Sign language geography

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We have a fairly good idea of how many spoken languages exist, at least to the nearest thousand. There are websites, encyclopedias and language atlases which survey known spoken languages based on reports and language surveys; one such source, *ethnologue.com*, lists 6,912 known living languages as of 2005. Listing all the spoken languages of the world is on the one hand a classificatory problem: how do we determine that a pair of languages is similar enough to be counted as dialects of one language, not separately as two languages? Conversely, how do we determine that two apparent "dialects" are more accurately two different languages? On further inquiry, we can investigate whether a group of languages are genetically related and can be called members of the same "language family." A language family is defined as a group of languages related by common descent from an ancestor language. Terms such as "dialect," "language," and "language family" denote a history of relationships between speakers of languages and how language change transpires over time. Wars, social upheavals and migration bring people in contact with one another, with consequences for the languages spoken by their groups. As Jean Aitchison reminds us "…languages are spoken by people, and people move around, sometimes in huge groups. The distribution

of languages changes faster than the course of rivers." (Comrie, Matthews, & Polinsky, 2003, p. 7)

We do not have a comparable understanding of how many sign languages there are. *Ethnologue.com*, which calls itself a reference volume of "the known living languages in the world today," only recently began listing sign languages in their survey of world languages. In the 2005 edition, there are 121 "deaf sign languages." Most entries have general information about the location of the sign language, how many users, if known, and whether it might be related to another sign language. Australian Sign Language (Auslan – and see the appendix for the list of abbreviations used in this chapter), for example, is described in *ethnologue.com* to have an estimated 14,000 users and is said to be closely related to British Sign Language (BSL) with some influence from Irish and American Sign Language (ASL). The entry for ASL, not surprisingly, is longer and more detailed since it is a comparatively well-researched language. An estimated 100-500,000 users of ASL are reported. Likewise listed is reference to sign language dialects of ASL: the Canadian dialect used in English-speaking parts of Canada and the Black Sign Language that has its roots in black deaf schools in the United States.

For cataloguing purposes, *ethnologue.com* places all "deaf sign languages" into a single language family as a way to set them apart from spoken languages. The strategy also illustrates the difficulty of coming up with a comparable rubric for sign languages. Included in the *ethnologue.com* "family" of sign languages are languages that cannot have descended from a common ancestor. Ban Khor Sign Language of northeast Thailand, for example, is used by a small community of hearing and deaf signers in a village and has no known history of contact with either ASL or BSL (Nonaka, 2007).

And as is well known, ASL and BSL are unrelated despite the common political history of North America and the United Kingdom.

Based on a flurry of new studies in recent years on village sign languages and young sign languages (Kegl, Senghas, & Coppola, 1999; Marsaja, 2008; Nonaka, 2007; Nyst, 2007; Osugi, Supalla, & Webb, 1999; Senghas & Coppola, 2001; Washabaugh, 1986), it is likely that Ethnologue's count of 121 sign languages is on the low side, and there remain yet more undiscovered and unidentified sign languages around the world. Given that deafness has been found in every populated continent of the world, we should expect to find more sign language communities, but how many more? We could make better predictions, indeed do a better job of categorizing sign languages we already know, if we knew more about the history of sign languages.

With the recent work on new sign languages, we are now starting to understand how sign languages can begin life and sustain themselves over time. Under what conditions do sign languages appear in spoken language communities? What is the relationship between gestures used by hearing people and the new sign languages that are formed in communities? Once a sign language takes hold, we do not know much about the social conditions under which sign languages have contact with one other. How does one sign language influence another, or how can one sign language replace another? There are cases of signing communities only hours apart whose sign languages are as unrelated as two sign languages much further apart geographically, as I will discuss in a later section. Conversely, there are sign languages separated by an ocean of distance, such as French Sign Language (LSF) and ASL whose vocabularies today still reflect their genetic relationship dating back nearly 200 years.

Determining relationships between sign languages involves understanding how signers and sign languages move across geographic space and historic time. We know that speakers migrating from one region to another may bring their spoken language with them, or abandon their languages in favor of a more dominant language in the new region. What about signers? Are they compelled to bring or abandon their sign languages when they migrate? Do the same forces that come into play for spoken languages also come into play for sign languages? Unlike spoken languages, sign languages exploit iconicity to some degree. How does the iconic character of sign languages play a role in sign language change over time and under conditions of contact with other sign languages?

Further, under what forces do signers bring their language from one geographic location to another? Once signers meet other signers, what happens? What patterns of change take place in the life of sign languages over long periods of time? In terms of scale, sign language communities are far smaller than spoken language societies, and almost always co-exist within spoken language communities. Sign language communities do not wage wars against each other; signers live among others and within dominant political agendas. The mobility of deaf people and how their languages are transported over space and time should be different than that of other groups of language users, but how? All of these questions figure in an account of "sign language geography," or the pattern of sign language distribution in various regions of the world and how they change over time under conditions of contact and transmission.

To illustrate these special issues, I will discuss sign languages and their use in two different regions of the world: North America and the Middle East. In one respect, the

regions are alike: there is a dominant spoken language used throughout the region,

English in North America and to a lesser degree, Modern Standard Arabic in the Middle

East[1]. These spoken languages play a central role in organizing the political ideology

within the respective regions; they are seen as unifying a diverse population across a

broad geographic space. However, North America has only a handful of sign languages

compared to the Middle East with many more small sign languages existing over a region

stretching from the Levant in the north to North Africa and the Gulf region in the south.

As I will show, juxtaposing the situation in North America with the complex sign

language situation in the Middle East brings to light important issues in the description of

sign language history which goes beyond that of spoken languages. Notably, sign

languages may spread from one region to another, or be adopted in another region in

different ways than in spoken languages not only because of political and cultural

reasons, but linguistic reasons as well.

History of sign languages

As a class, sign languages are described as young languages for the reason that there is

scant evidence of a sign language older than two or three hundred years. Susan Plann

(1997) describes the earliest records of deaf education in Spain as dating from about

1550, when monks became tutors for privileged deaf sons of noble families. From the

fact that well-known noble families in Spain had more than one deaf child, and that the

deaf relatives must have communicated within their families and possibly with other deaf

people, Plann speculates a sign language existed for use among them, but she could find

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[1] Modern Standard Arabic is used in written language and formal speech. With respect to vernacular or colloquial Arabic, there are a number of different varieties throughout the region, some of which have been described as "separate languages of the Arabic family."

no description of their language, or how easily they were able to communicate with one another.

In her account of an American sign language on Martha's Vineyard, Nora Groce (1985) identified a deaf father and son as among a group of early settlers arriving on Martha's Vineyard around 1714. While tracing the genealogical history of the settlers to their ancestors in the Weald of Kent in England, Groce came across a passage in Samuel Pepys's diary in which he observes a deaf man communicating by sign with a London politician, Sir George Downing. The date was November 9, 1666. The brief mention of the encounter by Pepys notes that the deaf man signed fluently and that Downing responded in equal form, but there is no information about the language itself. Peter Jackson (1990) found earlier references to signers and sign language in seventeenth century Britain, notably a book by John Bulwer written in 1648, *Deafe and Dumbe Man's Friende*, in which Bulwer identifies twenty-five deaf people living in various parts of the country. A chart of the hand alphabet is included in Bulwer's book, but not much else was mentioned about any sign languages in the region at that time.

Jackson argues that there were sign languages in Britain at least a hundred years before the establishment of schools for deaf children in that country around 1760. The evidence is in his favor but unfortunately, any descriptions of the form and structure of these sign languages are brief and insubstantial. By the late eighteenth century, however, we begin to see somewhat more useful descriptions. When Europe and North America began building public institutions as arms of the state in the late eighteenth and early nineteenth century, schools for deaf children as well as schools for the blind, orphanages and prisons were among the new institutions that represented the state's interest in the well-being of

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its populations. As Rothman (1990) notes, these institutions developed new standards of record-keeping reflecting their belief in the importance of documenting behavior of those under their care. Very interesting records have survived from these early institutions in Europe and in the U.S. and Canada. Among the first records of Pennsylvania Institution for the Deaf and Dumb, one of the first schools for deaf children founded in the U.S. were "admissions books," where records were kept of the names and ages families of deaf children admitted to their care, as well as information about their families. In this book, we see for the first time specific reference to the form of signs. Alongside some of the children's records were notations describing their name signs. Mary Reilly, admitted to the school in 1821, had this description at the bottom of her record: "Sign. the end of forefinger just above the corner of the eyebrow toward the nose with an upward motion." A few pages later, Henry Stehman who was admitted a few years later in 1826, had a name sign described thus: "Sign. Pulling the tip of the ear with the thumb and forefinger. Did these name signs accompany the children when they first arrived at the school, or were they assigned to them later? We don't know.

Given that we have evidence that deaf people and signing existing before deaf schools opened, should we date ASL and BSL as older languages? Probably, but with the small amount of evidence we have, we really do not know how to extrapolate backwards from contemporary forms to older signs. What happens when one sign language contacts the other? How do signs change and how do grammatical structures in one language absorb structures from another? We know that French Sign Language (LSF) was imported to the United States when Laurent Clerc came to Hartford, Connecticut in 1816 to establish the

first deaf school there. But what precisely happened when LSF was introduced to the varieties of sign language in existence at that time?

There may be some interesting clues about how sign languages change from recent work on emerging sign languages. Emerging or new sign languages are defined as those which have arisen within the last two or three generations of signers. There are no comparable cases of "new" spoken languages except for pidgins and creoles which arise out of contact between two or more existing languages. While pidgins and creoles demonstrate remarkable human creativity in the face of the need to communicate, they are not entirely new languages because the influence of the source languages can still be seen in their vocabulary and structure. But new sign languages, under the right conditions, can arise without any substantial influence from spoken languages or other sign languages. In such conditions, researchers can observe, in a way not possible with spoken languages, the development of a language from its origins to its contemporary form in only a few decades. New sign languages in different parts of the world and under different cultural environments are now being described in the sign language literature, allowing us to examine how sign languages develop and how conditions of human interaction and social life exert their influence on them.

Categories of emerging sign languages

In a recent paper, Meir, Sandler, Padden & Aronoff (to appear) propose distinguishing between emerging sign languages by considering their social and linguistic environments. The first category, called *village sign languages*, are those which "arise in an existing, relatively insular community into which a number of deaf children are born." Typically,

in such communities there is a genetically transmitted condition of deafness, resulting in a situation where deaf and hearing signers are related to one another and grow up in the same social and cultural environment. *Deaf community sign languages*, in contrast, are those in which deaf children are brought together from different places, even different cultures, and once together they form the basis of a community. These signers are typically not related to one another; in fact, signers with deaf relatives or signing hearing relatives will be comparatively fewer. What has brought deaf children and adults together is the establishment of a school or some other social institution.

Following a recent observation about the evolution of language (Wray & Grace, 2007), we argue that how often signers interact with "strangers" has an impact on the form and structure of that language. When interacting with relatives, there is a great deal of shared information, but not so when interacting with unknown individuals. When with relatives and members of the same village or community, the context for language is shared, as well as a common history together over time. Pointing to a particular location, for example, is easy to do in a village sign language, but when in a large urban center, that location is more likely to be specified explicitly by name, and not just by pointing. In the case of strangers, communication needs to be more explicit, more detailed and shared knowledge cannot always be assumed. Under conditions where speakers do not know one another, Wray and Grace argue that languages acquire certain kinds of grammars and vocabularies when compared to those languages where more is shared. Their basic insight is that cultural practices are implicated in the form and structure of human language.

A historical example of a village sign language is the one that developed in Martha's Vineyard between the settlement of the island in the late seventeenth century through the nineteenth century when the island's population moved off the island and became less insular (Groce, 1985).[2] Groce traces deafness on the island back to two families from Kent, England who left for the New World then subsequently moved to Martha's Vineyard and settled there. The two families carried a recessive condition for deafness which, after intermarriage on the island, resulted in a number of deaf children being born. At one time the number of deaf people on the island was as high as 45 out of a total population of 350, concentrated mainly in the two villages of Tisbury and Chilmark. Use of sign language was amply noted in written records of the island as well as in oral recollections of the oldest islanders still alive at the time Groce carried out her research.

In contrast to Martha's Vineyard Sign Language, American Sign Language is an example of a deaf community sign language. When the first American public school for deaf children opened in 1817 in Hartford, Connecticut, deaf children from throughout New England enrolled in the school and there they met deaf children from other towns and states. Deaf community sign languages are typically organized around the establishment of a school for deaf children which gives reason for unrelated signers to meet each other. The single largest group of children enrolling in the school the first several decades came from Martha's Vineyard (Groce, 1985). A large number of other deaf children came from the mainland, specifically two different signing communities. Lane, Pillard & French

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[2] Typically, village sign languages are spontaneously created. In the case of Martha's Vineyard, the sign language on the island may have been created earlier and elsewhere. An early settler on the island was a deaf man from Kent, England. He may have brought a sign language with him from his country of origin, but absent a description of the sign language as it was used on the island, we cannot know for sure.

(2000) report that between 1817 and 1887, a total of 44 children enrolled in the Hartford

School from Henniker, New Hampshire and nearby townships. In another settlement of

several families in what is today the southeastern part of Maine, there were 27 deaf

children who enrolled during the same period. Of the remaining children, many are

surmised to have grown up in small towns and rural areas having little or no contact with

other deaf people. One of the first deaf students to enroll in the first year of the school's

opening was John B. Brewster, a deaf itinerant painter who is notable in American art

history for having produced some of the finest examples of portrait painting from the

colonial American period (Lane, 2004). Born in 1766, Brewster acquired the skill of

painting under apprenticeship to a master painter, and then like other portrait painters of

that era, he traveled by horseback throughout New England in search of work. Brewster

had no deaf relatives and did not live in one of the many towns with deaf people.

According to Lane, the record is not clear as to whether Brewster could sign or what

signing he used. Indeed, how he communicated with those who paid him to do their

portraits is unknown. What the record does note, however, is that Brewster learned about

the school for the deaf in Hartford and enrolled there in 1817 when he was 51 years old.

Lane speculates that Brewster was one of many who came to the school with little or no

knowledge of a sign language; instead, he used home signs.

How did the different village sign languages in existence in 1817 coalesce together with

home sign systems, probably several, to create a common sign language? How did LSF

enter into this mix? Being able to answer this question involves doing historical

linguistics – with sign languages. We might be able to compare signs from the different

village sign languages (if we could find any record of them) with old LSF (from old

dictionaries) to see if a line of transmission could be traced. But doing such a task is not as straightforward as we might think.

Sign languages of North America

As one of the largest sign languages in the world with a substantial record of description and analysis, ASL may seem like a prototypical sign language, but in many respects it is not. It is unusual in how widely it is used, with generations of ASL signers found throughout North America, from the border with Mexico to the uppermost populated areas of English-speaking Canada. Compared to Europe which has many different sign languages within its continent, ASL has no competing sign languages of similar size. The number of primary users of ASL, those who use it as a first and dominant language, is roughly estimated at around 250,000 signers. With the recent proliferation of ASL classes in American and Canadian high schools, colleges, and universities over the last three decades, the number of second-language learners and users of ASL surely exceeds this number of primary users. Quebec Sign Language (LSQ), with 5-6,000 signers is the only other large sign language in the North American region, used in French-speaking areas of Canada. South of the U.S. border lies Mexico, a politically and geographically separate region with its own history of sign languages, including Mexican Sign language (LSM) (Palacios Guerra Currie, 1999; Quinto-Pozos, 2006; Ramsey & Quinto-Pozos, in press).

How did ASL emerge, and how did it come to replace the various smaller sign languages that once existed in North America? In his meticulous chronicle of deaf society in America, Jack Gannon (1981) provides a description of nearly every school for the deaf founded in the U.S. starting with Hartford, Connecticut in 1817. From looking at

Gannon's history, it can be seen how deaf schools in America established later in the 19th century were descendants of the first deaf schools, creating an unbroken line of ASL transmission throughout the U.S. and Canada.

Take for example the language history of two of the first deaf schools founded in America: the American School for the Deaf in Hartford, Connecticut and the Pennsylvania Institute for the Deaf and Dumb in Philadelphia. Thomas Hopkins Gallaudet is credited with persuading a signer of LSF to travel from Paris to Hartford for the purpose of helping him establish a new school for deaf children in the U.S. As the record shows, Gallaudet's co-founder of the school, Laurent Clerc, was instrumentally involved in developing the teaching curriculum at Hartford through which his native LSF was introduced to the school. Two years later, in 1819, when a scandal involving the head of the Pennsylvania Institute for the Deaf and Dumb threatened to topple the new school, the Board of Directors wrote to Clerc and asked him to assume directorship of the school. Clerc came to Philadelphia and remained there for ten months, after which a new director was found, and he returned to Hartford. Clerc lived out the rest of his life in the U.S., providing what must have been a stable presence for the intermingling of LSF and the different sign languages in existence in the early part of the nineteenth century.

Woodward (1978) speculates on the basis of a lexical comparison of modern LSF and modern ASL that LSF competed with other sign languages of New England which were already in place at the school, and these languages subsequently underwent a "massive abrupt change due to creolization" (p. 339) to become what is now known as ASL. If LSF was imported to America and entirely adopted as the language of the Hartford school, then the two languages should be more similar. Instead Woodward found a comparatively

lesser number of identical vocabulary, at about 58%, compared to a standard of 80% used by spoken language lexicographers to determine that two related languages are dialects (Gudinschinsky, 1964). Woodward finds additional support for the diminishing of LSF in favor of competing sign languages from Clerc's own diary where he writes about the failure to convey the language of his forbears, the French Abbés de l'Épée and Sicard, directly to the American students:

> I see, however, and I say it with regret, that any efforts that we have made or may still be making, to do better than, we have inadvertently fallen somewhat back of Abbé de l'Épée. Some of us have learned and still learn signs from uneducated pupils, instead of learning them from well instructed and experienced teachers. (Clerc, 1852 from Woodward, 1978:336)

Because so many deaf children from Martha's Vineyard attended the first decades of the Hartford school, it is possible that Martha's Vineyard Sign Language (MVSL) was an important contributor to early ASL, but there is limited evidence from Groce's interviews with elderly people on the island that like LSF, MVSL did not dominate ASL. When the deaf children returned to the island after having been at the Hartford school, they were using signs that were not recognized by those who remained behind on the island, suggesting that their MVSL signs had been replaced.

From its beginnings, ASL spread throughout other parts of New England and then into Canada where Clerc's influence was clearly present. Clerc trained Ronald MacDonald, a hearing man from Québec who then established the first Canadian school for deaf children in the city of Québec in 1831 (Carbin & Smith, 1996). Canadian deaf students

attended the Hartford school as well, which brought them into contact with the sign language used there. Within the U.S. Deaf associations were formed, including the National Association of the Deaf in 1880 and the National Fraternal Society of the Deaf in 1901, and their membership began to meet nationally at conventions that brought together signers from various places in the country. What is notable about North America is how readily signers travel across large regions, from Massachusetts to to what is today the state of Maine in the 18th century and then across national boundaries into Canada in the early 19th century. ASL users then spread to the midwest and westward to California, arriving by the middle of the nineteenth century. Today, the ASL-using population within North America is enormous compared to other sign languages of the world, and spans a very large geographic area.

Groce (1985) suggests that more historical research might uncover the contributions of the different sign languages in existence before the Hartford school and how they came to shape ASL. In recent work using dictionaries and films from the early 1900s, Ted Supalla (2004) compared early ASL forms with modern forms to show the pattern and direction of morphological change in ASL. He finds examples of phrasal compounds in older ASL (WATER~FLOW=RIVER) that have reduced as single signs over time (RIVER), leading him to conclude that compounding is a common source of lexical development in ASL, and probably in many other sign languages. Research of this type comparing older and newer signs has the potential of guiding historical analyses of early ASL and its vocabulary, by suggesting what forms older ASL signs may have had and in what direction they change over time.

Sign languages of the Middle East

A different approach is to look at modern research on sign languages in other areas of the world and observe how social and cultural forces in that region shape the ways in which the sign languages of that area meet and interact. One such region is the Middle East, which turns out to be significantly different from the U.S. and Europe in a number of respects. First, there is a different pattern of schooling for deaf children in the Middle East which affects the ways in which deaf children meet each other. Second, political boundaries in this region have shifted and changed significantly over the last two centuries, influencing how groups of individuals travel within the region. Third, this region has more cases of genetically transmitted deafness compared to North America and Europe because of the cultural practice of consanguineous marriage (marriage to cousins) common throughout the area. The combination of these factors has resulted in a quite different pattern of sign language use and transmission, so much that it may help us understand the distribution of sign languages in other parts of the world. This pattern may also help us imagine what sign language transmission and use might have been like in Europe and North America in its earlier history.

We begin first with an account of the state's relationship with deaf children and adults who live within its boundaries within the Middle East. In Arab countries, the first deaf school was established in Jordan only recently, in 1964. A deaf school in Beirut, Lebanon was founded only a few years before in 1957. Generally, a recorded history of deaf schools, at least in the European or North American sense of providing public education for large groups of deaf children, did not appear in the Middle East until the 20th century. More generally, institutions managed by the government which remove individuals from families and communities for the purpose of residential placement in orphanages, schools

for the deaf or for the blind, asylums for the feeble-minded or insane, are either not present in this region, or only recently introduced. Disabled and deaf children remained with their families. In Israel, the first deaf school was founded in 1932 in Jerusalem, followed by another in Tel Aviv in 1941 and then in the northern part of Israel, in Haifa in 1949 (Meir & Sandler, 2008). Schools for children of other ethnic groups living in the Negev, such as Bedouins, were not available or widely attended until the late 1960s. Consequently many Bedouin deaf children did not leave their villages to attend schools for the deaf until after this time.

Second, travel in the Middle East is complicated by political and ethnic boundaries. A citizen of Jordan does not need a visa to travel to Syria or Lebanon, but she does if she travels south to Saudi Arabia, Qatar or Yemen. Depending on her ethnic background, a visa can be hard to obtain. A Palestinian from Jordan may not be able to travel into Israel or the West Bank. A Bedouin with Israeli citizenship can visit Jordan but such travel is infrequent unless there are family members in Jordan. Mobility among Bedouin women is more limited than among men, with some women unable to travel outside of their village unless accompanied by a husband or a male relative. The political landscape of the Middle East is highly complicated and changing, even decade to decade, making mobility of groups of people, including deaf people, restricted in any number of ways.

With respect to the incidence of deafness, childhood diseases are a cause in this area but genetically transmitted deafness is much more common than in many other areas of the world. Endogamy, or marriage between related individuals, is widely practiced and encouraged in Arab communities, including among Bedouins. For Bedouins, marriage between cousins is an accepted means of confirming strong family ties and sharing land

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inheritance within their village. Marriage between cousins also increases the chances of the parents sharing a common genetic inheritance. If a community has carriers of a genetic condition that results in deafness (importantly, not every community does), then deaf children can be born into that community. Shahin et al. (2002) report that "prelingual hereditary hearing impairment occurs in the Palestinian population at a frequency of approximately 1.7 per 1,000 and is higher in some villages." They compare this figure with the global average reported by Nadol (1993) as 1 per 1,000, making the incidence of deafness in Palestinian areas at least 70% higher.

It should be mentioned that though these factors are common among Arab sign languages, they are not exclusive to them. Endogamy and genetic factors also played a role in the development of a sign language used within a Jewish enclave in Ghardaia, Algeria (Briggs & Guède, 1964; Lanesman & Meir, 2007). When the Jewish settlement left Ghardia in 1966 and immigrated to Israel and France, deaf and hearing signers brought their language with them to Israel where it exists today as a minority sign language in Israel. These three factors: endogamy, recent introduction of schooling and restricted mobility, taken together describe a region quite unlike North America and Europe politically, historically, and culturally. As it turns out, the distribution of sign languages in this region has a markedly different pattern.

The description of genetic relationships between languages, or the study of language classification in spoken languages, uses three types of comparisons: 1) basic vocabulary, 2) sound correspondences, and 3) patterned grammatical agreements. As a first and partial measure of sign language similarity and diversity in this region, Al-Fityani & Padden (to appear) compared basic vocabularies of five selected sign languages in the

Arab world: Jordanian Sign Language (LIU), Kuwaiti Sign Language (KSL), Libyan

Sign Language (LSL), Palestinian Sign Language (PSL) and Al-Sayyid Bedouin Sign

Language (ABSL).[3] These languages were selected in part because each had published

sign language dictionaries large enough for a vocabulary comparison. In terms of

categories of sign languages discussed earlier, four of the sign languages in our

comparison set are what we would term deaf community sign languages. They are used

in the major city centers of each country, and the vocabulary of their dictionaries are

recognized by some community standard as general to the country. The sixth sign

language, ABSL, is a village sign language, used by a closed, insular community of

Bedouins in southern Israel (Sandler, Meir, Padden, & Aronoff, 2005). ABSL is a new

sign language, having first appeared about 75 years ago when deaf children were born

into the community. At present there are about 125 deaf children and adults in a

community of 3500.

Figure 1. Map of the Middle East

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[3] By no means do these represent an exhaustive list; many more Arab sign languages exist in this region, e.g. in Saudi Arabia, Yemen, Syria, Qatar, Egypt and Morocco.

Vocabulary items used for the analysis were drawn from published dictionaries of the sign languages with the exception of ABSL, which does not yet have a dictionary. Instead ABSL vocabulary was elicited through interviews with signers on video. As a baseline, we compared LIU vocabulary with vocabulary of a sixth unrelated sign language, ASL. Because there is no history of contact between ASL and LIU, we expected the lowest number of similar signs compared to the other sign languages, all of which may have more possibility of contact because they are in the same region.

The analysis was performed on vocabulary that could be retrieved using dictionaries of the five sign languages. This method somewhat constrained the size of the vocabularies used for comparison because we were dependent on which vocabulary was included in a given dictionary (Table 1). The PSL dictionary, for one, included more academic vocabulary than the other dictionaries. For more detail about which vocabulary items were selected for the analysis and how similarities were recorded across vocabularies, see Al-Fityani (2007) and Al-Fityani & Padden (to appear).

	PSL	KSL	LSL	ABSL	ASL
Total signs	167	183	267	165	410

Table 1: Number of vocabulary items used for comparison between LIU and PSL, KSL, LSL, ABSL, and ASL

On the basis of political and ethnic history and a shared border, we expected that the vocabularies of LIU and PSL to show some similarity, and our analysis supported the prediction, with about 58% of their vocabularies showing similarity. In our analysis the

comparison was not with all known vocabulary items in the two sign languages, but with vocabulary that the two dictionaries had in common which had previously been identified as not indexic or directional.[4] Next ranked in terms of similarity was LIU and KSL, at 40%. There is a history of contact between Jordan and Kuwait among both hearing and deaf people when job opportunities became available for Jordanians in Kuwait in the last couple of decades.

Crowley (1992) defines two spoken languages descended from a common ancestor as dialects if 80% or more of their vocabulary are identical or highly similar. In order to determine whether any set of these sign languages in the Middle East are dialects, we would need cultural and social evidence of sustained contact between signers of different communities and further linguistic evidence. At present, we have only vocabulary comparisons, not other evidence more readily available to spoken languages such as sound correspondences and patterned grammatical agreement. The vocabularies of KSL, PSL and LIU have some level of shared vocabulary, but it would be difficult to argue that they are dialects on the basis of basic vocabulary alone. Libya is in the Northern Africa area of the Middle East, geographically more distant from Jordan, and as expected, the two vocabularies are mostly not similar, sharing only 34% of their items. ABSL, a village sign language which is geographically proximal to Jordan, shows the lowest amount of similarity of all, at 24%. Only ASL is more dissimilar, at about 18%.

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[4] We did not compare signs involving pointing to locations on the body: eyes, head, ears, etc., nor did we compare indexic signs of direction and position such as up, down, this, or that.
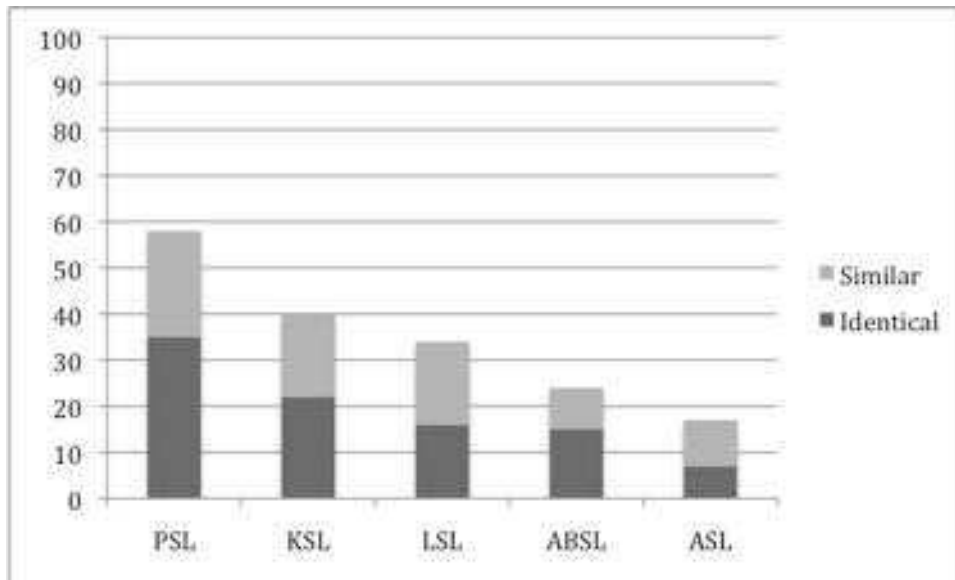
Figure 2. Cognates between LIU and other sign languages

These figures reflect patterns of mobility and political geography in the region. Since 1948, Palestine and Jordan share a border that has tightened and loosened depending on the political situation, but in general, Palestinians cross the border at Jordan with some difficulty. A Jordanian who wishes to travel to Kuwait or Libya must have a visa, which can discourage easy travel, at least more so than to Syria or Lebanon.

In Al-Sayyid, as in many other Bedouin villages, ties are especially strong within the community; marriage is encouraged among members within the village rather than with outsiders. Strong in-group ties among Bedouins led to the emergence of a village sign language which exists apart from other sign languages despite the geographical proximity of Al-Sayyid to the deaf community sign languages of Israel and Jordan. Some Bedouins in Israel have family members in Jordan, and they can travel between the countries, but travel is not easy, nor is it frequent.

Given the restrictions in mobility, how is it that apparently unrelated sign languages such as LIU, LSL, KSL and ABSL have *any* sign vocabulary in common (ranging from about 30% to 20%)? And why does LIU have any vocabulary similar to ASL, a sign language on a different and more distant continent? The fact that there is residual similarity between the vocabularies of any two sign languages could point to unknown contact between the languages (say, through the media), but more likely, it demonstrates that the visual-gestural modality inherent in sign languages predisposes their vocabulary to similarity. Time and again, we have heard reports that ABSL "looks like" LIU, or even ASL! Such impressions are often based on seeing a single short video clip with one or two sentences. Clearly the iconicity of sign languages is compelling, and the fact of any kind of similarity between them immediately draws comparisons. This is both a problem and an opportunity in the historical study of sign languages.

Take for example, one of two signs that are used in Al-Sayyid for 'fish.' The first looks similar to the one-handed ASL sign FISH, and it shows the movement of a prototypical fish. (On close examination, they are not exactly alike; the ASL sign involves movement only in the hand while the ABSL sign involves movement in the arm.) The other sign used by some ABSL signers is two-handed (Figure 3). The latter form is also found in Indo-Pakistani Sign Language (Zeshan, 2000) and Ghardaia Sign Language (Lanesman & Meir, 2007). Does this mean that the three sign languages have some history of contact? It is highly unlikely that Bedouin signers from southern Israel would have opportunity to meet Pakistani or Jewish Algerian signers from Ghardaia. Instead what is more likely is that the same sign was created independently in three different places in the world.

Figure 3. Illustration of FISH in ABSL, similar forms appear in Pakistani Sign Language and Ghardaia Sign Language.

In another comparison of vocabularies of related and unrelated sign languages, Currie, Meier and Walters (2002) examined the vocabulary of the sign languages of Mexico and Spain with Japan and found a residual amount of similarity (23%) between their vocabularies despite the fact that the Mexican Sign Language and Japanese Sign Language have no history of contact. They argue that the visuo-spatial modality may allow different sign languages to create similarly iconic forms by accident.

The presence of iconicity in sign languages confounds historical analysis to some extent, but it also suggests to a different approach to understanding how sign languages develop and evolve over time and space. New sign languages can simply create new vocabulary instead of borrowing them from other sign languages. If it is the case that ASL was not greatly influenced by either MVSL or LSF, then ASL must have created a large number of new vocabulary instead of borrowing all vocabulary from input sign languages. Whether sign languages are more likely to create new vocabulary than borrow from another sign language could be tested empirically by looking at village sign languages

that come into contact with other village sign languages, or cases where several village sign languages develop into a deaf community sign language.

Sign language geography in a global perspective

As in North America, there is a common spoken language used throughout the Middle East region, but with respect to sign language geographies, the two regions are very different. Where one sign language dominates in most of North America, the Middle East has many more distinct and smaller sign languages. In addition to the Arab sign languages mentioned earlier, there is the deaf community sign language of Israel, Israeli Sign Language. Looking at the two countries in the region that share a border, Israel and Jordan, for example, we see that there are very different sign languages on either side. Al-Sayyid, a Bedouin village in the Negev is only about 80 miles from Amman, the capital of Jordan, but LIU and ABSL are almost as dissimilar as LIU and ASL, though there are Bedouins living on both sides.

North America has no village sign languages, though there were some in the last century: MVSL, now extinct, and Maritime Sign Language from Nova Scotia, which has some elderly signers but is dying (Carbin & Smith, 1996). As explained earlier, the fact that schools for the deaf have only recently been introduced in the Middle East, and that schooling was made compulsory only recently, most likely accounts for why there are still village sign languages in this region. From the Middle East example, we can begin to see how schooling, incidence of deafness and political geography can interact to create quite different languages and language situations.

From contemporary examples such as ABSL, we can imagine how the village sign languages of Martha's Vineyard and Henniker, New Hampshire might have developed. By observing the development of a new deaf community sign language in Israel, formed when Israel became a state in 1948, and more recently in Nicaragua, we can speculate in useful ways how the different sign languages in the nineteenth century came together to create what is now modern ASL.

In the end, we may finally be able to evaluate whether the notion of "language family" can be usefully adopted to describe genetic relationships between sign languages and how they change and are transmitted over time and across space and geography. We will be that much closer to understanding why and how sign languages and spoken languages are fundamentally alike – or different.

Appendix of abbreviations

ABSL – Al-Sayyid Bedouin Sign Language

ASL – American Sign Language

Auslan – Australian Sign Language

BSL – British Sign Language

KSL – Kuwaiti Sign Language

LIU – Jordanian Sign Language

LSF – French Sign Language

LSL – Libyan Sign Language

LSM – Mexican Sign Language

LSQ – Quebec Sign Language

MVSL – Martha's Vineyard Sign Language

PSL – Palestinian Sign Language

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