons.

One main structural reason is that the very existence of emerging sign languages is directly linked to the presence of the Deaf

community members. If no new deaf people are born, the language usually dies. Because these sign languages tend to have a short life cycle, we only have a limited window of opportunity to document them. In addition, we are currently witnessing rapid social changes: the impacts of globalization combined with an increasing shift to Spanish and conceptions proper to Spanish speakers (namely, that being monolingual in Spanish is more valued than being bilingual with an indigenous language) may inhibit the emergence of new village sign languages and severely threaten existing ones. In many speech communities (such as Nohkop, for instance), the dispersion of the signers—mainly because young women get married and go live with their husbands' families—is a threat that has already affected the integrity of the community.

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Also, because emerging signed languages are new languages, they are subject to rapid language-internal change. As evident from the work done on NSL and recent findings on YMSL, there is a qualitative evolution between the first and second generation of signers in expressing verbal agreement. Also, new members of the community, such as hearing husbands, can also influence the use and meaning of a sign. For instance, in YMSL of Nohkop, the sign for "the mother of the signers" (i.e., a sign that referred to a single and unique person, the mother of the signers of this family) became a generic sign for MOTHER.

These findings indicate that both the lexicon and the grammar of emerging sign languages need to be documented soon, as many interesting and unique features might be lost or very quickly transformed.

Finally, we can witness, at least in the case of emerging sign languages in Mexico, some degree of language contact between LSM and the local sign languages. Although this influence is still minimal in many cases, it has nonpredictable long-term effects that might pose a serious threat to the survival of these newly emerged sign languages.

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