Is Kenyan Sign Language a sister language of ASL?
An analysis of language nativity through comparison between KSL and ASL

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1. Introduction
1. Background to the study

Recently, a sign language typology has been put forward based on quite a number of cross-linguistic studies of sign languages. As Zeshan suggests (Zeshan 2008, 671), sign language typology can lead to theoretical challenging issues of nature of human language. In our study, we aim to add more information into database of descriptive study of under-investigated non-Western sign languages and contribute to more dynamic development of sign language typology.

KSL, namely, Kenyan Sign Language is a visual language of the Deaf community in Kenya. The number of speakers of KSL is reported to be 340,000 (Lewis, Simons and Fennig 2015), though an accurate survey of sign users is still awaited. The first schools for the Deaf in Kenya were established in 1961, when St. Mary’s Primary School for the Deaf Nyangoma and Mumias School for the Deaf were set up by Dutch missionary groups in the western part of Kenya. Since then, KSL was gradually nurtured among Deaf children even though Oralism was dominant in schools (Okombo and Akach 1997). Sign language was introduced as a means of instruction in deaf schools in the 80s when Michaele Ndurumo, a Deaf educationist, came back from the United States (Ndurumo 1993). The newest Constitution of Kenya established in 2010 recognizes KSL as one of official languages. Though there are some variations of vocabulary in different localities, people with hearing impairments from Kisumu in Western Kenya and those from Mombasa in Eastern Kenya can understand each other completely.

It has been argued that KSL is one of the ASL’s sister languages such
as Bolivian SL, Thai SL, Ugandan SL, Filipino SL and West African sign languages. However, until recently, research on KSL, let alone other underdocumented sign languages was limited. Before we can truly answer the question of whether or not KSL is related to ASL, it is necessary to investigate both similarities and differences that exist between the structures of the two sign languages in more detail as Zeshan points out:

‘For the purpose of sign language typology, ... the most important type of documentation is a reference grammar. Reference grammars are concise, yet in-depth accounts of all grammatical structures found in a language, and they are an important source of information for spoken language typologists, who can rely on several hundred reference grammars, though not all of equal quality. However, to date sign language research has not produced a single reference grammar on any sign language, so the sign language typologists has to rely on other, less than ideal, sources’ (Zeshan 2008, 675).

The present study tries to fill in a gap of information of the KSL linguistics, though it is still an incomplete study.

1.2. Research Objectives

The study is intended to provide data to answer the question: Does KSL show enough evidence of relatedness to ASL?, and we will investigate from the aspects of lexicography, phonology and morpho-syntax.

2. Previous Studies

2.1. Till 2010

As mentioned above, not much was not done in linguistic documentation of KSL up to 2010. Most of the studies focused on socio-linguistic or educational aspects of the Deaf community in Kenya such as a study of bilingual education (Adoyo 2002); the one on variations of SL in Deaf schools in Kenya (Grimes, 2000) and another one describing language contact between KSL and the spoken language Kiswahili (Jefa 2009). There was a typological research of 40 SL kinship terms including KSL (Wilkinson, 2009). One of the few syntactic studies of KSL is Akach (1992).

2.2. Recent research

Recently, some linguists started investigations of KSL lexicon and phonology including Roberts (2009); Morgan and Mayberry (2010, 2012); Kimani (2011); and Mori, Miyamoto and Kakiri (2010, 2011) as well as the study of word-order
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of 42 sign languages (Napoli and Sutton-Spence 2014).

2. 3. View of Previous Studies

The view of KSL construction in a DVD developed by U.S. Peace Corps volunteers who used work in deaf schools in Kenya with the intention of teaching a basic KSL grammar to learners reveals a typical belief about KSL linguistic characteristics.

It states:
- KSL has the same basic order of SVO as ASL
- Adjective - Noun order is the same as ASL
- The Verb Aspects is the same as ASL
- Only different parts from ASL are that not only English, but also Kiswahili is used in fingerspelling, and speed of fingerspelling is slower than that of ASL (U.S. Peace Corps 2004)

Though we need to keep it in mind that the material was not prepared by trained linguists, the common belief was that KSL grammar is basically the same as ASL and little difference is found and thus KSL is a sister language of ASL.

3. Methodology

In addition to literature review of previous studies on KSL linguistics, we conducted a field survey of original collection and analysis of KSL data during the summers of 2010, 2011 and 2013. The first step of the data collection was to hold workshops to train KSL native signers to become aware of methods of linguistic research, so that we could get more accurate and deeper insights into the language. We, together with KNAD, Kenya National Association of the Deaf, selected six informants from different regions of the country and different age groups (though most of them were in their thirties) to obtain socio-linguistically balanced data. We, the two linguists, one of who is a native signer of Japanese Sign Language himself, went over the whole KSL dictionary of 2,894 entries (Akach 1991), and carefully checked vocabulary one by one with our informants. We made sure that they would not be influenced by any other major SLs and tried to appreciate the native signers linguistic intuition. When entries in the dictionary did not match what our informants told us, we removed them from our data. We also used the basic wordlist for sign language lexicography prepared by Woodward (1991). Any error found here, though of course, is entirely the responsibilities of the authors of this paper.
4. Findings
4.1 Lexicostatistics

In historical linguistics for spoken languages, sister languages are cognate languages; that is, languages that descend from a common ancestral language, the so-called proto-language. Every language in an established language family is a sister to the others. 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; while in sign languages, cognate similarity is based on comparing handshapes, movements, locations, and orientations of the hand in vocabulary of two different sign languages (Koda and Padden 2010, 9). 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 opportunities for contact with one another, that is, a percentage of similar words shows loanwords, rather than cognates.

Woodward, who modified the Swadesh’s 100 basic word list and proposed the list for sign languages, compared Modern Standard Thai Sign Language and ASL, and found that the languages share 57% cognates which reflects intense long-term contact between American deaf educators and deaf Thai Sign Language users (Woodward 1996).

McKee et al (2000) points out that Woodward does not identify how many or which parameters are taken into account when determining cognates.

Following McKee et al (2000), which used Woodward’s modified core vocabulary list of 100 concepts, we counted cognates between KSL and ASL. We 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.

We found that between 13-22% of the vocabularies of KSL and ASL share cognates as shown in Table 1, which would designate them as families of a stock, which means these two languages had a long-term contact. Indeed, history proves that educators in Kenya after the 80s tried to introduce quite a number of ASL vocabularies into KSL, thus these two sings had 30 years of intense contact.
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Table1. Cognates between KSL and ASL

|   |   |   |   |
|---|---|---|---|
| 1. all | 31. husband | 61. sharp | 91. year |
| 2. animal | 32. ice | 62. short | 92. yellow |
| 3. bad | 33. if | 63. sing | ✓ 93. full |
| 4. because | 34. kill | 64. sit | 94. moon |
| 5. bird | 35. laugh | 65. smooth | 95. brother |
| 6. black | 36. leaf | 66. snake | 96. cat |
| 7. blood | 37. lie | 67. snow | 97. dance |
| 8. child | 38. live | 68. stand | 98. pig |
| 9. count | 39. long | 69. star | 99. sister |
| ✓ ✓ 10. day | 40. louse | ✓ 70. stone | ✓ ✓ 100. work |
| 11. die | 41. man | 71. sun |
| 12. dirty | 42. meat | 72. tail |
| 13. dog | 43. mother | 73. thin |
| ✓ ✓ 14. dry | 44. mountain | ✓ 74. tree |
| 15. dull | 45. name | 75. vomit |
| 16. dust | ✓ ✓ 46. narrow | ✓ ✓ 76. warm |
| 17. earth | 47. new | ✓ 77. water |
| 18. egg | 48. night | 78. wet |
| 19. grease | 49. not | ✓ ✓ 79. what |
| 20. father | ✓ ✓ 50. old | ✓ 80. when |
| 21. feather | 51. other | ✓ ✓ 81. where |
| 22. fire | ✓ ✓ 52. person | 82. white |
| 23. fish | 53. play | 83. who |
| 24. flower | ✓ ✓ 54. rain | ✓ ✓ 84. wide |
| 25. good | ✓ ✓ 55. red | 85. wife |
| 26. grass | 56. correct | ✓ 86. wind |
| 27. green | ✓ 57. river | ✓ 87. with |
| ✓ ✓ 28. heavy | 58. rope | 88. woman |
| 29. how | 59. salt | 89. wood |
| 30. hunt | ✓ 60. sea | 90. worm |

✓ ✓: Complete cognates
✓: one parameter is different

4.2. Phonology

We checked handshapes of approximately 2,700 words and paid special attention to the non-dominant hand. In any natural sign language, it is known that non-dominant (H2) handshape are unmarked. Our findings in KSL shows the same. We found that:

1. In non-dominant handshapes: H2 of the 2-handed sings of which handshape and movement are unmatched, the basic unmarked shapes are B, A, 5, G/1, C, and O as in Fig. 1.
2. Within the unmarked set, /B/ is the most frequently used shape as in Fig.3.
(3) The distribution of H2 handshapes shows that the unmarked set is limited to a very small set compared to ASL, namely, a smaller variation than ASL as in Fig. 2 and 3.

Fig1. KSL unmarked handshapes

Fig2. ASL H2 handshape distribution (Henner, Geer and Lillo-Martin 2013, p.3)

Fig3. KSL H2 handshape distribution
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To show some examples of words with H2 handshapes, see Table 2 below.

| WORD        | H2 shape |
|-------------|----------|
| STRUGGLE    | /1/      |
| SHOW        | /C-B/    |
| RULE        | /C-B/    |
| PROMISE     | /s/      |
| STAND       | /B/      |
| SECRETARY   | /B/      |
| CHURCH      | /Open-C/ |
| AMEN        | /C-B/    |
| HOLY        | /C-B/    |
| APPOINTMENT | /Open-C/ |
| ESCAPE      | /Open-B/ |

These findings are similar to what Morgan and Mayberry (2010, 2012) reported. We could safely state here that the result of distribution of H2 handshapes also suggests that KSL seems to have a distinct phonology compared to ASL.

4. 3. Morpho-syntax

4. 3. 1. Number of Arguments

We found that KSL verbs can have three arguments for verbs. For example, the verb /BUY/ can take three arguments at maximum as follows:

A. MBOGO BOOK BUY CHILD (Mbogo buy book for the child.)
B. MBOGO CHILD BOOK BUY (possible) (Mbogo made the child buy book)

Possible Word Order

C. MBOGO/ CHILD BOOK BUY (Mbogo and Child buy book)
D. MBOGO CHILD/ BOOK BUY (Mbogo’s child buy book.)

Then at the KSL workshops, we tried to analyze verbs in KSL. The method of analysis was Valency Analysis (Tesnière, 1959: 1969). Valency refers to the number of necessary arguments for the verb. In ASL, the highest Valency number for its verbs is two. However, in KSL, some verbs were found to show
more than two for the Valency number through our analysis.

The sentences A and B show three arguments and they are respectively for Causer, Theme, and Beneficiary. It is the causative construction and as Comrie (1989) discussed, the typology discussion on spoken languages mentions the similar three argument Valency verb. As for KSL's Valency, we will need more careful analysis of these data and its linguistic implications. Especially, Non-Manuals, which were called Non-Manual Signals formerly, in KSL seem to be neutrally arranged and affected mainly by the word orders according to current data. However, we will still need more detailed analysis of their grammar. Another finding here is that when the word order changed as in C and D, the number of the arguments would be recognized as not three, but two. With these findings, we could give a higher probability to the conclusion that KSL is different from ASL in syntactic structure.

We could find the same construction change pattern for the verb of /COOK/. NMM plays important roles for the different word order and KSL does not seem to have the same basic order as ASL.

4. 3. 2. Word Order
Many of KSL sentence data through the workshops show that it is an SOV language (16/58=27.6%, SVO:25.9%). One example is as follows. The native signers of KSL give their intuition for the latter sentence to be ASL, not KSL.

KSL: NICKSON GOSSIP DISLIKE
ASL: NICKSON DISLIKE GOSSIP

However, sometimes, the latter ASL order would be used in everyday conversation. The basic order issue would be a more important issue for KSL linguistics. And it would be one of the most sensitive and controversial issues for the KSL signer community.

The basic word order or the basic constituent order for KSL has been said to be SVO as is that for ASL, for a long time. However, through the analysis by the workshops Deaf participants, the number of SOV order sentences would be more than that for SVO sentences. The sentences were elicited freely by the verbs in the KSL sign book and through Valency tests as mentioned in 4.3.1. So far the basic order of KSL has been thought to be fundamentally SVO and the other orders would be treated as Topicalization or Frozen orders as in ASL. However, the collected data show apparently its basic order is SOV. All the SOV
sentences collected have neutral NMs and the sentences with Topicalization NMs are not included for the word order analysis. The number of the sentences with Topicalization NMs is small.

Then the SOV sentence rate of 27.6% would be enough for us to raise questions about whether KSL has the same basic word order as ASL. To come to a final conclusion, it would be necessary to find the SOV sentences statistical rate in ASL. To give another support to the SOV order suggestion, we could have the important indication from the Deaf signer participants of our workshops. They indicated that SVO order sentences would be recognized as ASL sentence while SOV order sentences would be recognized as KSL sentences for them. This fact would be important when we think that Whaley (1997) gives the following standards for establishing the basic order.

i) The strong intuition of native speakers
ii) The frequency
iii) The least markedness
iv) Without some discourse context

The situations in KSL word order meet these conditions. Therefore, we could conclude that the basic word order for KSL would be SOV.

5. Conclusion

With the analysis from several aspects, we could come to the conclusion that KSL is not a sister language of ASL. We could give three major reasons for it. The first reason is that the cognates are only 13-22% between the two languages. The second reason is that there is phonological difference, especially that of H2 hand-shape distribution, between the two languages. The third reason is that there are morpho-syntactic differences such as three arguments and word-order, between the two languages.

The older view of KSL as one subspecies of ASL would be rejected here and we could have a newer view of KSL as a language developed with nativity of signed languages in the whole Eastern Africa. As we found through the workshops with native signers, KSL analysis with KSL signers could bring different findings from those by Euro-American sign linguists. That would be another fruit for this research project and we hope we could go further in our analysis of KSL comparing it with other East African sign languages. The several findings of the current research project would be then confirmed by comparative research between different sign languages in the area.
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ABSTRACT
This study investigates lexicostatistical, phonological and morpho-syntactic features of Kenyan Sign Language (KSL) and compares them with those of ASL. It concludes that evidence shows KSL is not a sister language of ASL for three major reasons. The first reason is that core vocabulary cognates are only 13-22% between the two languages. The second reason is that there are phonological differences, especially those of H2 hand-shape distribution. The third reason is that there are morpho-syntactic differences, such as three arguments and word-order, between the two languages. The findings of the current research project should next be confirmed by comparative research between different sign languages in the area. We could have a newer view of KSL as a language developed with the nativity of signed languages in the whole of eastern Africa.