Building the Corpus of Finland-Swedish Sign Language: Acknowledging the Language History and Future Revitalization

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Abstract

This paper presents the first steps in the process of creating a multimedia corpus for the severely endangered Finland-Swedish Sign Language (FinSSL). In the paper, we will first outline the history and current situation of FinSSL and then move on to describe some of the foundational choices which we have made both in the earlier data collection and at the start of the currently ongoing annotation work. Finally, we will bring up challenges related to the corpus data processing and discuss the future uses of the corpus, especially from the point of view of the FinSSL revitalization process.

Keywords: Finland-Swedish Sign Language, corpus, annotation, Signbank, research, revitalization

1. Introduction

This paper presents the first steps in creating a multimedia corpus for Finland-Swedish Sign Language (FinSSL) and outlines how corpus-building efforts can support deaf community aims for language conservation and revitalization. Building the corpus consists of data collection, processing and annotating the data, and developing a lexical database, Signbank[65] (see Takkinen et al. 2020). There are two national sign languages in Finland: FinSSL and Finnish Sign Language (FinSL). FinSSL is a severely endangered sign language. It is used by approximately 90 deaf people in the coastal areas of Finland. The Finnish Government is currently committed to the revitalization of FinSSL, whereby the Ministry of Culture and Education has assigned the University of Jyväskylä and the University of Helsinki a shared responsibility for 2021–2024 to carry out research on FinSSL. At the University of Helsinki, the research focuses on FinSSL users' role in the process of language revitalization. At the University of Jyväskylä, the mandate is being fulfilled by building the Corpus of Finland-Swedish Sign Language (Corpus FinSSL). The Corpus FinSSL will accompany the larger Corpus of Finnish Sign Language (Corpus FinSL; see Salonen, Kronqvist & Jantunen 2020), which was partly published in the FIN-CLARIN consortium's Language Bank in 2019 [66]. Corpus FinSSL will be stored mainly at the University of Jyväskylä and will later be transferred to the FIN-CLARIN's Language Bank for long-term preservation and publication according to language informants' research consents and data protection regulations.

2. Background on Finland-Swedish Sign Language

The history of FinSSL reaches back to 1846, when Carl Oscar Malm founded the first school for the deaf in Porvoo (in Swedish, *Borgå*), Finland. At the school, Malm taught his deaf pupils with sign language he had learned in Stockholm, Sweden, and as the number of students and schools grew, so the use of Malm's sign language also spread in Finland. Due to the oralistic trend, focusing on the development of speech articulation in deaf education, early on, deaf pupils were separated into Swedish and Finnish deaf schools according to their family background, which caused Malm's sign language to diverge into two different varieties, FinSSL and FinSL (Salmi & Laakso 2005).

The existence of two signed varieties was made visible for the first time in linguistics by

[65] The University of Jyväskylä, Sign Language Centre (2019)
[66] The University of Jyväskylä, Sign Language Centre (2018)

Rissanen (1985), who described FinSSL as one of two "main dialects" in FinSL. The signing of the Finland-Swedish deaf, as she puts it, *clearly differs from the signing of the Finnish deaf* (Rissanen 1985, 14). At the time Rissanen made her observation, the school in Porvoo was the only remaining school for pupils from Finland-Swedish homes and thereby an important linguistic environment for what would later on be defined as a Finland-Swedish deaf community (Lindberg 2021a). At the end of the 1980s there was a growing discontent with how education at the Porvoo school was arranged which resulted in a decreasing number of students and finally in the closing of the school in 1993. This political decision made by the government to stop providing education for FinSSL users again contributed heavily to the migration of language users to Sweden (Lindberg 2020; 2021b). Finland-Swedish deaf who stayed in Finland either got integrated among hearing Swedish-speaking pupils or attended Finnish deaf schools (Londen 2004).

A growing awareness of the loss of a linguistically and culturally important environment due to the closing of the Porvoo school contributed to supporting measures within the community. As early as in 1981, a Swedish[67] working group was established within the Finnish Association of the Deaf (FAD) (Wallvik 2005) and in 1998–2002 the first language documentation and description project of FinSSL was carried out within FAD. The project resulted in the publication *Se vårt språk! Näe kielemme!* [Eng. See Our Language] (Hoyer & Kronlund-Saarikoski 2002), that demonstrated characteristic features of the lexicon of FinSSL that differed from FinSL. At the same time, in 2002, a separate club for Finland-Swedish signers, called *Finlandssvenska teckenspråkiga rf (FST)*, was founded. In 2005, FST gave a response to the inquiry by the Ministry of Justice for the *Government Report on Application of Language Legislation* and declared their language to be a language of its own (Hedrén et al. 2005).

The definition of FinSSL as a separate language was also a precondition for introducing the context of language revitalization. Since the beginning of the 21st century, FST, together with FAD, have played an important role in providing information and promoting linguistic rights for FinSSL users. A more explicitly formulated step toward language revitalization was preceded by answering the adapted UNESCO survey on endangered sign languages (Safar & Webster 2014). FinSSL was labeled a *severely endangered language* in 2013. The scoring of vitality according to UNESCO criteria emphasized the gravity of the language situation and had an impact on decision-makers. In 2015, FinSSL was recognized in the Sign Language Act (Viittomakielilaki 359/2015), and at the same time the Finnish Government granted project funding for language revitalization.

Today, FinSSL is used by approximately 90 deaf people in the coastal areas of Finland. The total number of FinSSL users is, however, estimated to be somewhat higher, since the language is also used by hearing people (Andersson-Koski 2015). The shared research responsibility of the universities is a part of the ongoing government-funded revitalization.

3. Corpus Work on Finland-Swedish Sign Language

3.1. Collecting the Data

The video data for the Corpus FinSSL was collected alongside the Corpus FinSL data from 2015–2017 with the help of one Finland-Swedish deaf signer managing the recording sessions with informants. The material was recorded in both Jyväskylä (the University of Jyväskylä's television

[67] The term *Finland-Swedish sign language* was not yet established in the 1980s. Instead, the group was referred to as the "Swedish deaf" or "Swedish-speaking deaf" whose language was characterized by signs identified as typical for the school in Porvoo (swe: *Borgåtecken*) (Hoyer 2005).

studio) and Helsinki (FAD's studio). The FinSSL data contains elicited narratives and conversations from 12 FinSSL signers aged between 28 and 89 years, of whom there were 7 men and 5 women and most of whom live in Southern Finland. Seven task types were used in the data collection (see Table 1).

	Task type	**Description**
1.	Presenting oneself	Signers present themselves and tell briefly about their background.
2.	Telling about one's hobby/work	Signers discuss their work history or hobby.
3.	Signing cartoon strips	Retelling the contents of 4 frames of *Ferd'nand* cartoon strips.
4.	Signing a video story	Retelling the contents of short *Mr. Bean* and *Laurel & Hardy* movies.
5.	Signing from a picture book	Retelling the contents of textless picture books *The Snowman* and *Frog, Where are you?*
6.	Discussing an event related to Deaf culture	Signers have a conversation about an event that is related to Deaf culture and which they have personal experience of.
7.	Free discussion	Signers discuss a topic of their choice.

Table 1: The task types of data collection.

The data was recorded using six to seven high-quality Panasonic video cameras (3 x AG-HPX371E, 1 x AW-HE120KE, 3 x AG-HPX171E). The total duration of the video data is approximately 50 hours (including all camera angles). The signers participated in the tasks in pairs. Camera 1 recorded a general view of the both signers and cameras 2 and 3 recorded full frontal views of both signers (Signer A/B). Cameras 4 and 5 were focused on the torso and face of signer A and B, respectively. Camera 6 was located in the ceiling directly above both signers for getting exact information on the different body parts on the sagittal plane (this camera angle was not used in Helsinki). The last camera 7 recorded the instructor (see Figure 1). The HD recordings were saved on P2-disks (25–50 fps), stored in MXF format and compressed into MP4 files. (see Salonen et al. 2016.)

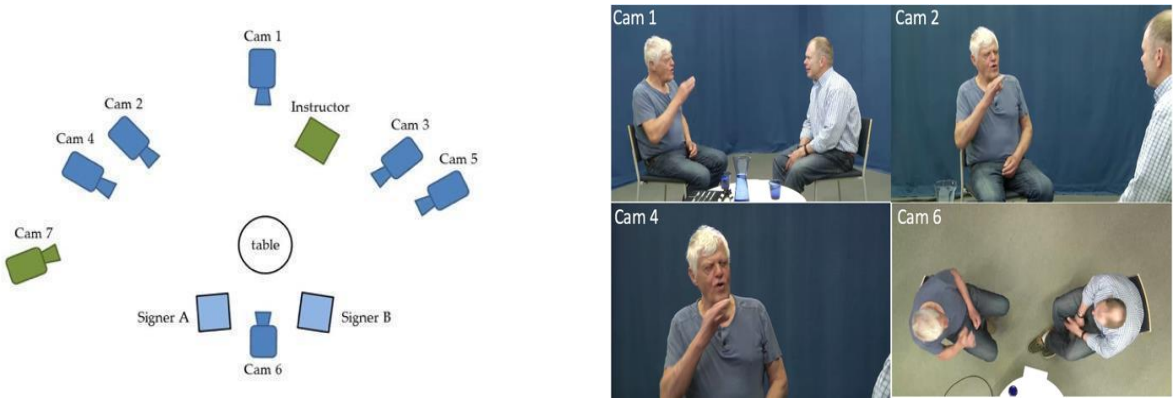

Figure 1: Camera setting in the recording (a) (Salonen et al. 2016); data from different angles (b).

During the recording sessions, we also collected consent information and metadata from the signers. On the consent forms, the signers were asked for permission to use their signing in the video material for research, display and publication purposes. All signers also had the option to not give their consent. On the metadata forms, the signers were asked about their personal, family and language backgrounds (e.g., region of residence, age). The final metadata information also includes technical details about the material and its collection (e.g., the size of the corpus, materials used in the elicitation tasks, etc.). A more detailed description of the consent and metadata forms is available in Salonen, Kronqvist & Jantunen (2020).

3.2. Annotating the Data

The annotation work of the FinSSL videos began in January 2021. The basic annotation was designed to follow the model used in the annotation of Corpus FinSL. This means the video data is processed with sign-level ID-glosses and sentence-level translations using ELAN annotation software (ELAN 2022; Crasborn & Sloetjes 2008), with Swedish as the written metalanguage.

3.2.1. Sign-Level Annotation

Building a functioning corpus demands unity and consistency with common principles and annotation guidelines for sign tokens (see Keränen et al. 2016). Many sign language corpus projects have developed their own annotation conventions (e.g., Schembri et al. 2013 for the United Kingdom; Crasborn et al. 2015 for the Netherlands; Johnston 2016 for Australia; Wallin & Mesch 2021 for Sweden). In Finland, the annotation process involves first the identification of sign units from the video (Jantunen 2015) and then tagging these units with ID-glosses (Salonen, Kronqvist & Jantunen 2020), which are unique form-meaning pairings that roughly represent the lemmas of traditional dictionaries. The ID-glosses are organized within the lexical online database, Finnish Signbank which is connected to ELAN over the Internet.

According to Johnston (2008; 2010), ID-glosses are tags that refer to sign tokens (both homonymous and polysemous) that all have the same form. Some phonetic variation is allowed (e.g., allophonic variation in some of the main parameters of the sign) and this is described in the Signbank entries. In practice, the ID-gloss functions as an identifier agreed upon by the annotators and enable systematic searches of the corpus data to be carried out. For example, the ID-gloss WAIT refers to homonymous sign tokens that carry the meaning ‘wait’ and ‘satisfied’ in FinSSL. In addition, ID-glosses contain provisional information about the grammatical features of the sign (e.g., repetition) if necessary. Examples of our current annotation conventions are given in Tables 2 and 3. Variants of signs are distinguished with codes written in parentheses after the main gloss of the signs (capital letters refer to different handshapes). Grammatical type or behavior is indicated with the symbol @ [where, e.g., @upprep refers to the repetition of the movement during the sign].

Category	Example
Lexical signs	a common/distinct ID-gloss:
Phonetic variants (1–2 different parameters)	LUCK(2g), LUCK(T) **=> LUCK**
Lexical variants (2–4 different parameters)	with e.g., a handshape code: **MEAN(GB) vs. MEAN(VV)**
Polysemic signs	WANT, HOPE, THINK, GOOD-MOOD => **WANT**
Homonym signs	WAIT, SATISFIED => **WAIT**

Table 2: Examples of the glossing conventions for different types of signs.

Type of grammaticality	Code
Negation	@neg
Repetition+plural	@upprep
Compound sign	@ssg
List buoy	@bojl
Lexicalized fingerspellings	@bt
Language contact	@sk

Table 3: Examples of the symbols for grammatical and usage-based features.

Finnish Signbank[68] is the lexical database built for FinSL and FinSSL corpus work. Signbank includes ID-glosses that are used for annotation in ELAN[69] as well as the citation form of the sign on video(s), the sign's Swedish equivalents, and any further information on the sign (Figure 2). The purpose of the database is to support annotation work with the help of the external controlled vocabulary (ECV). During annotation, it is possible similarly to see both ID-glosses (a left column) and their translation equivalents (a right column) in ELAN (Figure 3). This controlled feature allows the annotation work to proceed systematically, avoiding, among other things, spelling mistakes. Moreover, manual changes of ID-glosses and their equivalents in Signbank are automatically updated in ELAN, which also helps to control wide corpus data efficiently.

[68] The University of Jyväskylä, Sign Language Centre (2019)
[69] ELAN 2022

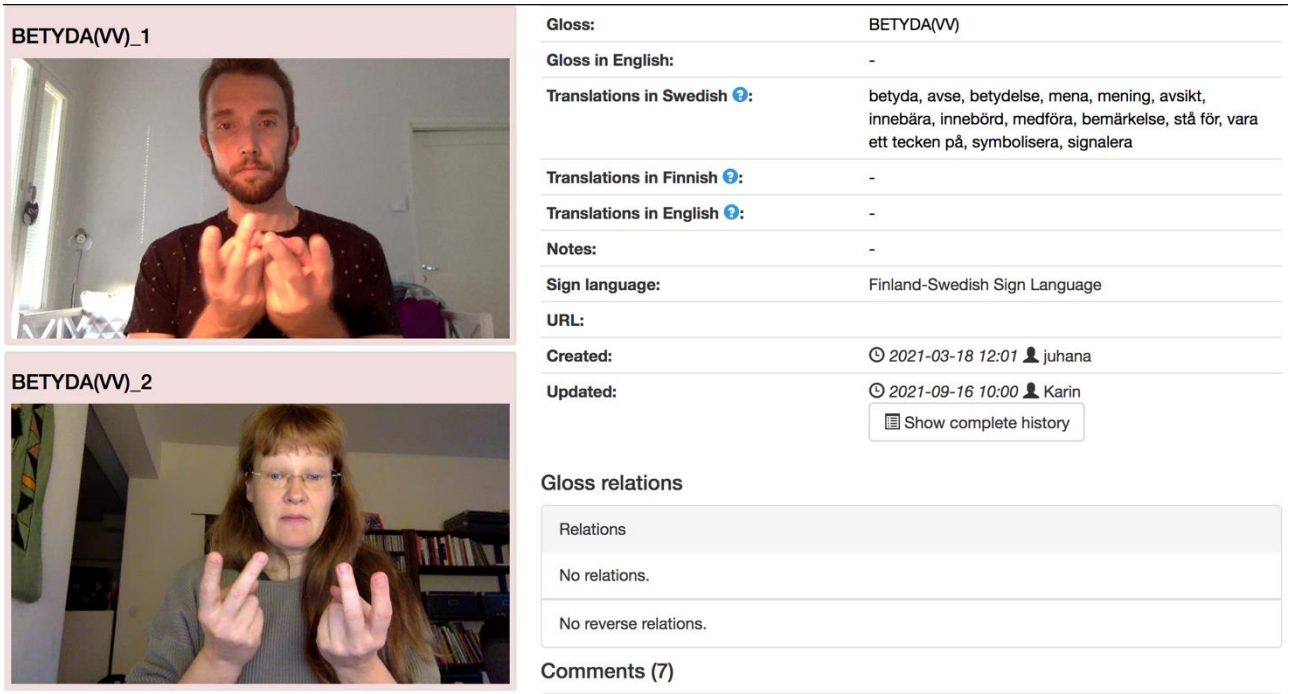

Figure 2: View of an ID-gloss working version page in Signbank. The videos on the left show the citation form(s) of the sign(s). The sign´s translational equivalents in Swedish and other information (e.g., the log of changes; the sign´s relation to other signs etc.) are described with text on the right.

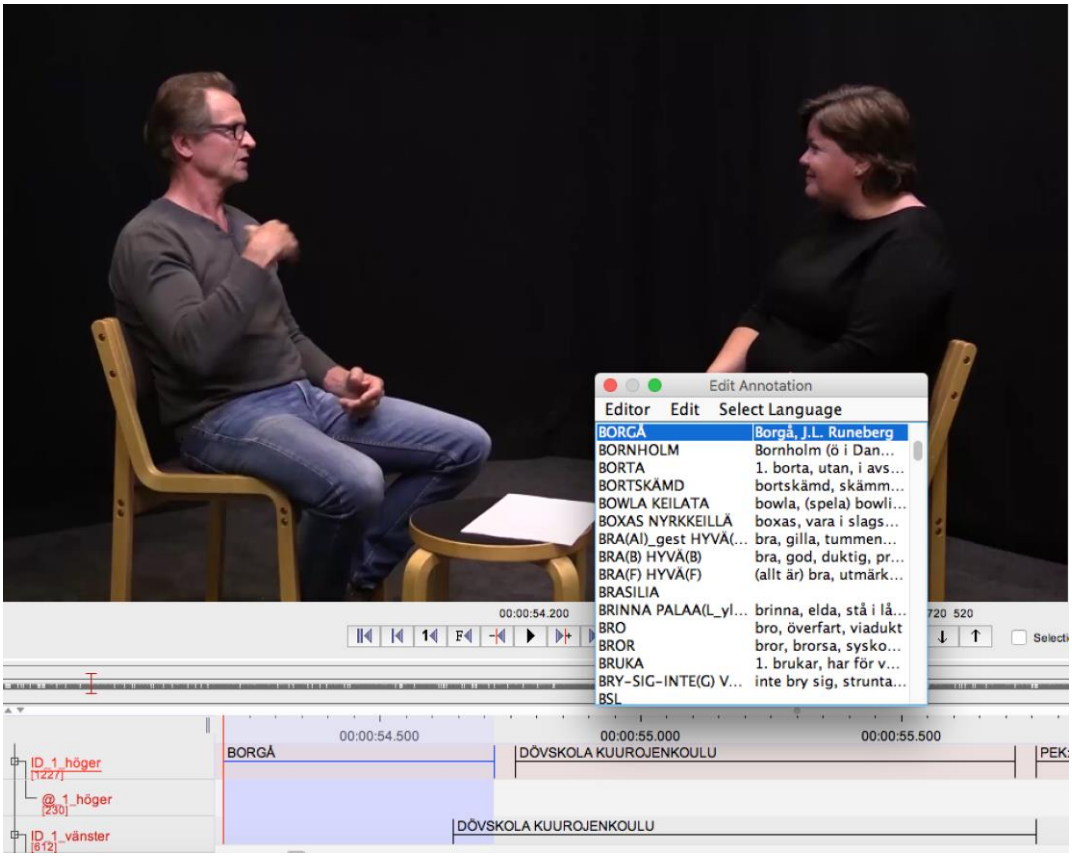

Figure 3: The view includes annotation tiers (with red font) on the left, and ID-glosses in Swedish and Finnish. The ID-glosses can be chosen from the Signbank database through the window that opens up in the view. The first column presents the ID-glosses in alphabetical order and the second column their translation equivalents in Swedish.

3.2.2. Sentence-Level Annotation

The FinSSL signing has been translated into Swedish at the level of sentences. The translation covers the meaningful information conveyed both by the manual (hands) and non-manual (other body parts) articulators. In addition, the translation seeks to distinguish sign language from the written Swedish language, so mandatory expressions in Swedish (e.g., the subject of the sentence, a copula, some conjunctions, adpositions; see Example 1) have been added in parentheses. The translation guidelines will be described in more detail in the forthcoming annotation conventions (cf. the convention for FinSL in Salonen et al. 2019).

(1) EGEN:min NAMN l-e-n-a_bokst

Mitt namn (är) Lena. [My name (is) Lena.]

The translation helps the corpus user to get a more complete view of the signed text because ID-glosses focus only on manual articulation. With the help of translations, users are able to see more accurately what meaning the ID-gloss refers to in the context. Similarly, the translation process provides support for creating Swedish translation equivalents of ID-glosses in Signbank. (cf. Salonen, Kronqvist & Jantunen 2020.)

3.3. Developing Annotation Guidelines for FinSSL

While the design of the Corpus FinSSL has benefited from earlier work on Corpus FinSL, we have also tailored our FinSSL corpus processing practices to better suit the needs of the FinSSL data and research agenda. An example is the annotation system which indicates lexical relations between FinSSL and FinSL in Signbank: we added codings for language contact, which differs from the way Corpus FinSL signs have been annotated. For example, in the FinSSL corpus data we have found three different signs that can carry the meaning ‘personal’. These signs have been given the ID-glosses PERSON(BB), PERSON(Lc), and PERSONLIG. The ID-gloss PERSONLIG is coded with @sk (språkkontakt, i.e., language contact), since the sign is a common sign in FinSL (HENKILÖKOHTAINEN) and its´ form reflects influence from Finnish (Figure 4).

At the beginning stage of annotating FinSSL, Corpus FinSL data was exploited by applying its ID-glosses and annotation guidelines. In practice, this meant that the annotator (a native FinSL signer) labeled FinSSL signs which had a similar form as in FinSL with the same ID-gloss which already existed in a FinSL lexicon of Signbank. It should be noted that the meaning may vary despite the similar form of the hands. The annotator marked separately on its own tier those sign utterances whose form varied from FinSL. Another worker, who has Swedish as her mother tongue and herself belongs to the cultural minority of Finland-Swedes, was responsible for the work on defining the form of the ID-glosses in Signbank, and on specifying the translation equivalents in Swedish (for the sign in question). At this stage, cooperation with FinSSL language guidance of various parties was emphasized (more on this in the next section).

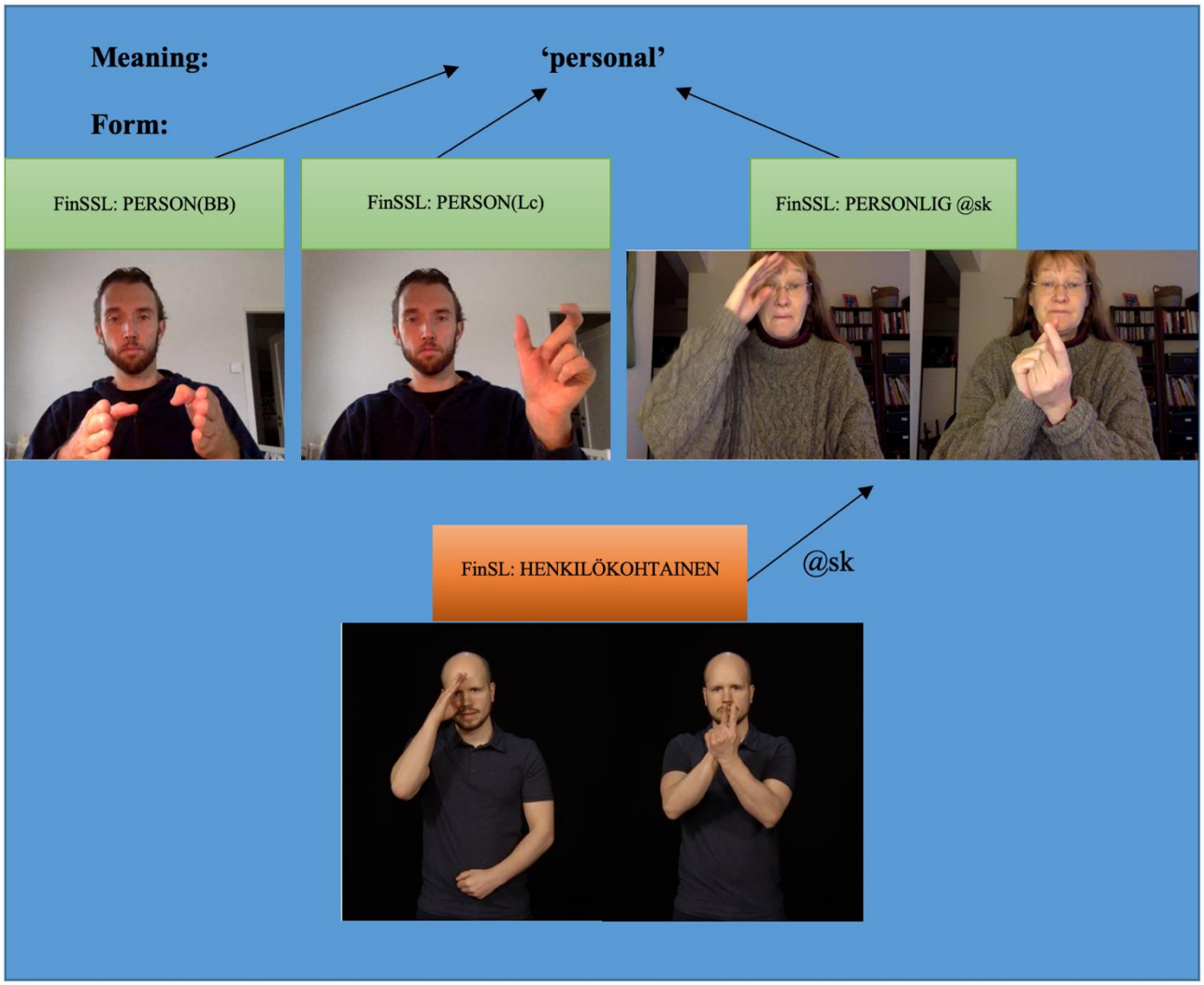

Figure 4: Example of language contact in FinSSL.

The annotation guidelines will be finalized during building the corpus, and updated over time as the scope of the annotation expands in the future as the growing research on FinSSL progresses. Similarly, updating a FinSSL lexicon in Signbank with new signs, translation equivalents and other information will serve the purpose of the FinSSL corpus. The aim is to create a completely independent entity for the FinSSL corpus, in which case the intervention of the Finnish language as well as FinSL will be eliminated. Their presence at this moment is due to solely technical regulations. In the final version, the Swedish language is used in ID-glosses (Figure 5), translation equivalents and Signbank's user interface and metalanguage.

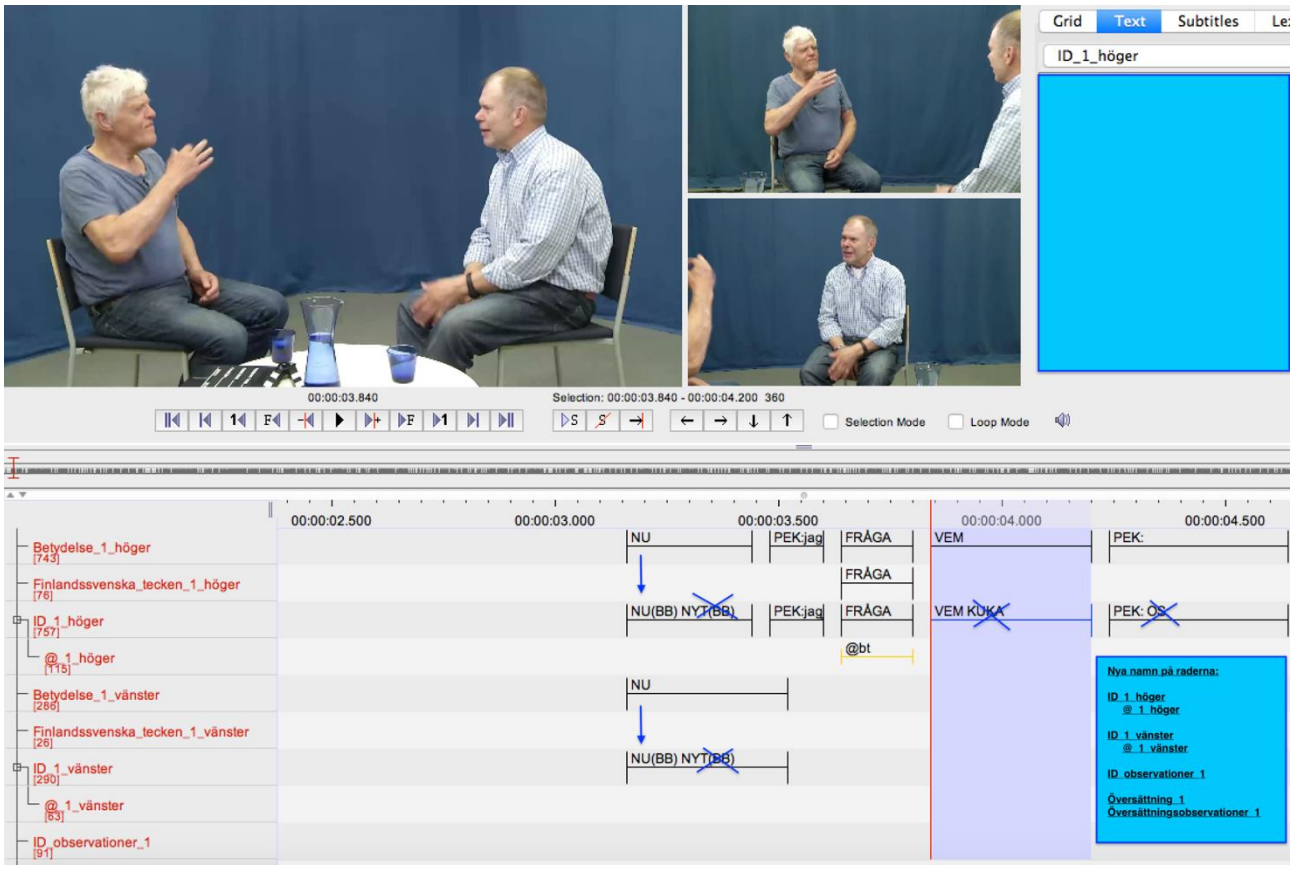

Figure 5: The view includes annotation tiers on the left, and ID-glosses in Swedish and Finnish. The process of eliminating Finnish as a metalanguage is shown by the crossed out glosses.

4. Involving the FinSSL Community – Corpus as a Tool for Empowerment and Revitalization

Certain challenges often surround work with an endangered language such as FinSSL (see Andersson-Koski 2022) which also affects the starting position for corpus work. A major challenge is the lack of previous research knowledge on FinSSL. This challenge arises in the corpus work in the need for categorization (see 3.2.1 Sign-Level Annotation), despite the lack of research on the grammar of the language. In addition, the threat of language attrition due to a loss of linguistic domains appears in the corpus data as a varying extent of language contact influences from both FinSL and Swedish Sign Language (SSL). The vulnerability of the language brings up to date the question of how to define FinSSL today (Hoyer 2012; 2013a). A further challenge in the corpus work is the lack of human resources with both linguistic and cultural knowledge in FinSSL, as none in the corpus staff represent a native FinSSL-user[70].

All these challenges contribute to emphasizing the importance of involving language users in the work process and spell out the relation between the research staff and the participants representing the language community. This calls for a need to scrutinize one's framework, concepts and starting points in the field of Deaf Studies (see Kusters, De Meulder & O'Brien 2017). To achieve linguistic guidance from native language users, the FinSSL corpus staff have included regular consultation with the FinSSL linguistic advisors of FAD. Moreover, workshops with language users have been

[70] This is due to the fact that native FinSSL-users are mainly above working age (Rainò & Vik 2020: 84), and poor availability of educational options has led to lack of academically educated language users who could be potential research staff.

implemented and will be arranged on a regular basis during the process of building the corpus. The involvement of the community, however, not only reaches toward the improved quality of the corpus itself, but highlights the relevance of its broader revitalization perspective. It is one way to engage the community to discuss FinSSL on a meta level which, eventually, will contribute to enriching the language and its use on both the individual and societal levels, both crucial to language revitalization.

The published corpus will enable and support research, teaching, lexicographic work and other activities crucial for strengthening the language. In addition, the process of creating the corpus has a significant symbolic value that improves the status enhancement of FinSSL. The fact of FinSSL being the target of academic research gives recognition of the existence of the language itself. But even more, witnessing academic appreciation for FinSSL is empowering and contributes to strengthening the linguistic and cultural identity of the community. The further acknowledgment of the language might lead to an "attitude shift" (Sallabank 2013, 65) toward the language among the surrounding majority (i.e., FinSL, Swedish and Finnish) language users. Due to the lack of research on the structure of the language, the role of the corpus as a documentation of how FinSSL looks today is emphasized. It can serve as a "mirror" for language users, who have not received any education or training in the subject of their own first language. Familiarizing oneself with the corpus even during the process of its creation, raises linguistic awareness and can be a tool for reflection and introspection about someone's own language use (see Hoyer 2013b).

In addition to its symbolic value, the engagement of language users in the process adds an educative dimension whereby users are provided with information on linguistic matters and are inspired to metatalk about their linguistic resources. Information given as a part of workshops thereby supplies more concrete tools (i.e., terms) to talk about linguistic features instead of operating with the elusive concept of "linguistic intuition." Simultaneously, it is important to bear in mind the restricted characteristics of the corpus. It represents only a snapshot of a language in transformation at a specific time used by a limited number of signers. Therefore, it cannot be set as the normative base for producing educational material without further research. However, a greater understanding of the meaning and possible use of a corpus may encourage in-depth cooperation. Members of the language community might become inspired to attend further linguistic training. This extended experience of ownership of the corpus raises its value for the community.

5. Conclusion

In this paper, we have described the process of building the multimedia corpus of FinSSL. This comprises collecting the data, consents and metadata as well as annotating the data and developing conventions for the annotation and creating a corpus lexicon. In addition to the actual corpus work, we have also presented the history and current situation of FinSSL, and the role of corpus work in the process of language revitalization.

Corpus FinSSL will be stored mainly at the University of Jyväskylä and will also be transferred to the FIN-CLARIN's Language Bank for long-term preservation and publication. The corpus of FinSSL will make it possible to promote research on the linguistic and cultural aspects of FinSSL in a comprehensive way and more systematically, even though the data in the corpus is not very wide. Similarly, the electronic and computer-readable material offers new opportunities for research on different sign languages comparatively. This is about to begin, for example, at the Nordic level in the Nordic Signed Language Corpus Network (NSLCN)[71] between FinSSL, FinSL, Norwegian Sign

[71] https://www.jyu.fi/hytk/fi/laitokset/kivi/opiskelu/tutkinto-ohjelmat-ja-oppiaineet/viittomakieli/nslcn

Language and SSL. Moreover, the FinSSL corpus material is already being used by different parties for their studies and research.

FinSSL is considered to be a severely endangered language. In addition to describing the ongoing corpus-building work, we have raised ethical issues in terms of research positionality during this work. The fact that the corpus staff are not native FinSSL signers opens up the necessity, but also the opportunity, to actively engage the FinSSL community into the working process. This has been achieved in the form of regular consultation with the FinSSL linguistic advisors of FAD. Moreover, workshops with FinSSL users and cooperation with other Finland-Swedish stakeholders have been implemented and will be arranged at regular intervals. The corpus will have a significant impact on the FinSSL community and the social status of sign language. In addition, the process of building the corpus together with the language community is already creating opportunities for strengthening linguistic awareness and confidence. This is crucial for the survival and revitalization of FinSSL as an endangered sign language.

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