A Lexical Comparison of Sign Languages
in the Arab World

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1. Introduction

More than two hundred million inhabitants of twenty-two countries across the Middle East and North Africa speak Arabic.¹ 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. Should a Yemeni and a Tunisian meet, they can resort to the dialect of movie stars to understand each other or 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. 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 Middle East (Suleiman, 2003).

¹ The 22 members 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).
In writing about sign languages of the Middle East, Abdel-Fattah (2005) suggested that the presence of a standard Arabic spoken language has led to the expectation that there is a shared common sign language in the region. This paper explores to what extent sign languages of this region may be related. It examines relationships between sign languages in the Arab world through lexicostatistics, a method of comparing vocabulary across sign languages to determine type and extent of language relationship, if any.

At least three ongoing circumstances affect the distribution of sign languages in this 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 the Arab world compared to exogamic societies, where deafness is more likely the result of disease than of genetic inheritance. Shahin et al. (2002) document that while approximately one in 1000 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 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 commonly found in 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 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)

Second, cultural and social circumstances in the Arab world 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 Arab world to be more likely to be isolated from one another. Marriage customs in the Arab world 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 (northern 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.
2. Review of Literature

The methodology of comparative lexicostatistics is used to develop hypotheses on possible historical relationships between 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 between spoken languages’ cognates, the closer the historical relationship between 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 need to 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 previous sign language studies’ assertion that ASL has roots in LSF, it is more likely that some sign language varieties existed in the United States before contact with LSF was made, after which a creolization process took place.

Woodward (1991) also compared several sign language varieties found in Costa Rica. With results ranging from between 7-42% cognates, he concludes that there are at least four distinct 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 concludes that these varieties are separate languages but belong to the same language family. Likewise, Modern Standard Thai Sign Language and ASL share 57% cognates, making them distinct languages that are related historically because of 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.

McKee et al. (2000) use Woodward’s modified core vocabulary list of 100 concepts to establish the relationship between New Zealand Sign Language (NZSL), ASL, Australian Sign Language (Auslan), and British Sign Language (BSL). The vocabularies were drawn from dictionaries and CD-ROMs of their respective sign languages. They identify signs as cognates if all phonemic parameters (handshape, location, movement, and orientation of the palm) are identical or if only one parameter is different. Vocabulary that falls in the latter category is designated related-but-different, or vocabulary 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 expected this high degree of similarity, as both Auslan and NZSL have colonial origins, when BSL was brought to Australia and New Zealand by deaf educators and other immigrants 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 the other 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 a separate language from the other three.

McKee et al. acknowledge that some language scholars criticize the method of employing selective or core vocabularies. Because they are high frequency concepts, such vocabularies may overestimate the similarities between the sign languages. Instead these researchers prefer random vocabularies on which to base their lexicostatistical study. Slightly 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 historical educational policies in which the New Zealand Department of Education introduced the Australian Total Communication System in 1979 that continued to be used until the early 1990s. However, they find it difficult to make a claim as to whether NZSL is a separate language or if it is, like Auslan, a dialect of BSL. While the first analysis they used found that NZSL was a dialect of Auslan and BSL because it fell within the lexicostatistical range of 81-100%, the second analysis suggests that NZSL belongs only 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 (NS). 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. For this reason, some believe LSF may be a source of borrowing for sign language(s) in Mexico. With Spanish being a shared spoken language in both 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 NS 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 vocabularies for the LSM-LSE comparison to 112 vocabularies for the LSM-LSF comparison and 166 concepts for LSM-NS. Concepts 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. Results found 38% cognates for LSM-LSF, 33% cognates for LSM-LSE, and 23% for LSM-NS. While there is history of contact between LSM and LSF, it is clear that their historical development is non-genetic. They attribute the similarity 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-NS 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 between unrelated sign languages.
Genetic relationships between 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 between sign languages of the Arab world may follow an entirely different pattern given that schooling for deaf children was introduced much later in the Middle East. Brother Andrew, a pioneering educator of deaf people in the Middle East, 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 Middle East. Schools for deaf people in other Arab countries did not open until several years, and decades 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 Middle East 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 than in Europe and the US.

This paper will explore similarities and differences among sign languages of the Arab world through the method of lexicostatistics. The sign languages that will be examined in comparison to Jordanian Sign Language (LIU)² are Al-Sayyid Bedouin Sign Language (ABSL)³, Kuwaiti Sign Language (KSL), Libyan Sign Language (LSL), and Palestinian Sign Language (PSL). LIU will also be compared with ASL as a baseline, 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 LIU is the abbreviated form of the Arabic-English phonetic translation, Lughet il-Ishara il-Urdaniyyeh.
³ ABSL is used in the Al-Sayyid community in the Negev Desert in Israel.
3. **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 Abu Shara community on video. 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 too focused on local references such as names of organizations and royalty as is the case with the Jordanian dictionary.

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) more stringent guidelines. For McKee et al., cognates are signs that share at least three out of four parameters. Non-manual differences such as facial markers were not included in the comparison.

4. **Results**

As illustrated in Table 1, between 165-410 vocabulary were examined for the different comparisons. The number of vocabulary is similar to past comparative research on sign languages. As predicted, LIU-PSL had the highest number of cognates at 58%, followed by LIU-KSL with 40%, LIU-LSL with 34% cognates, and LIU-ABSL the lowest with 24% cognates.

Two signs from different sign languages were termed *identical* if they shared all four parameters, as in Figure 2. They were termed *related* if they differed on only one of four parameters, as in Figure 3 where handshape is the differing element. They were termed *different* if they differed on two or more parameters.

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5. Discussion

Table 1 demonstrates that LIU-PSL and LIU-KSL are related but probably 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 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. These results contradict anecdotes that sign languages of the Arab world are mostly similar or are dialects of a single sign language. Instead, the results suggest that at least those sign languages in the Arab world do not have common origins, or they have diverged greatly over time.

As expected, 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. Also as expected, KSL and LSL have a lower number of cognates with LIU. This is attributed to the cultural, social, political, and economic circumstances that limit contact between the three nations. Finally, LIU and ABSL share the fewest cognates of all the sign languages studied. This confirms ethnographic reports that the Al-Sayyid Bedouin community is a closed community that has little contact with other Arab communities. Only 24% of their signs were cognates with LIU of total vocabularies compared, similar to that of LSM-NS which shared 23% and was 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. But the higher 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 for deaf Arab communities with little or no contact with each other to have similar signs due to a shared gestural repertoire.

Finally, LIU-ABSL cognates are at 24%, which is a higher rate than 17% shared by LIU and ASL. 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. It should also be noted that the difference might 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.
6. 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 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. This presents a unique geography of sign languages unlike the situation in the West. It can, however, be paralleled to Woodward’s (1991) findings on sign languages used in Costa Rica, where he found several distinct ones among the numerous indigenous pueblos.

Finally, a key question in lexicostatistics of sign languages is whether two unrelated sign languages have more vocabulary in common than any two unrelated spoken languages. We find in our comparison of sign languages of the Middle East region that two geographically distant sign languages can have a somewhat higher base level of similarity when compared to two unrelated spoken languages, suggesting that there is something inherent in the visual-gestural modality of sign languages that predispose their vocabulary to similarity. This may be why sign languages of a region can seem to be similar when upon closer analysis, they fall below a threshold of measurable similarity.

References


