Sign Language Geography in the Arab World

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1. INTRODUCTION

Every evening, the Al Jazeera satellite channel features a one-hour, comprehensive newscast of world events. Superimposed in the corner of the television screen is a box containing a sign language interpreter who translates the spoken Arabic of the newscaster. The interpreter is one of a team of Jordanian Sign Language (LIU)[1] interpreters who regularly interpret the newscast. However, the sign language they use is not strictly LIU. Heavily influenced by LIU, it is a newly devised sign language which uses vocabulary drawn from different Arab sign languages, including Egyptian Sign Language and Saudi Sign Language. The vocabulary was compiled in a dictionary by the Council of Arab Ministers of Social Affairs (CAMSA), a committee within the League of Arab States (LAS).

The effort by CAMSA to encourage a standard pan-Arab Sign Language (ArSL) has been met with wide resistance in large part because deaf viewers say they cannot understand the language. In this paper, we describe the geography of sign languages in Arab countries. As we explain, there already exists a number of sign languages used by

[1] LIU is the abbreviated form of the Arabic-English phonetic translation, *Lughat al-Ishara al-Urduniyah.*

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Arab deaf communities. Some are designated as nation-state sign languages and are used in the instruction of deaf students in their educational systems. The adoption of ArSL by Arab countries potentially threatens the future of these nation-state sign languages as well as an unknown number of smaller sign languages existing within this region. If ArSL were to substitute for any of these sign languages, it could potentially take on a colonial face and delimit the expression of the community's identity.

CAMSA's rationalization for the creation of the new ArSL is "to meet the needs of integration of deaf persons into society" (Council of Arab Ministers 2004). One way to achieve that goal according to CAMSA is to provide deaf people in the Arab world a comparable language situation that exists for hearing people, namely a common language.

More than two hundred million inhabitants of twenty-two countries across the Middle East and North Africa speak Arabic.[2] However, should a Yemeni and a Tunisian meet, it is unlikely that their Arabic would be intelligible to the other. The Arab world is characterized by pervasive "diglossia," a language situation in which regional dialects are spoken alongside a highly codified written language. Of the Arabic dialects, the Egyptian dialect is most widely understood by Arabs, since Arab cinema and other entertainment media is largely Egyptian-based and typically uses Egyptian actors. If a Yemeni and a Tunisian meet, they can resort to the dialect of movie stars to understand each other or

[2] The 22 countries are Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates, and Yemen (League of Arab States nd).

they could use the highly codified language of Modern Standard Arabic (MSA) which is used by newscasters and public officials in Arab countries. Although it is the mother tongue of no one, MSA is the official literary standard of Arab countries and is the form of Arabic taught in schools at all stages. Indeed, spoken colloquial Arabic, as the regional varieties are often called, is rarely found in a written form. In addition to education, MSA is prevalent in government and news media, allowing Arabs to communicate with and understand each other across nations despite varying regional dialects. It is commonly said that the Arabic language is what unites the different members of the Arab community, despite the different geographies and cultural traditions that can be found throughout the region (Suleiman 2003).

Studies of sign languages in other areas of the world show that they do not map entirely onto the geography of spoken languages. Sign languages in English-speaking countries such as the United States and Canada on the one hand, and Australia, New Zealand, and the United Kingdom on the other, have distinct histories. McKee and Kennedy 2000 describe Australian Sign Language (Auslan), British Sign Language (BSL), and New Zealand Sign Language (NZSL) as dialects of a single parent language, BANZSL (British, Australian, and New Zealand Sign Language; see also Schembri et al. this volume). Using a lexicostatistical analysis of random vocabularies, they conclude that the three languages belong to the same family tree but are dissimilar enough to qualify as dialects. In other research, Mexican Sign Language (LSM) and Spanish Sign Language (LSE) are described as distinct languages despite a common spoken language shared between the two respective countries (Currie et al. 2002). With respect to Arab

sign languages, Abdel-Fattah 2005 suggests that the presence of a standard Arabic spoken language has led to the expectation that there should be a shared common sign language.

This paper explores the geography of sign languages of Arab countries by examining relationships among selected sign languages in the region. The method used is lexicostatistics, which compares similarity of vocabulary across sign languages to determine the type and extent of a language relationship between two or more languages, or as might be the case, no such relationship exists.

1.1 Sign Language Communities in the Middle East

At least three ongoing circumstances affect the distribution of sign languages in the broader Middle East region. First, as Walsh et al. 2006 describe below, certain marriage traditions are common in the region:

The unique demographic history of the Middle East has led to many [endogamous] communities. For more than 5,000 years and continuing to the present, the eastern shores of the Mediterranean have seen immigration of people from a wide variety of cultures. Villages were often established by a few extended families and, despite their geographic proximity, remained demographically isolated. For centuries, marriages have been arranged within extended families in these villages, leading to high levels of consanguinity and consequently high frequencies of recessive traits. (p. 203)

The common practice of endogamy has resulted in a high incidence of genetic deafness in this region compared to exogamic societies where deafness is more likely the result of disease than of genetic inheritance. Shahin et al. 2002 report that while approximately one in one thousand infants worldwide are born with hearing loss, communities with high levels of consanguinity have especially high frequencies of inherited childhood deafness. They state: "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" (Shahin et al. 2002, p. 284). This means that in Palestine, the frequency of deafness is 70% higher than the global average.

From the few reports of sign languages in such communities, they are not confined in usage to places where deaf people are brought together by social institutions, such as schools for the deaf or local clubs for the deaf, instead they are also used within family and community settings. As Groce 1985 illustrates in her history of nineteenth-century Martha's Vineyard where there was a high incidence of recessive deafness, sign languages are likely to flourish in such communities as deaf people and hearing people use signed communication on a regular basis. Kisch 2004 describes the case of the Al-Sayyid Bedouin community in the Negev, where consanguineous marriage is common and frequencies of hearing loss is high at 3% of the population due to genetically recessive traits of profound prelingual neurosensory deafness. Sandler, Meir, Padden, and Aronoff 2005 also write of this community:

Members of the community generally recognize the sign language as a second

language of the village. Hearing people there routinely assess their own

proficiency, praising those with greater facility in the language… One result of [recessive deafness] is that there is a proportionately large number of deaf individuals distributed throughout the community. This means that hearing members of the community have regular contact with deaf members and that, consequently, signing is not restricted to deaf people. (p. 2662)

Recently, Meir and Landesman 2007 have begun to describe a minority sign language in Israel used by Jewish emigrants from Algeria whose families once lived in an insular Jewish community within the old trading city of Ghardaia. Following a pattern common to the region, members of the community married within extended families, and deaf individuals began to populate the Jewish community (Briggs 1964).

Second, cultural and social circumstances in the Middle East provide somewhat more opportunity to learn sign languages from birth. With higher incidence of genetic deafness, sign languages are able to survive across generations within a family, compared to other regions of the world where genetic deafness is less frequent. Where deafness is a result of disease, a deaf person's chances of learning a sign language are more dependent on having access to organizations or institutions organized for deaf people. In the Middle East, sign language survival is not dependent on formal institutional policies.

Third, cultural, social, political, and economic circumstances lead sign languages in the region to be more likely to be isolated from one another. Within the Arab world, marriage customs give preferential treatment for partners from the same region as they are more likely to share a common dialect and customs. Moreover, political factors of immigration regulations within Arab countries make it difficult for nationals of one

region to travel to another. For these reasons, a Jordanian woman is more likely to marry a man from the Levant region (eastern countries of the Middle East) as opposed to one from a Gulf state. This is because she would need a visa to travel to Dubai, for example, but not one to travel to Damascus or Beirut. Moreover, proximity of Damascus and Beirut to Jordan makes it more economically feasible for a Jordanian woman to meet a man from these cities as opposed to meeting a Qatari man. Inasmuch as cultural, social, political, and economic factors restrict such contact, sign languages in the Arab world would arise within boundaries that possibly isolate them and allow them to develop independently from each other. Research on sign languages in the Arab world may reveal interesting findings on the geographic distribution of sign languages that are used on a daily familial and tribal social basis as opposed to those found in a more state formalized, institutional basis.

1.2 Lexicostatistical Analyses of Sign Languages

The methodology of comparative lexicostatistics is used to develop hypotheses on possible historical relationships among spoken languages (Crowley 1992). This is done through a quantitative study of cognates among the vocabularies of the languages under study. Cognates are defined as vocabulary from two different languages that are homogeneous enough to be considered as having similar linguistic derivation or roots. A comparison among spoken languages involves identifying similarities in syllable and segmental structure; in sign languages, cognate similarity is based on comparing

handshapes, movements, locations, and orientations of the hand in vocabulary of two different sign languages.

Many spoken language linguists use basic 200-word lists as the basis of their lexicostatistical research as opposed to longer lists, as a convenient and representative way of sub-grouping languages. The higher the lexicostatistical percentage among spoken languages' cognates, the closer the historical relationship among the languages as it points to a more recent split from a common parent language (Black & Kruskal 1997). Within the lexicostatistical methodology, Crowley 1992 defines languages to be dialects if they share 81-100% of cognates in core vocabularies. They are considered as from the same language family if they share 36-81% of cognates, and families of a "stock" if they share 12-36% of cognates. By "stock," lexicostatisticians do not identify the languages as descending from one common ancestor language, instead, the term recognizes that languages within a region can have opportunity for contact with one another. Greenberg 1957 provides four causes of lexical resemblances across languages, only two of which are historically related: those are genetic relationship and borrowing. The other two are shared symbolism, where vocabularies share similar motivations either iconic or indexic, and finally, by chance.

Woodward 1978 is one of the first sign linguists to conduct lexicostatistical research on sign languages. He compared the lexicon of French Sign Language (LSF) from a sign language dictionary with ASL, where one set of signs were elicited from an older deaf man and another set from younger ASL signers. He began with a list of 200 core words from the Swadesh list, a common tool among anthropologists for eliciting a

basic vocabulary, but excluded numerals, pronouns and body parts because they are indexical and highly iconic. With 77 words remaining on his list that had counterparts in the LSF dictionary, he found 61% cognates for both sets of comparisons of LSF with the older deaf man and with the younger signers. Substituting the modified core vocabulary list for all 872 available signs in the LSF dictionary, he found that cognates dropped slightly to between 57.3-58% for both sets of ASL signs. Woodward concludes that contrary to popular belief that ASL descended from LSF, it is more likely that some number of sign language varieties existed in the United States before contact with LSF was made, after which a creolization process took place leading to what is now ASL.

Woodward 1991 also carried out lexicostatistical analyses of several sign language varieties found in Costa Rica. With results ranging from between 7-42% cognates, he concluded that there are at least four distinct sign languages in Costa Rica. In a third study, he compared sign language varieties in India, Pakistan, and Nepal with results ranging from 62-71% cognates (Woodward 1993). He finds that these varieties are separate languages but belong to the same language family. When comparing Modern Standard Thai Sign Language and ASL, Woodward found that the languages share 57% cognates which reflects recent long-term contact between American deaf educators and deaf Thai Sign Language users (Woodward 1996). Unfortunately, in these studies Woodward does not identify how many or which parameters are taken into account when determining cognates.

Using Woodward's modified core vocabulary list of 100 concepts, McKee et al. 2000 examine three historically related sign languages: New Zealand Sign Language

(NZSL), ASL, Australian Sign Language (Auslan), and British Sign Language (BSL).

The researchers then compared these sign languages with ASL. The vocabularies used for

analysis were drawn from dictionaries and CD-ROMs of the respective sign languages.

They identify signs as cognates if all phonemic parameters (handshape, location,

movement, and orientation of the palm) are *identical* or if one parameter is different.

Vocabulary that falls in the latter category is designated *related-but-different*, that is,

similar enough to have a common origin. They found that between 79-87% of the

vocabularies of Auslan, BSL, and NZSL are cognates, which would designate them as

dialects of a parent language. The researchers were not surprised by a high degree of

similarity, as both Auslan and NZSL have colonial origins in common, when deaf

educators and other immigrants brought BSL to Australia and New Zealand from the

United Kingdom. Moreover, there has been frequent contact between deaf people from

Australia and New Zealand. This is in contrast to ASL which has no historical linkage

with these three sign languages. As expected, the researchers found that only 26-32% of

ASL vocabulary was identical or similar to Auslan, BSL, and NZSL, confirming that

ASL is unrelated to the other three.

McKee et al. acknowledge that some linguists criticize the method of using a

selection of "core vocabularies" as a basis for comparing vocabularies. Because such

vocabulary often consist of high frequency words, this method may overestimate the

similarities among the sign languages in the sense that such words are likely to persist as

languages change over time. Instead random vocabularies should be used for comparative

purposes. After altering Woodward's methodology to double the vocabulary being

compared and to include more random vocabulary as opposed to core vocabulary from the Swadesh list, McKee et al. found that the number of cognates between NZSL and each of Auslan and BSL dropped dramatically to 65.5% and 62.5% respectively. As expected, cognates between NZSL and ASL remained low at 33.5%. The researchers reason that the slightly higher rate of commonality between NZSL and Auslan than that between NZSL and BSL is related to geographical proximity and to educational policies in which the New Zealand Department of Education adopted the Australian Total Communication Signed System in 1979 which continued to be used until the early 1990s. Their first analysis supported the conclusion that NZSL was a dialect of Auslan and BSL because it fell within the lexicostatistical range of 81-100%, but after altering the vocabulary set, the conclusion was weakened somewhat, suggesting instead that NZSL belongs to the same language family as Auslan and BSL with significant divergence having occurred between them.

Currie, Meier, and Walters 2002 counted cognates in their lexicostatistical comparison of LSM with French Sign Language (LSF), Spanish Sign Language (LSE), and Japanese Sign Language (JSL). LSM is compared with LSF as there is reason to believe they are historically related. A deaf French educator came to Mexico in 1866 when he first learned of a deaf school being established there. Consequently, some believe LSF may be a source of borrowing for sign language(s) in Mexico. With Spanish being a shared spoken language in Mexico and Spain, LSM and LSE may have a basis for similarity. Finally, because they have no known historical relationship, the

comparison of LSM and JSL is used as a control to approximate the possible degree of similarity between two unrelated sign languages.

Data for the analysis was retrieved from videotaped elicitations. Word lists ranged from 89 signs for the LSM-LSE comparison to 112 for the LSM-LSF comparison and 166 for LSM-JSL. Signs from different vocabularies were designated as cognates if they shared two out of three parameters. Unlike McKee et al. 2002, Currie et al. 2002 exclude the fourth parameter of orientation. They report 38% cognates for LSM-LSF, 33% cognates for LSM-LSE, and 23% for LSM-JSL. While there is history of contact between LSM and LSF, it is clear that their historical development is non-genetic. They attribute the similarity between LSM-LSF to borrowing. Their findings also do not support similarity between LSM and LSE even though they exist in communities that share a spoken language, Spanish. Finally, the LSM-JSL comparison provides a base level of the degree of similarity between any two sign languages that may have shared iconicity. They argue that the visual-gestural modality of sign languages and their capacity for iconic representations support at the very least, a minimal level of similarity among unrelated sign languages.

1.2.1 Lexicostatistical Analyses of Sign Languages in the Arab World

Genetic relationships among major sign languages in the United States, Western Europe, and the British colonies are mapped onto the history of deaf education in these regions, but relationships among sign languages of the Arab world may follow an entirely different pattern given that schooling for deaf children was introduced much later in the

region. Brother Andrew, a pioneering educator of deaf people in the Arab world, credits Father Andeweg, a fellow Dutch Anglican missionary, with the establishment of the first school for deaf people in the region in Lebanon in the late 1950s. Brother Andrew came first to Lebanon in the capacity of a teacher and later moved to Jordan in 1964 to resuscitate a deaf school that had been also established by Father Andeweg (Holy Land Institute for the Deaf 2004).

The Holy Land Institute of the Deaf (HLID) in Salt, Jordan is now considered a model school for deaf people in the Arab world. Schools for deaf people in other Arab countries did not open until several years later. These schools were established by their respective governments and largely without influence from Europeans. HLID being a rare exception, most schools for the deaf in the region emphasize oral methods of communication, preferring it to sign language. Given the youth of such institutions for deaf people and their continued advocacy of oral methods for communication, we would expect sign language development in the region to exhibit a different geography from that in Europe and North America.

The following section explores similarities and differences among sign languages of the Arab world through the method of lexicostatistics. The sign languages being compared are: Jordanian Sign Language (LIU), Kuwaiti Sign Language (KSL), Libyan Sign Language (LSL), and Palestinian Sign Language (PSL). LIU will also be compared with Al-Sayyid Bedouin Sign Language (ABSL)[3], a sign language used by a community of deaf and hearing Bedouins in southern Israel. Hearing members of this community

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[3] ABSL is used in the Al-Sayyid community in the Negev Desert in Israel.

speak Arabic. Finally, as a baseline, LIU will be compared with ASL with the expectation that percentage of cognates will be low due to no known historic relationship between the two. However, as there are Jordanian professionals working with deaf people who have studied in the US as well as a few deaf Jordanians who have studied at Gallaudet University, there may be lexical borrowings from ASL to LIU.

2. METHODOLOGY

Vocabulary used for comparison was drawn from published dictionaries of the respective sign languages, with the exception of ABSL where the vocabulary was elicited through an interview with a deaf member of the Al-Sayyid community on video.[4] All vocabulary in the LIU dictionary and each of the other four dictionaries were used for the comparisons. The reason for such an extensive comparison was that using a modified core list or randomly selected vocabularies would have resulted in a smaller set of comparison vocabulary from the Kuwaiti and Libyan dictionaries, or a lack of comparison vocabulary as was the case with the Palestinian dictionary which was targeted towards high school and university students in the math and sciences, or more focused on local references such as names of organizations and royalty as is the case with the Jordanian dictionary.

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[4] Dictionaries used for this study are: Hamzeh 1993 for LIU, Palestine Red Crescent Society 2000 for PSL, Kuwaiti Sign Language Dictionary 1995 for KSL, Suwayd 1992 for LSL, Tennant and Gluszak Brown 1998 for ASL.

Individual signs of different languages were compared based on four phonemic parameters (handshape, movement, location, and orientation of the palm), following McKee et al.'s 2000 criteria. Non-manual differences such as facial markers were not included in the comparison.
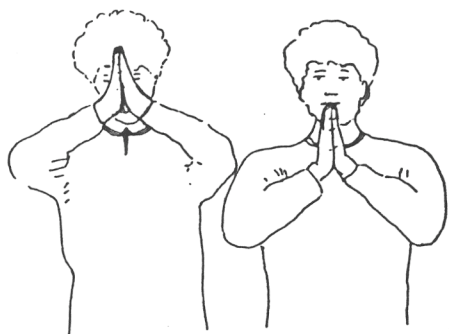
3. RESULTS

Following McKee et al., two signs from different sign languages were termed *identical* if they shared all four parameters, as in Figure 1.[5] They were termed *related* if they differed on only one of four parameters, as in Figures 2 and 3.[6] They were termed *different* if they differed on two or more parameters as in Figures 4, 5 and 6.[7]

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[5] The LIU sign for KORAN shows an arrow pointing upwards on the left, below the chin. The PSL sign for KORAN shows an arrow moving towards the forehead.

[6] The LIU sign for ELEPHANT has a D-handshape. The LSL sign for ELEPHANT has a flattened O-handshape.

[7] The LIU signs for HOUSE and UNIVERSITY show arrows, each pointing both upwards and downwards.

LIU   PSL

Figure 1. KORAN—The LIU sign is identical to its PSL cognate (4 shared parameters).
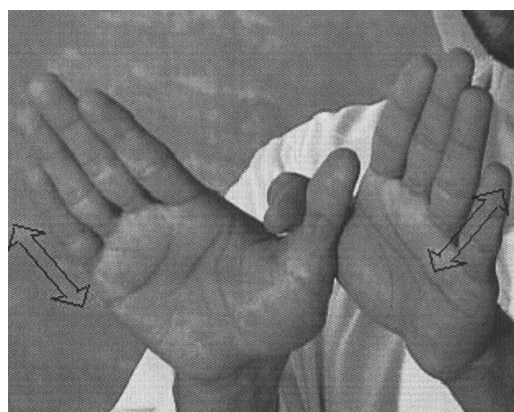
LIU   KSL

Figure 2. BUTTERFLY—The LIU sign is related to its KSL cognate (3 shared parameters; orientation differs).
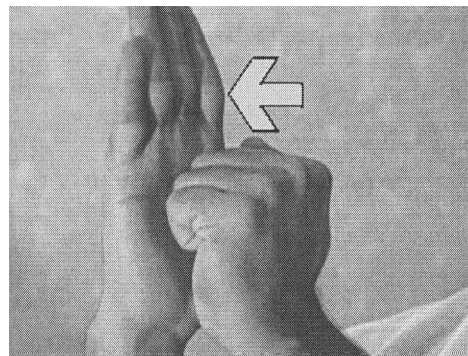
LIU   LSL

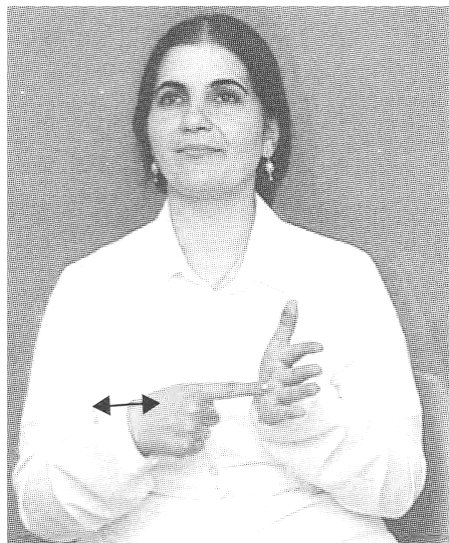**FIGURE 3. ELEPHANT—The LIU sign is related to its LSL cognate (3 shared parameters; handshape differs).**

LIU   KSL

Figure 4. HOUSE—The LIU sign is different to its KSL cognate (2 shared parameters; movement and orientation differ).

LIU   PSL

Figure 5. UNIVERSITY—The LIU sign is different to its PSL cognate (1 shared parameter; handshape, movement, and orientation differ).

LIU   LSL
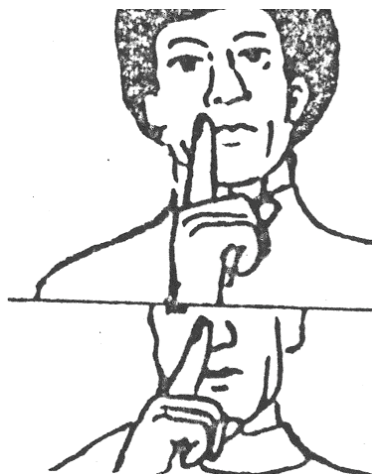
Figure 6. WHO—The LIU sign is different to its LSL cognate (0 shared parameters).

As Table 1 illustrates, between 165-410 vocabulary items were used for the different comparisons, depending on the available vocabulary for the languages. The numbers of vocabulary items are similar to past comparative research on sign languages.

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

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

Figure 7 shows that the sign languages being compared in this study probably are not dialects, despite the presence of a common spoken language, Arabic. As predicted, LIU-PSL had the highest number of identical and related cognates at 58%, reflecting their geographic proximity. Next in number of similar cognates is LIU-KSL with 40%, then LIU-LSL with 34% cognates, and finally LIU-ABSL was the lowest with 24% cognates. The final result is striking given that the two languages exist in neighboring countries, yet they are quite dissimilar when compared to LIU and PSL and LIU and KSL.
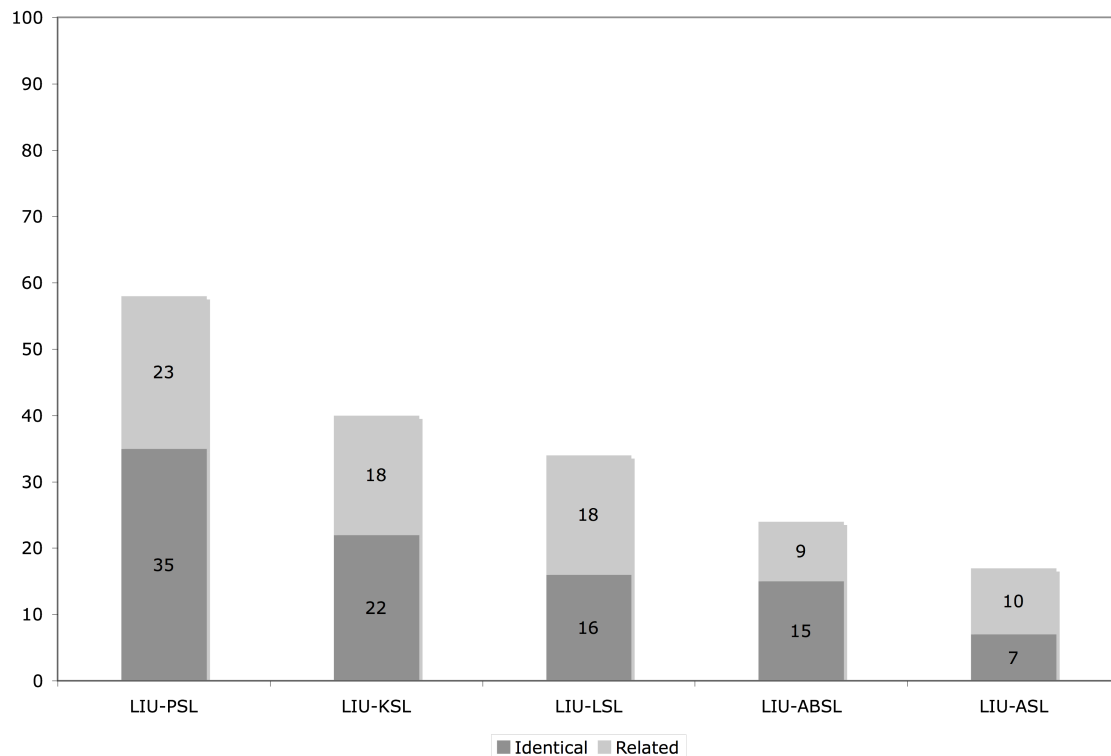
Figure 7. Cognates between LIU and other sign languages

4. DISCUSSION

From the data illustrated in Table 1 and Figure 7, we conclude that LIU-PSL and LIU-KSL are related but likely not dialects of the same language, as their cognates lie within the 36-81% range. As for LIU-LSL, LIU-ABSL, and LIU-ASL, they are most likely not related since they share only 12-36% of cognates. These results demonstrate first and foremost that the geography of sign languages in this region does not map onto that of spoken languages. Although ABSL, KSL, LIU, LSL, and PSL are languages existing in Arabic-speaking communities, they are distinct sign languages. Furthermore, geographic proximity does not always predict similarity; LIU and PSL are separated by the Israel/Jordan border, as is ABSL and LIU, but in the first case, the languages are more similar than in the latter case. Clearly there are cultural and economic factors in play that influence the mobility of communities of signers within this region, which in turn influences how much contact sign languages have with each other. On the whole, these results contradict anecdotes that sign languages of the Arab world are mostly similar or are dialects of a common sign language. Instead, the results suggest that at least with respect to the sign languages in this study, they do not share common origins, or if they did at one time, they have since diverged greatly.

As expected and demonstrated in Figure 7, LIU and PSL share the most cognates of any two languages examined in this study. This is not unexpected as the Palestinian and Jordanian communities are tightly knit in terms of custom and marriage traditions. When we juxtapose the results of lexicostatistical studies of sign languages around the world, as we do below in Figure 8, it can be seen that LIU-PSL are as lexically similar to each other as are ASL-LSF. Woodward 1978 concludes that ASL and LSF do not share

roots, but that sign language varieties existed in the U.S. before any contact with LSF was made, after which a creolization process took place. Perhaps the same could be said of LIU-PSL, where they do not share roots but similarities develop through contact.
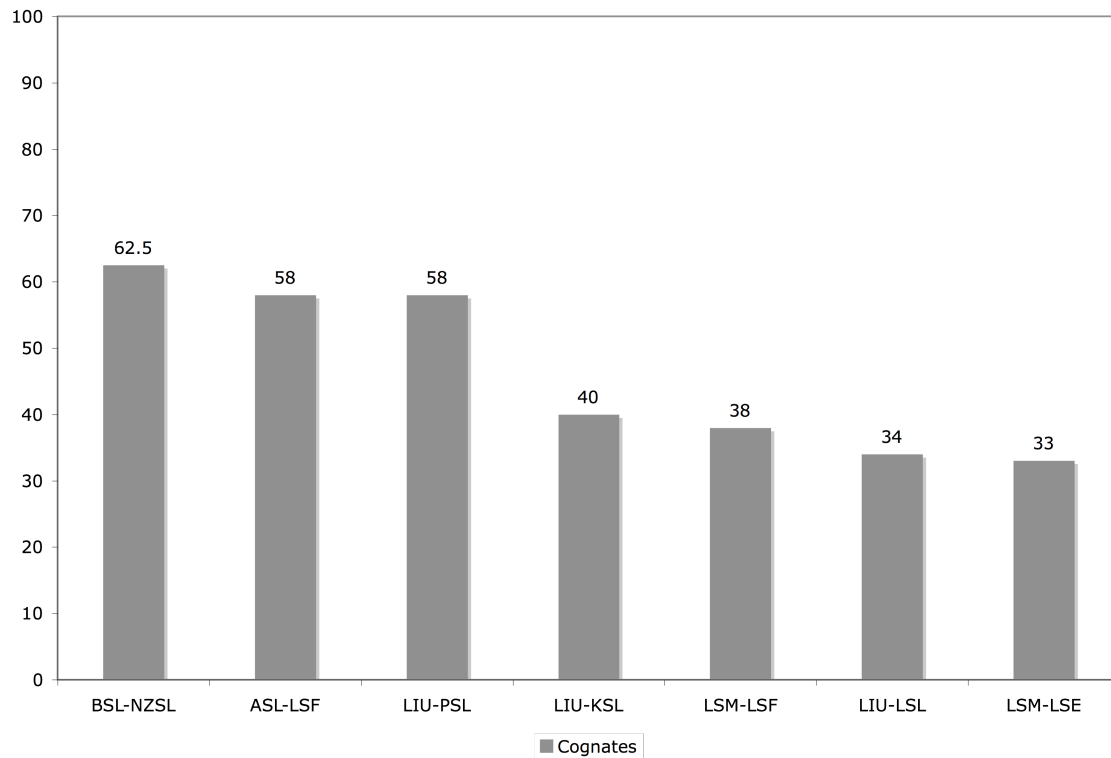

Figure 8. Vocabulary similarities between pairs of sign languages

Returning to sign languages of the Arab world, we find from our study that KSL and LSL have a lower number of cognates with LIU. Lexical similarity between LIU-KSL and LIU-LSL lie within the same range as LSM-LSF and LSM-LSE. Currie et al. 2002 note that while LSM and LSF have come into contact, their historical development is non-genetic. They also note that while Spanish is a common spoken language between Mexico and Spain, their sign languages are unrelated due to little opportunity for contact. While KSL and LSL may have come into contact with LIU, they are probably not

historically related. Also, that they share a similar spoken language may account for a degree of lexical similarity, as is the case with LSM-LSE.
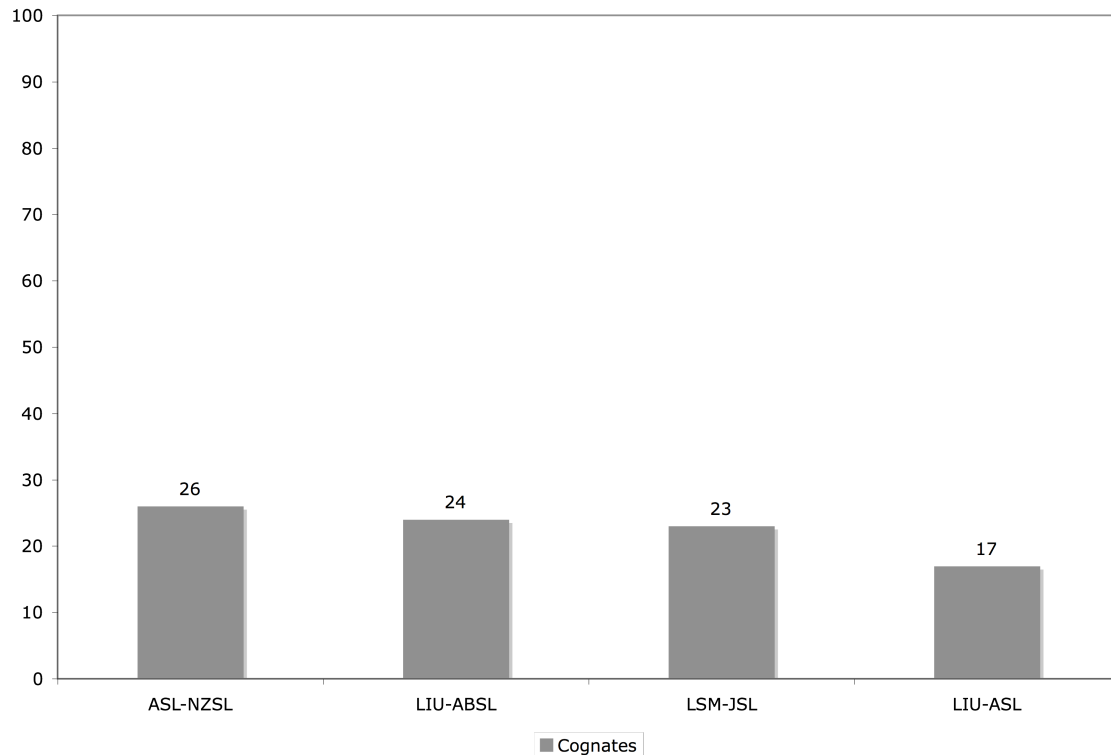

Figure 9. Base level similarities between unrelated sign languages

Finally, LIU and ABSL share the fewest cognates of all the sign languages studied. This confirms ethnographic reports that signers in the Al-Sayyid Bedouin community have little or only sporadic contact with signers in Jordan and other Arab countries. Only 24% of their signs were cognates with LIU of total vocabularies compared. Figure 9 shows that LIU-ABSL are within the same range of similarity as are ASL-NZSL and LSM-JSL, the latter being considered by Currie et al. 2002 as a base level of similarity that can be expected between any two unrelated sign languages. . This degree of difference falls just below the baseline of 26-32% that McKee at al. 2000 give

for ASL-NZSL. In fact, LIU-KSL and LIU-LSL at 40% and 34% cognates are not significantly higher than that base level. This suggest two things: 1) LIU, KSL, and LSL are probably unrelated historically, 2) the slightly raised level of similarity may be due to the fact that these sign languages exist within the Arab world where there are many common emblematic gestures. It is indeed said that speech, gesture, and culture are so intimately related to Arabs that to tie an Arab's back while they are speaking is tantamount to tying their tongue (Barakat 1973). It is not unlikely then to surmise that deaf Arab communities with little or no contact with each other can still have similar signs due to a shared gestural repertoire.

Least similar are LIU-ASL with 17% cognates. This is a lower rate than the 24% shared by LIU-ABSL. While these results fall within the unrelated category, the slightly higher base level for ABSL than for ASL may due to the fact that LIU and ABSL share the same culture. Sharing a similar cultural stock may account for higher lexical base levels among sign languages. It should also be noted that the difference might also be due to the discrepancy in vocabularies compared. In the LIU-ASL comparison, more than twice the vocabulary was available than with LIU-ABSL. Possibly if a larger vocabulary were compared, the degree of similarity would drop even further.

4. 1 Why Lexical Comparisons from Dictionaries?

Deeper language comparisons such as those that judge similarity of not just vocabulary but also morphology and sentence structure are likely to provide a more accurate measure of the degree of similarity among sign languages. A more extensive comparison may also take into account regional variations where similar vocabularies

between two languages might exist in one region of a country but in not another. However, lexical comparisons remain useful, as they provide a basis by which initial evaluations can be made before proceeding to delve deeper into the vocabulary and grammar of any two comparison languages. When compared side-by-side with lexical studies of other languages, rough boundaries for sign language geographies on a global scale can be drawn that would not otherwise be possible.

For similar reasons, dictionary entries are used instead of live elicitations. While live elicitations are superior in making available three-dimensional and temporal aspects of individual signs, they nonetheless have inherent limitations. The selection of representative signers can be problematic for an investigator, because signers and their vocabularies will vary depending on age, gender, region, and other individual factors such as fluency and competence. Since dictionaries (at least those that are developed within a community) are meant to be consensus points resolving disagreement within a language community, their use for lexical comparisons seems appropriate. Studies that work with very large sets of vocabulary than a representative set, as was the case with lexicostatistical studies described in this paper, will necessarily involve more time and funding. These may be difficult to obtain for sign language researchers working in different parts of the world. Finally, the current trend toward CD-ROM storage of sign language dictionaries would eliminate some limitations of lexical comparisons in the future, and most certainly benefit studies of sign language geography around the globe.

5. CONCLUSION

Given the tradition of endogamy in the Arab world which leads to high rates of

genetic deafness, most likely there has been a long history of sign languages in the region. As the results of this study show, many of these sign languages are likely to be distinct languages, not dialects, and are unrelated historically. Similarities in their vocabularies may be attributed to sharing similar cultural values and gestural repertoires. These results follow from the historical pattern of sign languages in the Arab world which develop largely in familial institutions as opposed to educational ones as is the Western pattern. Indeed, organized educational systems in the Arab world are relatively young. With cultural, social, political, and economic circumstances restricting contact among communities, numerous sign languages may develop within families and tribes. Our results show quite clearly that the geography of sign languages in the Arab world does not map onto that of spoken MSA.

The recent trend toward standardization of sign languages on a national basis in Jordan, Kuwait and Libya drawing from their schools suggests that a creolization or pidginization is now actively in place, where children from different families and tribes are converging and beginning to share a common sign language. The history of sign languages in this region presents a geography of sign languages unlike the situation in the West, where creolization and standardization has been underway since the nineteenth century. The Arab world situation can, however, be paralleled to Woodward's 1991 findings on sign languages used in Costa Rica, where he found several distinct languages among the numerous indigenous pueblos.

There is at least one implication of these findings in terms of a project to unify sign languages of the Arab world. The underlying assumption that sign languages of the

region are similar enough to be standardized may in fact be erroneous. It may be risky to engineer a "standardized" sign language in the Arab world, given the difficulty of standardizing languages that are historically unrelated.

Further research could examine more deeply the patterns of mobility among deaf people in the region, particularly gender differences in the region. Such research could investigate how social and cultural traditions of gender segregation and restriction of mobility of women limit the possibility of convergence of languages. This would differ from spoken Arabic where both genders have similar access to the spoken word through broadcast media to which deaf people have little to no access. Research may also take into account other linguistic features, such as grammar, to investigate further the nature and relationship of sign languages in the Arab world. A more ambitious research project should include other sign languages from the region that have recently documented their language in dictionary form such as in Egypt, Lebanon, and Yemen.

Finally, a key question in lexicostatistics of sign languages is whether two unrelated sign languages will turn out to have more vocabulary in common than any two unrelated spoken languages. The results of our comparison of five different sign languages in the Arab world show that two geographically distant sign languages can have a somewhat higher base level of similarity when compared to two unrelated spoken languages. Our results suggest that there is something inherent in the visual-gestural modality of sign languages that predispose their vocabulary to similarity. At the same time, the iconicity of tokens in the visual-gestural modality can be misleading in the sense that a casual observer might believe two sign languages are more similar than they

really are. In our study, we show that while there are some similar signs among sign languages in the Arab world, the languages in fact have quite large vocabularies *not* in common. Finally, we believe that lexicostatistical analyses of sign languages are valuable as means of addressing two important observations about sign languages: that two unrelated sign languages can have similar vocabulary, and conversely, that two sign languages in the same region can have *dis*similar vocabulary. In doing so, they can shed light on the history of sign languages in a region, but more broadly, they can address the remarkable history of sign language creation and development time and time again, all around the world.

6. ACKNOWLEDGMENTS

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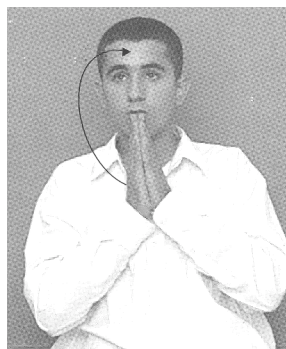Palestine Red Crescent Society. 2000. *Qamus lughat al-ishara al-Falasteeniyah*.

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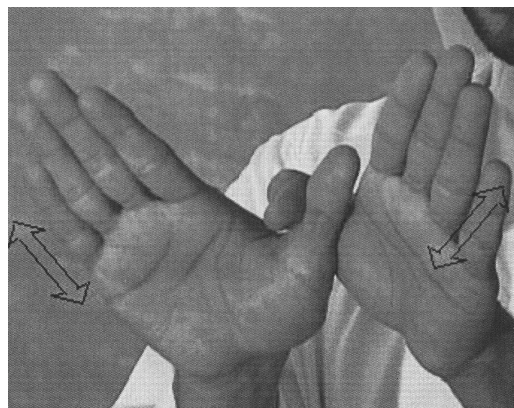
LIU   PSL

Figure 1. KORAN—The LIU sign is identical to its PSL cognate (4 shared parameters).

LIU   KSL

Figure 2. BUTTERFLY—The LIU sign is related to its KSL cognate (3 shared parameters; orientation differs).

LIU   LSL

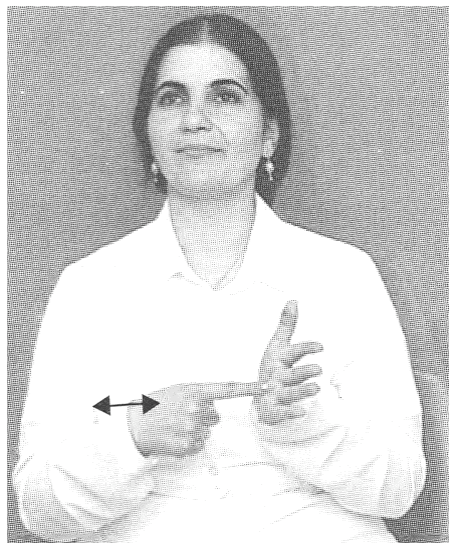**FIGURE 3. ELEPHANT—The LIU sign is related to its LSL cognate (3 shared parameters; handshape differs).**

LIU   KSL

Figure 4. HOUSE—The LIU sign is different to its KSL cognate (2 shared parameters; movement and orientation differ).
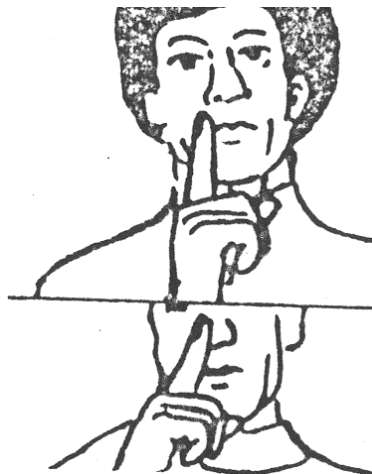
LIU   PSL

Figure 5. UNIVERSITY—The LIU sign is different to its PSL cognate (1 shared parameter; handshape, movement, and orientation differ).
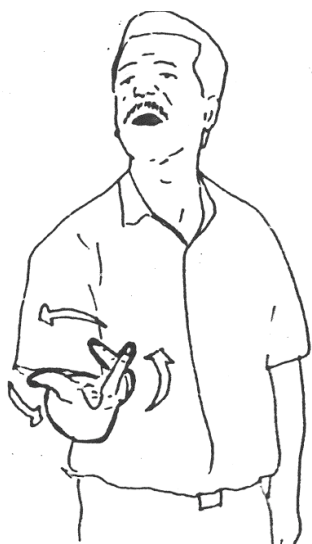
LIU   LSL

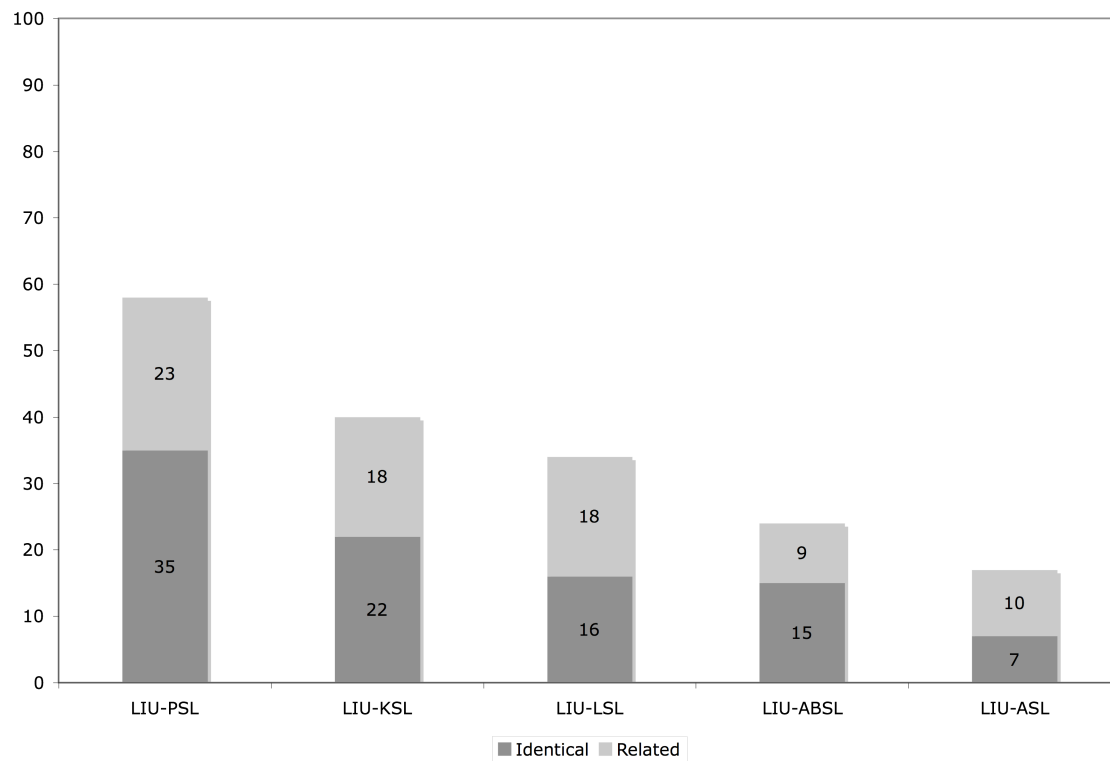**Figure 6. WHO—The LIU sign is different to its LSL cognate (0 shared parameters).**

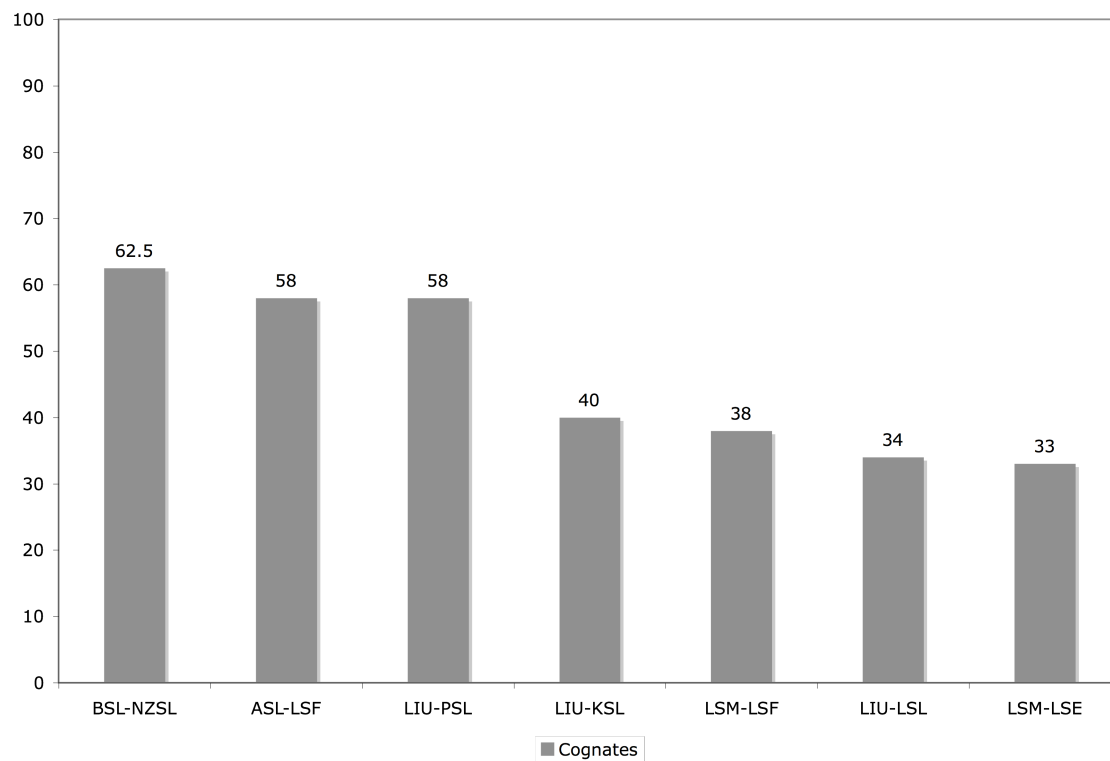**Figure 7. Cognates between LIU and other sign languages**

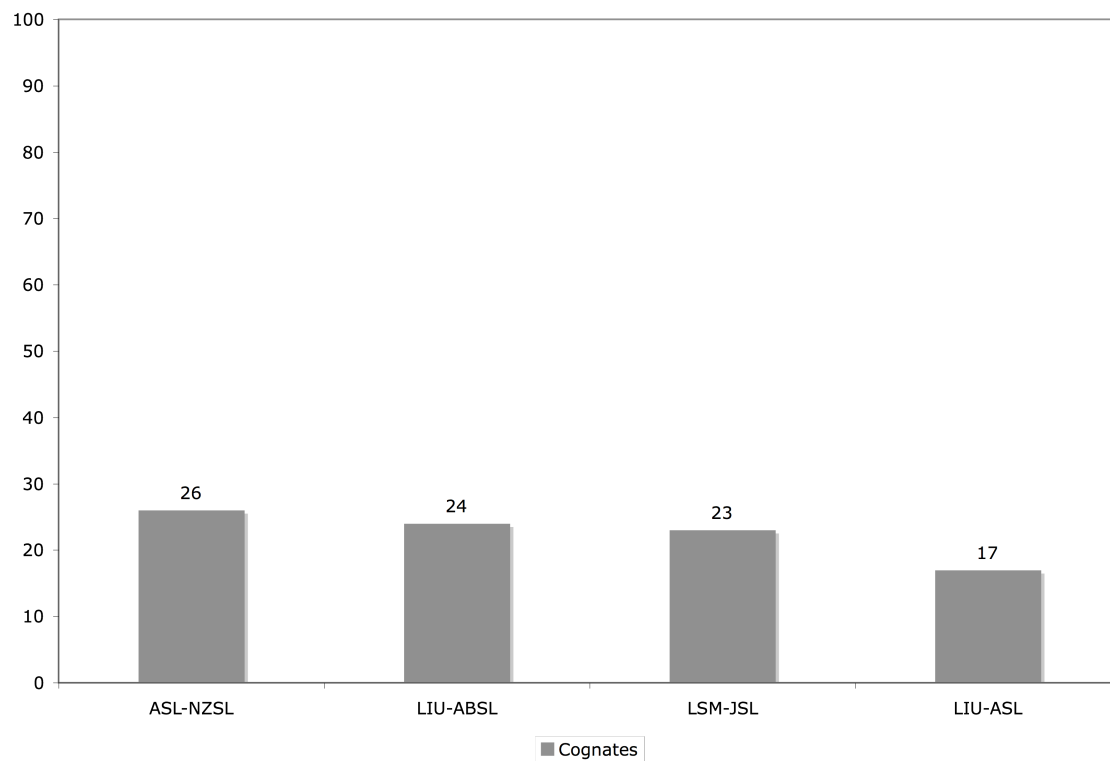**Figure 8. Vocabulary similarities between pairs of sign languages**

Figure 9. Base level similarities between unrelated sign languages