

FUNCTIONS OF THE MOUTHINGS IN THE SIGNING OF DEAF EARLY AND LATE LEARNERS OF SWISS GERMAN SIGN LANGUAGE (DSGS)

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ABSTRACT

This research study concern the mouthings (unvoiced pronunciations of German words or word parts) co-produced with manual signs by deaf signers of Swiss German Sign Language (DSGS). The signers in this study represent 'early' and 'late' learners of the language. At first glance, it is reasonable to hypothesise that these mouthings primarily represent a code-switching to, or a lexical borrowing from, the Swiss deaf signer's other language, German. While these two functions do seem to be a possible motivation for many of the mouthings in this corpus, further analyses of the data have indicated that mouthings can take on non-lexical functions as well. This is particularly the case for the early learners, for whom the uses of mouthings seem to be more thoroughly grammaticalised, with a larger range of systematically-used subtypes, including not only lexical and grammatical, but also stylistic and prosodic functions. For mouthings with lexical functions, criteria for distinguishing between code-switches, nonce borrowings and established borrowings are proposed.

INTRODUCTION

Swiss German Sign Language (DSGS)

Swiss German Sign Language (Deutschschweizerische Gebärdensprache, henceforth referred to as DSGS) is used by an estimated 4000-5000 deaf persons living in the German-speaking cantons of Switzerland. (Deaf persons living in the French and Italian-speaking cantons have separate sign languages.) DSGS is composed of five related dialects; there is no standardised version of the language. The tradition of schooling deaf children only in the oral language is still quite strong in German Switzerland (Caramore, 1988, 1990) and has influenced not only the spoken and signed language skills of Swiss deaf people, but also their attitudes towards these languages. Deaf adults in German Switzerland thus clearly live in a bilingual situation. One of their languages – German – is actively promoted and positively viewed both by hearing and deaf people. Their other language – DSGS – has received public attention only within the past decade, is still insufficiently researched, and continues to be viewed as a "dispensable evil" by a large number of hearing authorities who are responsible for deaf education as well as for medical and early family counselling.

Mouthing and DSGS

The 'mouthings' discussed in this report refer to the voiceless pronunciation of German-like words or word parts which accompany the production of manual signs. For example, in DSGS the mouthed word *Mutter* usually accompanies the manual sign MUTTER (mother).

The component called 'mouthing' which is analysed here does not encompass all the forms or activities which the signer makes with the mouth, but only those which seem to be related to the spoken language. Other uses of the mouth which are apparently not related to the spoken language are not part of this study. These other mouth forms and activities are separate morphemes and are referred to here as 'mouth gestures'. These elements have also been referred to in the literature as 'non-manual adjectives and adverbs' or 'non-manual components of multichannel signs'. An example of a mouth gesture would be the 'square' mouth form that adds the meaning of 'intensely/with difficulty' to a manually produced verb. When co-produced with the manual sign TO-WORK, for example, the combined meaning would be translated by 'work hard'.¹

Earlier studies of mouthings in European sign languages include those by Vogt-Svendsen (1984) and Schroeder (1985) for Norwegian Sign Language, Schermer (1990) for the Sign Language of the Netherlands, Ebbinghaus & Hessmann (1994, 1995, 1996) for German Sign Language, and Pimiä (1990) for Finnish Sign Language.

There are several possible reasons why mouthings seem more significant for DSGS than has been reported, for example, for American Sign Language (ASL). One reason might be that most Swiss German deaf signers have until recently not used fingerspelling, which for signers of other sign languages (such as ASL) is a productive technique for incorporating lexical items from the spoken language into the signed language. The lack of a standardised form of DSGS also has the consequence that, in this small country, the chances are high that one's conversation partner is using a different sign dialect from one's own. In this situation, a mouthing associated with the manual sign can serve as a redundant marker of a lexical meaning. Finally, the bilingual situation in which the Swiss German deaf signer lives is heavily weighted towards the oral language by past and present educational policy and by general positive language attitudes of deaf people

1 Cf. Baker & Cokely (1980) and Baker-Shenk (1983) for ASL examples of mouth gestures; Coerts, 1992, for non-manual grammatical markers in Dutch Sign Language; Vogt-Svendsen (1992) for Norwegian Sign Language; Pimiä, this volume, for examples in Finnish Sign Language. Some mouth forms seem to be based on facial expressions that are used by hearing as well as deaf persons for non-verbal communication of the speaker's physical or emotional state. An example of this is the dropped jaw mouth form ('ah') as an expression of surprise, shock or fear. In signed texts, this can be used to indicate the non-verbal state not only of the signer but also of a character in the narrative being signed. The accompanying manual sign is held or quite often dropped altogether, resulting in a kind of pantomimic island inserted into the sign string. The function of these kinds of mouth forms seems analogous to the facial expressions and gestures, which accompany spoken narratives presented in a dramatic style. For DSGS, Carmen Steiner has begun an analysis of mouth gestures using Ekman and Friesen's (1969) 'Facial Action Coding System' (FACS). Preliminary analyses of those mouth gestures involving a protruding tongue indicate that while this coding system is helpful, it is often not detailed enough for some distinctions needed for signed languages.

towards the spoken language. Given these factors, it is not surprising that mouthing of German words has become an important element in the signing of deaf DSGS users.

Research Questions

The principal research question of this study concerns the status of mouthings in DSGS. Specific questions are the following: In what situations are mouthings instances of code-switching between the oral and sign languages and when so used, in what environments and for what purposes does this code-switching occur? To what extent are mouthings permanently integrated loan elements or borrowings in DSGS, and at what levels of the language do these borrowings function?

In a first attempt to address these questions, data from spontaneous signing of three early and three late deaf learners of DSGS are compared. The first section is a description of the frequencies and forms of the mouthings found in these data. The second section describes the different functions which mouthings seem to serve for these signers. The last section discusses the possible linguistic status of mouthings used for lexical purposes.

Subjects, Data Collection and Coding

Data were analysed from a study of three early and three late deaf learners of Swiss German Sign Language.² At the time of data collection, all early and late learners had been using sign language in their daily lives for more than 10 years, and all were fully integrated into the local deaf community. The early learners were all born profoundly deaf, had deaf relatives and had attended schools for the deaf. They had learned sign language from their relatives and from other children at the school for the deaf they had attended. The late learners had more varied backgrounds: Two had lost their hearing between the ages of 6 and 7; the third had been severely hard-of-hearing from birth and had attended a strictly oral school for the deaf where signing was not allowed, even in the dormitories. All three late learners learned sign language as adults, after they had completed their basic schooling. German was thus their first language and DSGS a later second language for all three late learners.³

The data used for this mouthing analysis are from the first four minutes of each signer's ca. 4 – 7 minutes unrehearsed short monologue about a personally experienced accident. For the early learners, these texts had an average of 500 successive manual signs; for the late learners, an average of 370 manual signs. The audience for these narratives consisted

2 The data for this study of mouthing is from the Swiss National Science Foundation-sponsored projects Nr. 11-28770.90 and 11-36347.92, "An exploratory study of how age of acquisition affects forms of sign language used by the deaf in German Switzerland" (1991-1995), carried out by the Forschungszentrum für Gebärdensprache in Basel by P. Boyes Braem, T. Tissi and C. Jauch. (Boyes Braem, 1995)

3 One of the deafened late learners did attend a school for the deaf for a few months of first grade where she was exposed to some signing. However, she then was transferred to a school for hard-of-hearing children where no signing was used and where she completed the rest of her education. She reports that she feels she learned DSGS only after age 16 from deaf friends.

of the other five deaf signers, most of whom already knew each other. Filming was done in the Deaf Centre in Zurich, with no hearing people present during the filming. The subjects were aware that their signed stories would be used for research purposes.

Two deaf co-workers (both early learners of DSGS) transcribed the German mouthings from Super-VHS videotaped data of a full screen view of the signer, who was facing the camera. The transcribers paid attention to how the mouthings were co-ordinated with the manual elements. The mouthings were transcribed as complete German words, unless the transcribers judged them to be a clearly reduced form, in which case the part of the word which they judged to have been actually produced was noted.

FREQUENCY AND FORMS OF MOUTHINGS

The small number of signers (6) and the fact that the data consist of short narratives mean that all the observations based on the analyses of these data are necessarily preliminary. However, both signer groups, but especially the early learners, performed quite uniformly on the aspects of mouthing that were studied, which suggests that the major findings of this study could be investigated further using only early learners.

The four following types of analysis made on the mouthing data will be described in this section:

- Frequency of Mouthings
- Forms of Mouthings
- Co-ordination of Mouthings and Manual Signs
- Co-ordination of Mouthings and Manual Meanings.

Frequency of Mouthings

Taking in account that for the late learners German was their first, and for many years their only language, one original hypothesis of this study was that the late learners would accompany more of their manual signs with mouthings than would the early learners. Furthermore, it was hypothesised that most late learner mouthings would represent code-switching to German.

This hypothesis was disproved by a first analysis of the data, which showed that both the early and late learners accompany approximately the same, quite high, percentage of their manual signs with mouthings. Figure 1 shows the percentage of all manual signs which are accompanied by mouthing over the first 4-minute stretch of the spontaneous narrative signing. The three early learner subjects accompanied an average of 80% of their signs with mouthings; the late learners an average of 76%. Thus, the first quantitative finding was that both groups of learners accompany nearly four-fifths of their signs with mouthings, although the late learners showed more individual variation than did the early learners.

The high percentage of signs accompanied by a mouthing found in this study is partly due to the coding method used. Signs were counted as being accompanied by mouthing

even if only part of a mouthing was co-produced with the manual sign. Thus, in the signing of the early learner in Example 1, each of the six manual signs was coded as being

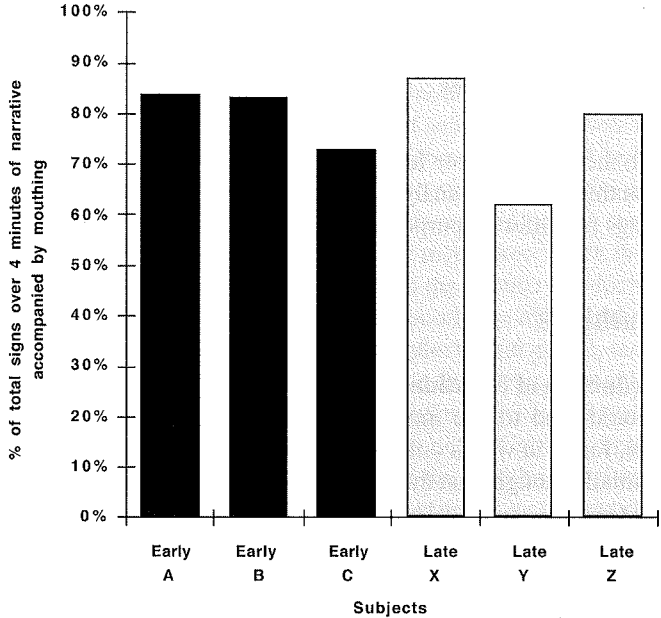


Figure 1: Percentage of manual signs accompanied by mouthing over 4-minute stretches of spontaneous signed narratives of early and late learners

accompanied by a mouthing or mouthing segment. Only three full mouthings are involved in this example, as they have been co-produced (or ‘stretched’) over the production of two or more manual signs. (In this and all the following examples, the English translations can, of course, only give a general idea of how the original German mouthings are ‘stretched’ over the manual signs.)

(1) Early learner data: 3 mouthings stretched over 6 manual signs in a sign utterance meaning ‘I did it quickly in about one minute’. (An underscore _ indicates the stretching of a mouthing over successive manual signs.)

Manual Sign	(do quickly) SCHNELL- MACHEN	(approx.) UNGEFÄHR	(one) EIN	(minute) MINUTE	(I) ICH	(CI-walk) KI-WALK
Mouthing	schne_ (quick_	_ll _ly	ei_ o_	n Mi ne Mi	i i	_nute _nute)

Example 2 is from the signing of an early learner. In this sentence, four manual signs are also accompanied by mouthings, but here a different mouthing is produced for each manual sign.

(2) Early learner data with 4 mouthings matched to 4 manual signs

Manual Sign	(say) SAGEN	(please) BITTE	(quiet) RUHIG	(remain) BLEIBEN
Mouthing	sagen (say)	bitte please	bleibe remain	ruhig quiet

Although both the early and late learners accompany a high percentage of their manual signs with mouthings, further analyses indicate that the two groups often use different forms of mouthings for different purposes.

Forms of Mouthings

Phonological Reduction of Mouthings. An initial hypothesis of this study was that the early learners would tend to use more monosyllabic mouthings as well as 'reduced' mouthings, that is, forms in which only the first part of polysyllabic words are produced. In contrast, we initially thought that the late learners would tend to mouth forms more like those of standard German, specifically more polysyllabic and non-reduced forms.

In the DSGS data, when only obviously reduced forms were compared, it was found that they represented 1% of the total mouthings of both subject groups. Ebbinghaus and Hessmann (1995) found 9.5% reduced words in their mouthing data of German Sign Language. Schermer (1990) found 7% reduced words in her corpus for Sign Language of the Netherlands.

The lower percentage found for DSGS in this study is probably related to the methodology in which 'doubtful' cases of reduction were counted as full forms. There were several difficulties in trying to decide if a mouthing was actually produced as a reduced form or if the full form was produced, but in such a way that the endings were visually unclear. Outside of labials (m, n, p, b) and vowels, most parts of mouthed words are difficult to see, as they involve invisible actions of the tongue and glottis. Thus, in the following mouthings, the final parts in parentheses can be produced so as to be almost invisible: *sof(ort)*, *wi(chtig)*, *fe(rtig)*, *me(hr)*, *Stu(nde)*, *de(nken)*, *helf(en)*, *Schu(ld)* (immediately, important, finished, more, hour, think, help, guilt). Especially in the mouthings of the early learners, it was often difficult to decide whether a mouthing (for example, *helfen*, *help*) was produced as a reduced form (only *helf*) or whether the subject simply articulated the final morpheme /en/ with minimal internal mouth movements which made the final morpheme less perceptible. As it was difficult for the deaf transcribers to judge whether mouthings of words with such 'less visible' endings were full or reduced, a decision was made to code the doubtful cases as being complete forms.

Easier to judge as being 'reduced forms' were words of two or more syllables in which the vowel in the second syllable involved a visible change from that in the first, for example in mouthings such as *ge(rade)*, *wes(halb)*, *kom(isch)* (straight/right away, why, funny/strange). One clear difference between the subject groups was that the late learners generally seemed to take more care in their enunciation of the mouthings, which made it easier to judge whether they were using complete or reduced forms.

All the reduced forms are polysyllabic forms but only a small number of polysyllabic mouthings in this data are reduced forms. The reduced forms seem to be primarily of frequently occurring mouthings. For example, *gehörlos* (deaf) is usually reduced to *gelos*.⁴

Both learner groups also tended to reduce words which had adjectival or adverbial meanings such as *mühsam*, *unsympathisch*, *plötzlich*, *komisch*, *möglich* (tiring, unlikeable, suddenly, funny/strange, possible) rather than nouns. The only obvious reductions of nouns in this data were for the name of a local deaf school, *Wollis(hofen)*, and a repeated reference to the police, *Poli(zei)*. Ebbinghaus and Hessmann (1995) make the interesting observation that there might be more reductions on verbs than nouns in their data, as a reduction of a German verb does not impair the understanding of the meaning as does the reduction of a noun. They also argue that it doesn't matter how much the form is reduced if the form can be reconstructed by the perceiver in the context in which it appears.

Inflections on Mouthings. In this corpus, the mouthings of the early learners are usually forms of German lexical items which are uninflected for plural, tense and case. The verbs are typically either in the infinitive form or first person singular for frequently occurring verbs such as *gehe* (go, first person singular). This often results in mouthings that are not inflected as they would be in a corresponding German sentence. This is particularly true for irregular forms, for example as in the mouthing *vergessen* (to forget) in a sentence meaning 'he forgets', where German grammar would require the 3rd person singular, present tense form 'vergisst'.

Exceptions to the above conventions are past participle forms for some very frequently used verbs. For example, all three early learners used the mouthing *gesagt*, the past participle form of 'sagen' (to say). Two of the early learners even produced as a kind of frozen construction the full German construction with inflected auxiliary in their mouthing, *habe gesagt* (have said). Most of the other past participles mouthed in the early learner data appear without the auxiliary *haben*.

The late learners generally used many more past participles of verbs than did the early learners⁵. They also used more conjugated forms of the auxiliary *haben*, although these sometimes occur without a following past participle, for example, mouthing only *habe* [einen] *Unfall* (have accident) rather than the full spoken German form *habe* [einen] *Unfall gehabt* (have had accident).

4 Deaf signers have informally observed that one motivation for this reduction of the mouthing *gehörlos* (deaf) to *gelos* is so that the mouthing will have the same number of components (two syllables) as the simultaneously produced sign, which moves between two locations (the ear and the mouth). Other sociolinguistic motivations for this sign are discussed in Boyes Braem, Caramore, Hermann & Shores Hermann (1998).

5 Past participles forms which occurred in the late learner data were *gemacht*, *gemerkt*, *geweint*, *geholfen*, *gesehen*, *gefahren*, *aufgeschrieben*, *aufgestanden*, *gebraucht*, *gebremst*, *gehalten*, *geplaudert*, *gestanden*, *gewonnen*, *heimgegangen*, *hinuntergefahren* (made, noticed, cried, helped, seen, gone, written-down, stood-up, used, braked, stopped, chatted, acknowledged, won, gone-home, driven-down).

Co-ordination of the Production of Mouthings and Manual Signs

There are several different ways in which mouthings and manual signs can be co-ordinated. As the type of co-ordination used is an important difference between the early and late learner data, the following types of co-ordination will be described in more detail:

- Mouthing alone with no accompanying manual sign;
- One mouthing matched to one manual sign;
- Several mouthings produced with one manual sign;
- One mouthing stretched over two or more manual signs.

Figure 2 shows the proportions in which the two subject groups used these different co-ordination techniques.

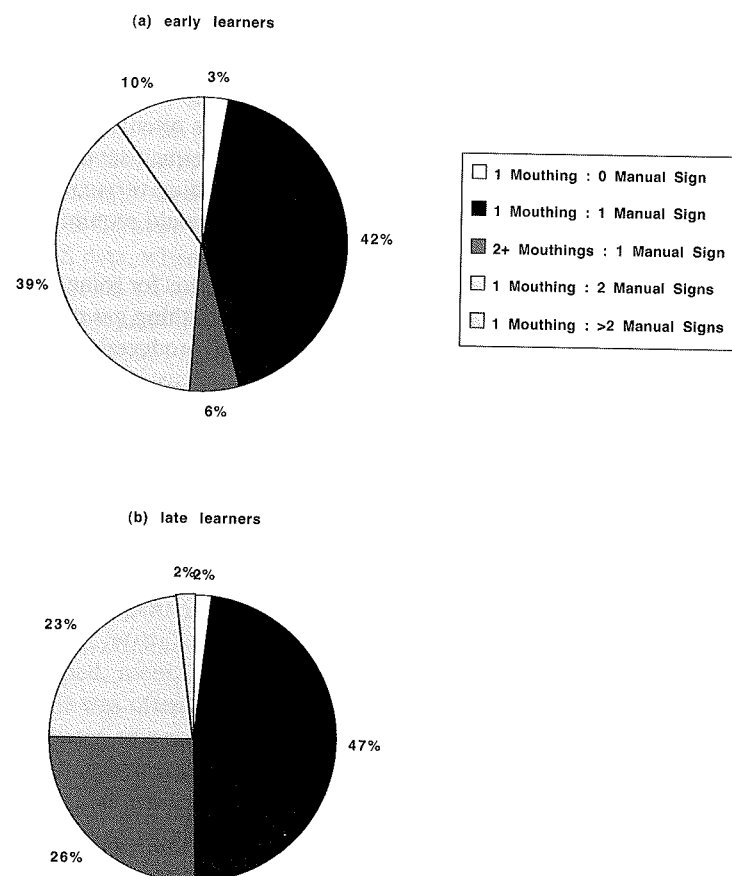


Figure 2: Techniques for co-ordinating mouthings and manual signs used by (a) early learners and (b) late learners

(a) **Mouthing with No Accompanying Manual Sign.** Unaccompanied mouthings were very rare in the data of both early and late learner subjects, representing 3% of the early and 2% of the late learners' mouthings. Both groups produced unaccompanied end-

ings of mouthings to complete the production of longer polysyllabic words, usually at the end of sentences.

(b) **One Mouthing with One Manual Sign.** The type of co-ordination most frequently used by both groups matches one mouthing to one manual sign. This form of co-ordination accounted for 42% of the early and 47% of the late learners' mouthings.

(c) **Several Mouthings with One Manual Sign.** The production of two or more mouthings simultaneously with one manual sign accounted for 26% of the late learners' mouthings but only 6% of those of the early learners. Here again, the early learners seemed to use this technique in a more constrained way than did the late learners. Early learners used multiple mouthings most often with set German phrases, such as *was machst Du?* (What are you doing?), *nicht schlimm* (not bad), *am Abend* (in the evening). The later learners' more frequent production of multiple mouthings indicates that their base language here often is German. In order to co-ordinate the more numerous mouthings of the base spoken language with the more slowly produced manual signs, the late learner was sometimes forced to match more words to each manual sign.

(d) **One Mouthing Stretched over Two or More Manual Signs.** The stretching of one mouthing over two or more signs was a technique used much more frequently by the early learners (49% of their total mouthings) than by the late learners (25%). For the early learners, the stretching did not necessarily correspond to syllable breaks, but rather occurred over a vowel (for example, *Ma_nn*). Therefore, both monosyllabic as well as polysyllabic mouthings could be stretched. One early learner stretched 45% of the monosyllabic mouthings in his text. Although most stretches were over two signs, there were cases where a monosyllabic mouthing was stretched over as many as four signs. For example, the mouthing *gearbeiten* (worked) was stretched over the manual signs ICH GEHEN-ZU ARBEITEN ICH GEHEN-HIN (I go-to work I go-there).

Co-ordination of the Meanings of Mouthings and Manual Signs

Mouthings carrying the sole meaning in the sentence constituted a larger proportion of the late learners' total mouthings (39%) than of the early learners' (16%). The mouthings of the early learners, on the other hand, were more often used for meanings which were 'redundant' to those of the manual signs in the sentence (74% vs. 51% of the late learners). The proportion of mouthings used for meanings that were 'supplementary' to those of the manual signs was the same for both subject groups (10%) (Fig. 3).

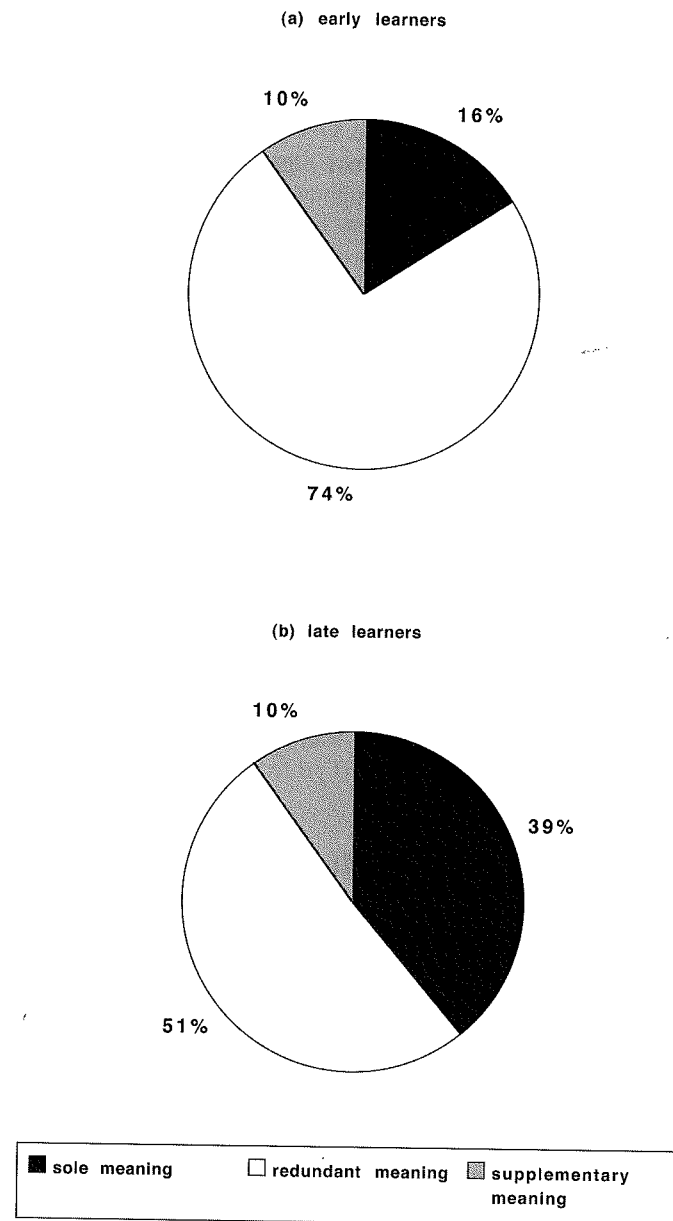


Figure 3: Mouthings as sole, redundant or supplementary carriers of meaning in the data of (a) early learners and (b) late learners

In Example 3, the mouthing *erzähle* (tell) is an example of a mouthing as the sole carrier of meaning in a sentence; *Unfall* (accident) is an example of a mouthing with a meaning redundant to that of a manual sign in the sentence. An example of a mouthing adding a 'supplementary' meaning to a manual sign would be *Skischuh* (skiboot) co-produced with the manual sign for 'shoe'.

(3) Late learner sentence ('But I will tell about only one accident.')

Manual Sign	(but) ABER	(I) ICH	(one) EIN	(Determiner) DET	(accident) UNFALL	(index finger pointing up) Index (oben)
Mouthing	<i>aber</i> (but)	<i>ich</i> (I)	<i>erzähle nur</i> (tell only)	<i>ein</i> (one)	<i>Unf_</i> (acci_)	<i>_all</i> _dent)

In the late learner data, the entire meaning of some sentences could be gained from the mouthings alone, as in Example 4a. In comparison, the mouthings of the early learners carry only a part of the meaning of the sentence (Example 4b).

(4) Typical mouthing sequences of (a) late learners and (b) early learners

- (a) Mouthings alone from a late learner signed sentence which, with the manual signs, meant "I had to ride with the bike from the company, back and forth every morning and every afternoon, four times a day".

Muss von der Firma mit dem Velo fahren hin und zurück jeden Morgen und Mittag vier mal im pro Tag

(Must from the firm with the bicycle ride to and fro every morning and afternoon four-times in the per day)

- (b) Mouthings alone from an early learner signed sentence which meant "I quickly **went to the balcony and hung up the wash**, very quickly, about one minute, **then I came back**". (Meanings carried by the manual but not the mouthing components are indicated in bold.)

Ich schnell Balkon waschen schnell ein Minute

(I quickly balcony wash quickly one minute)

The complete meaning of a lexical item in one language rarely completely overlaps with all the meanings of an item in another language. Here, 'redundant' means that the mouthing and the manual sign belong to the same lexical category and have roughly one meaning in common. A comparison of the mouthings of the early and late learners shows, however, how broad the scope of 'redundant' meaning can be. The late learners often used a much wider variety of semantically related mouthings to accompany a sign. For example, to accompany the sign SAGEN (to-say/tell), the early learners consistently used the mouthing *sagen*. The late learners in some contexts used synonyms for 'sagen' (say) such as *melden* (report). Accompanying the sign WIE-GEHTS? (how are you?), which can be used as a common greeting and as a serious inquiry about someone's health, the

early learners used the same mouthing *wie gehts?* for both meanings. A late learner used the same manual sign, but with the mouthing *nichts passiert?* (nothing happened?) for an inquiry about a person's physical state after an accident.

FUNCTIONS OF MOUTHINGS

For the late learners, the primary function of the mouthings seemed to be a lexical one and often represented a code-switch to German. For the early learners, some mouthings served a lexical function as a code-switch or as a borrowed element. The early learners, in addition, used mouthings for grammatical, stylistic and prosodic purposes. These different kinds of functions will be discussed in more detail below.

Mouthings as Code-Switches to German for Lexical Purposes

To Fill Lexical Gaps in the Sign Language. One of the most obvious functions that a mouthing might take is that of denoting a lexical meaning. If a mouthing is the sole carrier of a meaning in a particular sentence (i.e., there are no manual signs with that meaning in the sentence), it would usually be classified as an obvious code-switch to the signer's other language, German.

This kind of code-switching can be seen in many of the early learners' mouthings for concepts for which there is no conventionalised sign in DSGS, i.e. to fill lexical gaps in the language. These mouthings denote primarily nominal concepts which are either proper names or are nominal concepts not commonly used in the local Deaf culture. Signers of some other sign languages, such as ASL, use the fingerspelled form of a word from the spoken language for this purpose. Signers of still other languages, such as British Sign Language, use a mixture of fingerspelling and mouthing for this purpose (Sutton-Spence, personal communication).

Both the early and late learners of DSGS sometimes held the index finger to the chin or the mouth while making these kinds of mouthings, as if to signal that this was a code-switch to the spoken language. The early learners' articulation for this kind of mouthing was produced more slowly and clearly than for other kinds of mouthings in their data.

To Fill Lexical Gaps in an Individual's Production. As indicated in Example (3), the late learners used mouthings that were the sole carriers of meaning in a sentence more than twice as often as did the early learners. The late learners' code-switching seemed often to be for meanings for which they perhaps did not know a sign, although a conventionalised sign for that concept existed in the language. This use of code-switching mouthings is not surprising, given the fact that the late learners had a smaller sign vocabulary than the early learners: In the first four minutes of their stories, the late learners had an average of 99 different signs, as compared to 153 different signs in the early learner data.

To Indicate a Signer's Base Language. Sometimes the late learners used mouthings as the sole carriers of meaning, even though they had used the conventional sign elsewhere in the videotaped texts. These cases of mouthings are an indication that German, rather than DSGS, was their base language in this part of the monologue.

Mouthings as Borrowings for Lexical and Grammatical Functions

The mouthing of a word accompanied by a manual form may not represent a clear 'code-switch' but rather an incorporation of the borrowed word into the lexicon of the language.

The term 'borrowing' will be discussed in more detail later in the section "Relevant Findings from spoken language research". For the moment, the term is used here in the sense of Thomason and Kaufman's (1988) definition: "The incorporation of foreign features into a group's native language by speakers of that language: the native language is maintained but is changed by the addition of the incorporated features" (p. 37). The candidates for borrowed forms found in this data were in the following situations:

- (a) To avoid homonyms of manual forms / derive new lexical items;
- (b) To modify the meaning of adjectives, adverbs and a modal;
- (c) To negate;
- (d) To specify nominal notions in clauses;
- (e) To name the possessed referent in possessive noun phrase constructions;
- (f) To distinguish between word and sentence level meanings.

(a) To Avoid Homonyms of Manual Forms / Derive New Lexical Items. For some manual signs, a simultaneous mouthing seemed to be obligatory in order to avoid homonyms with lexical items involving the same manual sign. In one DSGS dialect, one manual form can mean 'license plate', 'subtitle' or 'football team', depending on the accompanying mouthing.

Sometimes, the mouthing functioned not to distinguish between manual homonyms, but rather to make more precise the meaning of the manual sign. For example, the mouthing of *Zettel* (note) co-produced with the manual sign for 'paper'; the mouthing *Skischuh* (ski boot) with the manual sign for 'shoe'. In this sense, mouthings are a device for the derivation of related, new lexical items.

While many of these so derived lexical items seem to be manual homonyms, ongoing research on a lexical databank project for DSGS indicates that, in fact, the derived item often has additional small manual or facial components which differentiate it from the original sign. The sign for the fruit 'orange', for example, is made by tapping together the fingertips of two 'bent 5' handshape, as if indicating a round object. The derived sign for the colour 'orange' adds a slight twist of the wrist to this movement component.

The homonym-avoiding and derivation functions of mouthings have been reported for several other European sign languages (see, for example, Schermer, 1990; Pimiä, 1990; Ebbinghaus & Hessmann, 1994, 1995, 1996, Ebbinghaus, 1998, as well as many of the contributions to this volume.)

(b) To Modify the Meaning of Adjectives, Adverbs and a Modal. For the early learners, a mouthed adverb can add intensification to an adjectival manual sign, for example, when the sign GUT (good) is accompanied by the mouthing *sehr* (very). If, in addition, the manual sign is inflected manually for 'intensive' (by changing the movement to include an initial hold and then a large movement), the result would be an even greater intensification of the meaning, 'extraordinarily good'.

Intensification can also be signalled by the repetition of a mouthing with the same meaning as the manual sign. For example, one early learner produced the manual sign meaning 'more' and accompanied it with the repeated mouthing *mehr mehr mehr* (more

more more) resulting in the augmentative meaning of 'more and more'. Although the mouthing here stems from the German word, its repetition to indicate augmentation is a device typical of signed languages.

When produced with no mouthing, the sign normally glossed as MÜSSEN (must) usually has the weaker meaning of 'sollen' (should). When the mouthing *müssen* (must) is co-produced, the meaning of the construction is that of stronger obligation, 'must'. Late learners, however, used the mouthing *sollen* alone or with the sign meaning 'must'. Early learners used this construction only when they were producing 'constructed speech' to portray people communicating in the spoken language.

(c) **To Negate.** DSGS has conventionalised manual signs for negation, as well as conventionalised non-manual facial signals, specifically the tilting or shaking of the head. However, sometimes an early learner will signify a negative with a mouthing alone, usually the German word 'nicht' (not). This use of mouthing alone for negation may be produced with no manual sign for negation appearing in the same sentence and with no negative head markers. In the late learner data, use of mouthing alone for negation occurred primarily together with the manual sign for the modal *können* (can), resulting in a manual+mouthing construction meaning 'cannot'.

(d) **To Specify Nominal Notions in Clauses.** In DSGS, polysynthetic verbs with classifier handshapes are usually not accompanied by mouthings that denote the meaning of the verbal element (i.e. 'walk', 'lie down', 'move upward', etc.). The mouthings or mouthing segments that do co-occur with 'classifying' verbs in this data tend rather to specify nominal notions (such as agents, patients, locations, sources or goals of the movement) or adverbial modifiers. For example, one early learner signed the meaning 'the doctor approached me' using a polysynthetic verb meaning 'approach' and accompanied by the mouthing *Doktor*, which identified the subject of the verb. Another early learner, trying to explain that the path he was describing was actually a sidewalk, used a polysynthetic verb meaning 'to walk' with a mouthing *Leute* (people) to indicate the subject of 'walk'. In neither of these cases was there a manual sign for the mouthed nominal in the sentence.

The sentence in Example 5, meaning 'I walked up to the second floor where I was shocked...[to see six doctors were waiting for me]', involves a polysynthetic verb meaning 'walk up the stairs', which is co-produced with the mouthing *Stock* (floor). Here, the precise goal of the movement, 'floor', is indicated only by a mouthing, with no manual sign in the sentence having a corresponding meaning.

(5) *Early learner use of mouthing alone to indicate the goal of a polysynthetic verb of motion in the sentence 'I walked up to the second floor where I was shocked; [...six doctors were waiting for me].'*

Manual Sign	(Cl-person-walks-up) KI-PERSON-STEIGEN-AUF	(second) ZWEITE	(I) ICH	(Cl-person-walks-up) KI-PERSON-STEIGEN-HINAUF	(shocked) ERSCHROCKEN
Mouthing		<i>zwei</i> (se_)	<i>te</i> _cond <i>Sto</i> Flo_	— —	— _ck _or)

(e) **To Name the Possessed Referent in Possessive Noun Phrase Constructions.** Mouthings often functioned as a borrowed element carrying the sole meaning in possessive noun phrase constructions in the early learner data. This was particularly true in possessives indicating family relations. In these constructions, the pronoun indicating the 'possessor' is a manual sign orientated toward the spatial locus of the possessor, and meaning 'my', 'your', 'his', etc. The 'possessed' referent is usually not indicated at all by a manual sign but only by a co-produced mouthing. Thus, although there is a conventionalised sign meaning 'father', the construction of the phrase meaning 'my father' was produced by an early learner as shown in Example 6.

(6) *Possessive noun phrase construction in DSGS in a construction meaning 'my father'*

Manual Sign	MEIN (my)
Mouthing	<i>Vater</i> (Father)

(f) **To Distinguish between Word and Discourse Levels of Meanings.** Sometimes the mouthing can indicate at what linguistic level the manual sign is functioning. For example, the manual sign FERTIG (finished), when accompanied by the mouthing *fertig* or *schon* (already) functions at the morphemic level as a completive tense marker for a verb, as in GESTERN ICH BUCH LESEN FERTIG+*fertig* (yesterday I book read finish). If the same sign, FERTIG, is combined with no mouthing or the mouthing *dann* (then), the sign functions at the discourse level to indicate boundaries between sequences of related events, as in GESTERN ICH BUCH KAUFEN LESEN FERTIG+*dann* ARBEIT SCHREIBEN (yesterday, I bought and read the book and then I wrote the paper).

Mouthings Used for Discourse Functions

As was indicated in figure 3, a surprisingly large proportion (74%) of the early learners' mouthings have meanings that were the same as that of the co-produced manual sign or of a sign elsewhere in the same sentence. This is puzzling because if the manual signs can carry the meaning by themselves, why bother adding a redundant mouthing? One possible motivation has already been mentioned: As DSGS signers are often in situations where they are communicating with a person who uses another sign dialect (often their own husband or wife), the redundant use of mouthings may be a measure to avoid misunderstanding the manual signs of the other dialect. However, these sociolinguistic factors alone cannot account for the very frequent and persistent use of redundant mouthings observed in the early learner data.

The early learner data indicate that mouthings also can function at the discourse, prosodic and stylistic levels of the language. These other functions of mouthing no doubt contribute to the large proportion of early learner mouthings which, at the lexical level, have meanings 'redundant' with those of the manual signs in the signed sentence. In this section, two kinds of discourse level functions are discussed: to help establish linguistic reference, and to add stress.

To Help Establish Linguistic Reference. One of the most important functions of mouthings among the early learners seemed to be the clear identification of new referents

in the discourse. There are numerous techniques for identifying linguistic referents in DSGS, including manual signs for proper names ('namesigns')⁶, manual nouns and noun phrases, the use of spatial techniques (co-ordination of the location or movement of a sign and/or the direction of eye gaze with a spatial locus, which has previously been identified with a referent), and the use of 'character identifying' facial and body expressions. Fingerspelling is not commonly used for this purpose in DSGS.

As in spoken languages, in DSGS different combinations of referencing techniques are used at different levels of the discourse, depending on whether a referent is being newly introduced, repeatedly referred to within an episode, or re-introduced in a later episode (Boyes Braem, 1992). The early learners in this study introduced all new referents and reintroduced all participating characters in new episodes by combining a namesign (or a nominal sign or nominal sign phrase) with a mouthing for the same referent and often an indication of a spatial locus for this referent. An example of the resulting construction for the first mention of a referent would be a sequence such as the following: GIRL+*girl* LITTLE ANNE+*Anne* INDEX (to a spatial locus). There is a striking regularity to the early learners' use of this combination of semantically 'redundant' techniques for establishing first mention of a referent. When the early learners did use a mouthing alone for a referent, it was usually at a lower level of the discourse structure, within subsequent scenes of an episode, after the referent had been introduced and identified with the usual combination of redundant techniques.⁷

The late learners, in contrast, did not consistently combine a mouthing with manual techniques for a new or reintroduced referent. This indicates a second language learner problem in mastering the DSGS referencing techniques appropriate to different levels of the discourse. Some late learners used mouthing as the only means of first identifying a referent. These cases seemed to be examples of interference from their first language, an over-reliance on German words alone to establish reference.

To Add Stress. A stressed or focused lexical item in DSGS is usually indicated by its placement in the final position in the sentence, as Wilbur (1990) noted is also the case for stressed items in ASL. However, the use of a mouthing with a meaning redundant to the manual sign also seems to be able to add stress, particularly to manual signs that do not necessarily occur in final position. The effect of this kind of stress is not as strong as a final placement would be. The use of mouthing for adding lexical stress seemed to occur more frequently with manual adjectives and adverbials, for example, KURZ+*kurz* (short), AUCH+*auch* (also), VERRÜCKT+*verrückt* (crazy).

6 Reference to proper names in DSGS is interesting, as until recently very few such references made use of the finger alphabet, either in spelling out the whole name, or in 'initialised' namesigns. Sometimes names of persons are indicated by a namesign accompanied by the forename and family name being pronounced together without voice (for example, *HeinzSchreiber*). Some deaf persons in German Switzerland have no namesigns at all, but are referred to by a voiceless mouthing of their names followed by some kind of physical description of the person (cf. Tissi, 1993, for a more complete description of namesigns in DSGS).

7 The combining of several of these devices for establishing or re-establishing identity of a linguistic reference has been reported for other sign languages. (Cf., for example, the discussion of discourse devices used in Swedish Sign Language in Ahlgren & Bergman, 1990, 1994.) However, the conventional use of mouthing to establish reference in this combination has not, to my knowledge, been reported for other sign languages.

Prosodic Functions of Mouthings

The use of mouthing for prosodic functions in these DSGS data involves the use of what has been described earlier as 'stretched mouthings', i.e. mouthed words which are co-produced over two or more successive manual signs. Stretched mouthings thus belong to the repertoire of possible prosodic markers in DSGS, along with facial and body markers. (For a discussion of these other kinds of prosodic markers in sign languages, see Sandler 1999, Wilbur 1999.)

In the early learners' signing, stretched mouthings seemed to act as an additional suprasegmental for binding sequences of manual signs. This form of prosodic marking did not occur with all kinds of sequences. Stretched mouthings found in this data seemed to have the following prosodic functions in marking units of different sizes: to bind constituents of noun phrases; to bind verbs and their subjects; to bind larger prosodic units.

To Bind Constituents of Noun Phrases. Stretched mouthings occurred often with manual signs that utilised spatial techniques that are common in sign languages but impossible in spoken languages. For example, in noun phrase constructions of a nominal sign followed by an indication of the spatial locus for the noun, the mouthing for the referent was often stretched over both manual signs (Example 7).

(7) Mouthing stretched over noun sign and a spatial index sign

Manual Sign	(man) MANN	INDEX (spatial locus)
Mouthing	<i>Ma_</i>	<i>_nn</i>

Mouthings also tended to be stretched over phrases which involved a nominal referent and the DSGS person classifier, a sign which can be repeated in horizontally slightly shifted locations to indicate plurality (Example 8).

(8) Mouthing stretched over noun and plural indicating sign in a construction meaning 'six doctors'.

Manual Sign	(six) SECHS	(doctor) DOKTOR	(person+plural) PERSON (plural)
Mouthing	<i>sechs</i> (six)	<i>Do_</i> (Do_	<i>_ktor</i> _ctor)

Both this example and the MANN INDEX (spatial locus) construction in Example 7 seem to be cases of a stretched mouthing binding a nominal with a free form morpheme inflection. This might be a signed language equivalent of the marking of a prosodic word in spoken languages.

To Bind Verbs with Subjects. The handshape component of the polysynthetic verb can refer to a class of referents, such as 'large vehicles', 'single thin vertically orientated objects', etc. The exact referent is normally identified by a noun sign elsewhere in the sentence or the discourse unit. Often these nominal signs occur before the verb, in which case a corresponding mouthing is often stretched over the following verb. In Example 9, in a

sentence meaning 'the car moves', the mouthing *Auto* begins accompanying the manual sign AUTO and is stretched over the polysynthetic verb of motion.

(9) *Mouthing stretched over noun and polysynthetic verb in a construction meaning 'the car moves'*

Manual Sign	(car) AUTO	(Cl-car-moves) KI-AUTO-FAHREN
<i>Mouthing</i>	<i>Au_</i> <i>Ca_</i>	<i>_to</i> <i>_r</i>

The stretched mouthing also seems for some of the early learners to act as a kind of prosodic binding for phrases in which the manual pronoun ICH (I) is repeated at the end of the sentence. In the sentence of an early learner (Example 10), the first instance of ICH functions syntactically as the subject of the verb. The resumptive pronoun at the end of the sentence does not seem to have this semantic function.

Whatever other linguistic function these resumptive pronouns may have⁸, it is interesting that in the DSGS data, each is prosodically bound to the preceding sign by means of a stretched mouthing. In a separate analysis of the data for this study, it was found that these resumptive pronouns were also accompanied by another type of prosodic marking, a rhythmic horizontal swaying of the torso which typically accompanied certain kinds of discourse structures. When resumptive pronouns occurred at the end of sentences, the torso would tend to reverse direction and move toward a 'neutral' central position, indicating the end of a larger prosodic phrase (Boyes Braem 1999).

(10) *Mouthings stretched over resumptive pronouns in the sentence meaning 'Maybe I did not pay attention.'*

Manual Sign	(I) ICH	(not) NICHT	(pay attention) AUFPASSEN	(I) ICH
<i>Mouthing</i>	<i>vielleicht</i> (maybe)	<i>nicht</i> (not)	<i>aufpa_</i> (pay a_	<i>_ssen</i> _ttention)

To Bind Larger Prosodic Units. The sign sentence in Example 11 has two stretched mouthings. The first, *ge_he*, (go) binds a resumptive pronoun. The second mouthing *arbeiten* (work) is stretched over a succession of three manual signs: a verb, an indexed locus and a verb.

⁸ The addition or reduplication especially of the pronoun 'I' occurs fairly often in DSGS even when the pronoun is not stressed or focused. Wilbur (1994) has suggested that for ASL, unstressed pronouns in final position fall into the category of extra-grammatical pronoun clitics. Both Wilbur and Bos (1995) think that this kind of pronoun copy might be a kind of proto subject agreement marker. The DSGS data reported here, however, indicates that on the prosodic level, an unstressed phrase-final pronoun might also be motivated by a need to add temporal length to the final unit, so that this unit will be more temporally balanced with the preceding unit.

(11) *Mouthing stretched over verb sequences in sentence meaning 'I went to where I work'.*

Manual Sign	(I) ICH	(go-to) GEHEN-ZU	(I) ICH	(work) ARBEITEN	Index (+locus) INDEX (+Lokus)	go-there (+locus) GEHEN-HIN (+Lokus)
<i>Mouthing</i>		<i>ge_</i> (go_	<i>_he</i> _o-to)	<i>arbei_</i> (wo_	<i>_te_</i> _o_	<i>_en</i> _rk)

Another example of a mouthing stretched over a larger unit is found in Example 5 discussed earlier in the sentence 'I walked up to the second floor where I was shocked; [...six doctors were waiting for me]. Here, the mouthing *Stock* (floor) begins with the pronoun ICH (I) and is stretched over a repetition of the verb meaning "I walk up" and into the following sign *erschrocken* (shocked) conveying the signer's state at what she found on the second floor (six doctors waiting for her). The boundaries of this stretched mouthing do not correspond with single phrase or clause boundaries, but instead seem to mark a discourse structure unit.

Another example of the stretching of mouthings over larger discourse units is shown in the sentence in Example 12 below, where the word *nervös* (nervous) is both reduced (*nerv*) and stretched into the beginning of the next sentence.

(12) *Mouthing both reduced and stretched over several signs in sentence meaning 'I was also nervous, like I was lucky, I was nervous and kept quiet'.*

(I)	(like)	(nervous)	(I)	(think)	(like)	(lucky)	(I)	(nervous)	(I)	(keep-quiet)	(I)
ICH	GLEICH	NERVÖS	ICH	DENKEN	GLEICH	GLÜCK	ICH	NERVÖS	ICH	SCHWEIGEN	ICH
<i>ich</i>	<i>au wie</i> (also like)	<i>ner_</i> (ner_	<i>_v_</i> _v_	<i>_v_</i> _v_	<i>wie</i> (like)	<i>Glü_</i> (lu_	<i>_ck_</i> _ck)	<i>nerv_</i> (nerv_	<i>v_</i> _v_		

Stylistic Functions

The early learners would often code-switch to German when using the discourse styles of 'constructed speaking', of narrative emphasis and narrator perspective.

'Constructed Speaking'. Early learners tended to use mouthings in a special way for a style of discourse that will be termed here 'constructed speaking'. This can be reported speech of a hearing person, or the report of a deaf person who is using speech to communicate with a hearing person. These are not citations or 'direct speech', as the intention is not to reproduce exactly what someone else said. Here, the aim is rather to give an impression of a conversation involving a non-signing person.

In this style of discourse, there are far fewer stretched mouthings than are generally found in the same early learners' signing in other styles. There are also more mouthings without any accompanying sign, more multiple mouthings per sign and more matching of one mouthing with one manual sign. The resulting sentences are similar to what late learners used in all forms of discourse.

Sometimes the mouthed word in 'constructed speaking' is conjugated as it would be in spoken German, which (except for some perfect participles, modals and frequently used verbs) is usually not the case for other forms of early learner mouthing. While the order of the signs in the sentence does not necessarily follow that of German, other German grammatical rules are followed. For example, in 'constructed speaking', the possessive is indicated not by the normal DSGS device of combining the manually expressed possessive pronoun with a mouthing for the possessed (as with MEIN+Vater, Example 6), but rather by successive signs plus co-produced mouthings for both meanings, as in the sentence in Example 13 below:

(13) *Constructed speech of a doctor asking a mother, 'Was hat Ihr Kind vorher gegessen?' ('What did your child eat before?')*

Manual Sign	Index (child) INDEX (Locus Kind)	(her) IHR	(child) KIND	(past) VERGANGENHEIT	(eat) ESSEN	(what?) WAS?
Mouthing		Ihr (your)	Kind (child)	vorher (before)	essen (eat)	was (what)

It is also in constructed speaking that the early learners used the mouthing *nicht* (not) in combination with signs other than the modal 'can'. For example, in the mother's response to the doctor's question concerning how much her child had eaten that morning, the construction VIEL+nicht (much+not) occurred. Another signer, in a story about a car that ran into him, reports his conversation with the hearing driver of the car, in which the signer proclaims that he, himself, is not guilty. The manual sign +mouthing construction here was SCHULD+nicht schuld (guilty+not guilty).

The 'constructed speaking' style can sometimes lead to complicated co-ordination of the manual and the mouthed components of the sentence. In Example 2, an early learner was reporting what her hearing neighbour said to her. Here, the word order of the mouthing was that of German while the order of the signs was that of DSGS.

Another stylistic device related to spoken German is the repeated mouth gesture *dädädädädä* or *bäbäbäbäb*, which accompanies a manual sign meaning 'speak'. This form is based on how hearing people look, from the perspective of a deaf person, when they're producing a continuous stream of sentences.

In the 'constructed speaking' style of early learners, sometimes mouthings of some conjunctives, non-spatial adverbs and adverbial prepositions occur, for example, *und*, *darum*, *weil*, *als*, *doch*, *auch*, *durch*, *für*, *von* (and, therefore, because, as, yet, also, through, for, of/from). These mouthings are usually accompanied by a manual sign that consists of an upheld index finger that makes a small downward, inward curving movement. This manual sign seems to be a semantically empty manual accompaniment to the mouthing. The early learners in this study use this kind of manual sign+mouthing construction primarily when representing the speech of hearing persons. The motivation for this usage thus seems to be more stylistic than grammatical. This is in contrast to the late learners, who tend to use these manual signs with the arcing index finger throughout their signing in all forms of discourse.

Narrative Emphasis and Perspective. Another function of mouthings which have meaning redundant to the manual sign is to draw attention to some aspect of the narrative. An example of this is in a sentence signed by an early learner in a story where she is sitting in a hospital waiting room and the doctor who has just operated on her child comes towards her (Example 14).

(14) *Someone approached me, the anaesthesiologist walked in, approached me...*

Manual Sign	Cl- movement (singular+towards 1 st . Person) KI-BEWEGEN (Einz.+entgegen)	(narcosis) NARKOSE	(doctor) DOKTOR	(walk) LAUFEN	Cl- movement (singular+towards 1 st . Person)KI- BEWE- GEN (Einz.+entgegen)
Mouthing	je_ (so_	_mand Na_ _meone (na_	_rkose _rcosis)	Do_ (Do_	_ktor _ctor)

Throughout most of the production of the first sign, a polysynthetic 'classifying' verb indicating a person approaching, the signer produced no mouthing but her facial expression indicated that of a person who had been stolidly waiting for many hours in a hospital waiting room. Towards the end of the production of this sign, the signer begins to mouth *jemand* (someone), followed by *Narkose Doktor* (anaesthesiologist). The dramatic effect is that of the portrayed person's growing awareness of the identity of the person who is approaching.

THE STATUS OF MOUTHINGS USED FOR LEXICAL FUNCTIONS

The data presented in the previous sections indicate that mouthings in Swiss German Sign Language (DSGS) have a number of different functions. The use of mouthings for 'redundant lexical functions raises important questions of their linguistic status: In which cases are these kinds of mouthings 'code-switches' to the spoken language and when would they be better described as 'borrowings' or as more permanently integrated 'loanwords' in the language?

The question of the status of mouthings is not only of theoretical interest to linguistics and has important practical consequences for sign language lexicographers, but it can also evoke high emotional and political interest in wider circles. One indication of this interest is the number of articles and letters to the editor that have appeared in several issues of the German journal, *Das Zeichen* in 1997 and 1998 (see Ebbinghaus & Hessmann and Happ & Hohenberger, both this volume).

Here, it will be argued that sociolinguistic factors, specifically bilingualism and a daily contact language situation, are of primary relevance to the question of the status of lexical mouthings in signed languages such as DSGS.

Most deaf signers in European and North American countries⁹ are considered here to be bilingual in the sense that Grosjean (1992) defines the term:

...bilinguals are those people who use two or more languages (or dialects) in their everyday lives. This includes people who have spoken skills in one language and written skills in the other (a situation that is akin to the Deaf who sign one language and read/write the other), people who speak two languages to varying degrees of proficiency (and who do not know how to read or write them), all the way to people who have complete skills in their two (or more) languages.

(Grosjean 1992, p.308)

Several concepts and theories that have been discussed in the literature of spoken language bilingualism will be examined to see how they might apply to the phenomenon of mouthings in sign language.

Relevant Findings from Spoken Language Bilingual Research

Base Language and Language Mode. In all bilingual discourse, it is generally agreed that one language is more basic than the other. Myers-Scotton (1996), for example, refers to the more basic language as the 'matrix' language. She defines the matrix language as the one that has more morphemes in the discourse sample and that is, in the situation in which the samples were collected, also the more 'unmarked' language, or the language most expected in that situation. Her term for the other language in the sample is the 'embedded language'. The base language has also been referred to in the literature as the 'host language' or 'recipient language'.

Grosjean has argued in several places (1992, 1995, 1997, 1999), that in addition to the concept of 'base language', a control or assessment of the bilingual's 'language mode' is also necessary. This language mode represents the level of activation of the languages involved in the discourse. The levels of activation can be thought of as a continuum ranging from a largely monolingual mode (when the interlocutors share only one language) to a largely bilingual mode (when the interlocutors share two or more languages). At the monolingual end of the continuum, one language is highly activated and the other is highly, but never completely, deactivated. At the bilingual end, both languages are highly activated. Between the two poles, there are intermediary modes of activation of the languages involved. The base language in this model is the more highly activated of the languages and the main language of processing.

In the collection and analysis of any bilingual material, it is thus essential that both the base language and the language mode be either controlled or clearly identified. Grosjean has pointed out (1999) that obtaining 'monolingual mode' data can be jeopardised by such small things as the signers' simply being aware that the experiment they are participating in involves bilingualism, or by an experimenter's pretending to be monolingual but unintentionally signalling by non-verbal behaviour an understanding of the other language. Other factors cited by Grosjean (1999) as potentially influencing language mode are the following:

9 For a discussion of American deaf signers in contact language situations, see Lucas & Valli (1989).

- **Interlocutors** (language proficiency, usual language of interaction, kinship relation, socio-economic status, attitude towards language mixing, etc.);
- **Situation** of the interaction (location, presence of monolinguals, degree of formality and of intimacy);
- **Content** of the discourse (topic, type of vocabulary needed);
- **Function** of the interaction (to communicate information, to request something, to create a social distance between the speakers, to exclude someone, etc.).

Code-switches, Nonce Borrowings, Established Borrowings, Loanwords. 'Code-switches' and 'borrowings' are generally considered to be two different kinds of language mixing, involving different processes: code-switching is an alternation between languages; borrowing is an integration of lexical items from one language into another (Grosjean, 1995). In code-switching, the other-language element maintains both the content and form which it has in the original 'donor' language. In borrowing, the morphological and phonological form of the element conforms to the recipient language linguistic patterns (Poplack & Sankoff, 1984).

'Borrowings', if they reoccur within the discourse of the bilingual community, are considered 'established borrowings'. However, some forms can be one-time occurrences, which, if they have the linguistic patterning of the recipient language, would still be considered borrowings. These 'one time borrowings' have been termed 'nonce borrowings'.¹⁰

Code-switches and borrowings occur almost exclusively in discourse of bilinguals. When an established borrowing used by bilinguals is adopted by the monolingual community, it becomes a 'loanword' in the language of that community as well. An overview of these different types of second language element is shown in Table 1.

	Code-switch	Borrowing		Loanword
		nonce	established	
linguistic patterning of -	donor language	recipient language	recipient language	recipient language
in discourse of a community of -	bilinguals	bilinguals	bilinguals	monolinguals as well as bilinguals
frequency of occurrence	non-reoccur.	non-reoccurr.	reoccurring	reoccurring

Table 1: Some distinctions between code-switches, borrowings and loanwords in spoken languages

For linguists more interested in describing the structure of a language than in the language behaviour of bilinguals, and especially for lexicographers of the language, the distinctions between these different types of element are very important. For any corpus, the

10 I am grateful to F. Grosjean for pointing out this distinction between nonce and established borrowings. In earlier literature, these elements have been referred to as 'speech' and 'language' borrowings respectively (cf. Grosjean, 1982). Poplack & Meechan (1998) describe nonce borrowing as follows: "Nonce borrowing differs from code-switching, and resembles established borrowing in all but its extra-linguistic characteristics of recurrence and diffusion" (p. 136). "...nonce borrowings pattern exactly like their native counterparts in the (unmixed) recipient language, and not like elements of the language of their etymological origin" (p.137).

lexicographer would want to describe the established vocabulary of the language, including the loanwords, but not necessarily the code-switches and borrowings used primarily in bilingual discourse. Relevant here is the following advice about making these category distinctions, which Poplack and Meechan (1998) stress is important in spoken language research:

Insofar as code-switching and borrowing are based on some principled combination of elements of the monolingual, that is unmixed, vernaculars of the bilingual community, it is important to have as explicit an idea as possible of the nature of these vernaculars before concluding that a codemixed element takes aspects from one or the other or both. (Poplack & Meechan 1998, p. 130)

Researchers of DSGS would find it difficult to follow Poplack and Meechan's advice, for not only is there not yet a full description of the sign vernacular, but, more crucially, there is no monolingual community of users of this language. All Swiss German signers are bilingual in both German and DSGS; there is no area of the country, no foreign 'mother country', and not even an educational institution where only DSGS is used for communication. Distinctions between 'established borrowings' and 'loanwords' made on the basis of comparisons to the language of a monolingual community are impossible in DSGS. For these reasons, the phenomena that fit the criteria for 'established borrowings' for sign languages such as DSGS should also be considered to be permanent lexical items of the language.

Most 'Lone Elements' Are Major-Class Content Words. According to Poplack and Meechan (1998), in all the spoken language bilingual corpora which have been studied, mixed discourse consists largely of single (or lone) elements which are usually major-class words (nouns, verbs and adjectives) embedded in the syntax of the recipient language. Of the major-class words, nouns occur most frequently in code-mixing of all languages.

In the DSGS data of this study, most of the mouthings of both the early and late learners also fall into major-class categories (nouns, verbs, adjectives and adverbs.) In the early learner data, the least used categories of mouthings are conjunctions and locative and temporal prepositions, i.e., all non major-class words (See Table 2).¹¹

The data from this study support similar findings from studies of other sign languages (Ebbinghaus & Hessmann, 1994, 1995, 1996, Pimiä, 1990, Schermer, 1990). They provide evidence that signed languages do follow one of the basic principles for the structures of code-switching and borrowing found for spoken languages, namely that the majority of lone elements are major-class content words, primarily nouns.

Most Lone Other-Language Items Are Borrowings, Not Code-Switches. An entire issue of the *International Journal of Bilingualism* was devoted to reports of studies which focused on lone other-language items in five languages (Turkish, Persian, French, Ukrai-

¹¹ The German copula 'sein' (to be) was non-existent in the early learner data. The use of the auxiliary 'haben' (to have) was limited to some cases of the first person, present tense form in a few commonly used phrases which seem to function as a unit in a frozen form (*habe gesagt*; have said).

nian and Igbo) with English. All studies used the same quantitative (variationist) methodology, which is independent of any one theory of code-switching.

A common finding in all these studies was that most lone items from the other-language were borrowings, not code-switches:

Whatever the linguistic properties of the language pair examined, ranging from typologically distant to nearly identical, and the diagnostic employed — phonological, morphological, or syntactic — lone other-language items overwhelmingly surface with the patterns of the language in which they are incorporated... This is evidence that they have been borrowed into that language, despite the lack, in some cases, of any dictionary attestation or diffusion within the community. (Poplack and Meechan, 1998, p. 136)

Word Class of German Mouthing	Early Learners	Late Learners
Nouns	26%	25%
Verbs	20%	23%
Adjectives / Adverbs	18%	21%
Personal Pronouns	6%	6%
Negations	5%	5%
Conjunctions	4%	4%
Discourse	4%	2%
Preposition	3%	8%
Number	3%	2%
Temporal	2%	2%
Interrogatives	2%	1%
Demonstratives	0%	1%

Table 2: Lexical categories represented by the mouthings of early and late learners

Whether most mouthings used by early learners are to be considered borrowings and not code-switches depends to a great extent on how well the two categories can be discriminated from each other. In the following section, some criteria for identifying borrowings and code-switches in spoken languages will be described and examined as to their possible application to the mouthing data in sign languages.

Criteria for Discriminating Borrowings from Code-switches

'Linguistic Patterning' Criterion. One criterion for measuring the integration of other-language material into a recipient language is the phonological, morphological and

syntactic adaptation of the item to the linguistic patterns of the recipient language, as indicated in the quotation from Poplack and Meechan above.

The DSGS mouthing data in the present study are not from a sufficiently large corpus to enable the use of the quantitative methodology that has been used in many spoken language bilingual studies. However, the mouthings of the early learners include very few instances of morphological inflections on nouns and verbs. When an inflection is made on the sign, (for example, on verbs to indicate grammatical person, number, case, manner, time aspect; or on nouns to indicate number, form specification), it is carried out by special manual techniques involving changes of the parameters of the manual sign (hand-shape, location, movement, orientation). In addition, many such modifications also involve the mouthing being replaced by a mouth gesture.

Many inflections on signs in DSGS, however, are for meanings for which German words are not inflected. For example, the DSGS sign meaning 'to clean-up' ('putzen') is, in the unmodified form, accompanied by the German mouthing *putzen*. The sign can be modified for manner ('to clean up strenuously') by a rapid repetition of the manual sign with an accompanying specific mouth gesture. There is no corresponding inflection for manner on the German verb 'putzen'.

A first task is therefore to identify 'conflict sites', or those functions which are comparable in the two languages, but have different markings (Poplack & Meechan, 1998, p. 132). Both DSGS and German do have inflections for grammatical person, number and case on some verbs, as well as number on some nouns. Here, however, the fact that the two languages are produced and perceived in two different modalities (aural/acoustic vs. visual/corporal) places some restrictions on comparisons.

For example, the marking of person, number and case on 'agreement verbs' in DSGS is done by using space, whereas in German an affix is used. The German verb 'schicken' ('to send') marks the second person singular form with the affix '-st' ('schickst'). In sign language the same function is marked by moving the sign from the spatial locus for the second person. The accompanying German mouthing in this case often remains a kind of base form: '*schick*'. In some instances, the mouthings in this data do seem to have been inflected with an appropriate German affix, a kind of double marking of a function, using inflection techniques from both languages simultaneously. The fact that sign language uses the hands and face as well as the mouth as possible articulators makes this simultaneous marking possible. However, it is often difficult to determine from videotaped data whether the spoken language marking has really been produced, as the appropriate German affixes often involve consonants or vowels which are not easily visible on the lips (e.g. 'n', 'st', 't').

Another potential 'conflict' site for German and DSGS is the plural marking on nouns. Again, this is in practice difficult to measure due to the less visible forms of the most common German affixes for plural (-e, -en, as in 'Berg', 'Berge', 'mountain', 'mountains'). A frequently used technique for indicating plural in DSGS is to repeat rapidly the manual sign for the noun in closely adjacent locations. If the manual signs are accompanied by a single mouthing stretched over all repetitions (*Stra*-----*sse*), the meaning is a simple plural ('streets'); if accompanied by a rapid repetition of all or part of the mouthing (*Stra*,

Stra, *Stra*), the result is an 'exhaustive plural' (this street and this street and this street.)¹². In both cases, the German word in the mouthing becomes temporally distorted, making it even more difficult to determine whether spoken language affixes have been used.

Whether or not an appropriate German affix is produced with any particular mouthing might also depend more on individual variables – for example, how well the signer knows German, a capability that can vary greatly from person to person. The use of appropriate German affixes might also depend on whether the signer is more in a sign language dominant or in a signed/spoken language bilingual mode.

In order to discriminate between mouthings which are 'borrowings' and those which are 'code-switches', a criterion which is more important than the simultaneous production of spoken language markings would be the clear production of the appropriate sign language (manual and non-manual) inflections for the item. If the sign language inflections are produced, the item would be categorised as a borrowing. Mouthing+manual sign constructions that occur only once and do not include any of the appropriate sign language patterns would be considered clear code-switches.

'Frequency' Criterion. In spoken language discourse, the frequency with which an other-language form is used is considered an indication of its degree of integration into the language (cf. for example, Hasselmo, 1970).

Myers-Scotton (1996) uses the following working rule for determining whether a form has appeared sufficiently frequently to qualify as a borrowed form: When a form occurs three or more times in different conversations in a corpus of a minimum of twenty hours of conversation, it is considered a borrowed form. When all the so-determined borrowed terms are eliminated from the corpus, the remaining forms are considered by Myers-Scotton to be potential code-switches, as according to her theory, code-switches are essentially non-recurring spontaneous forms. This definition of code-switch forms does not, however, take in account the existence of 'nonce borrowings', which have the linguistic patterning of the recipient language but do not reoccur.¹³

For sign language mouthing data, the following frequency criteria are proposed: Established borrowings are those mouthing+manual sign constructions which occur three or more times in a large corpus of spontaneous conversations. (The large corpus collected by Hessmann & Ebbinghaus, this volume, would probably be an appropriate database for this analysis for German Sign Language.) The constructions which are candidates for established borrowings could be checked in elicitation sessions, in which signers are asked to name objects in pictures, using complete sentences, and asked if they knew any other signs for the object. (This methodology is similar to that used by Poplack & Sankoff (1984) to determine Spanish/English borrowings by Puerto Ricans living in New York City.)

The data collection methodology for conversations and elicitation sessions should include controls that the interlocutors are as much as possible at the monolingual end of the language mode continuum and that sign language is the base language. In this language mode, the other (spoken) language would not be totally deactivated, however, the mouthings would be processed not as spoken language words, but as sign language lexical items.

12 I am grateful to R. Sutton-Spence (personal communication) for pointing out this difference between simple and exhaustive plural in these cases.

13 F. Grosjean (personal communication) has also pointed out the problem which nonce borrowings present for Myers-Scotton's definition of code-switches.

'Displacement of Old Items, Creation of New Items' Criterion. Another criterion for measuring how much an item is integrated into another language is the degree to which it displaces an equivalent item within the recipient language (Poplack & Sankoff 1984, p. 128).

For many sign languages, however, the use of mouthings seems to function not so much as a displacement of already existing manual signs, as rather a means of creating new signs. This would apply particularly to those structures in which the mouthing's meaning has a supplementary relationship to the meaning of the manual sign. An example of this in DSGS is a group of signs in which a manual sign meaning 'drugs' is combined with German mouthings of words meaning not only 'drugs', but also 'to take drugs' and 'drug-dealer'.

When a sign is first coined, the signer is probably in an intermediary language mode in which the base language is DSGS but German is also activated to access the German word to be produced with manual signs for the new lexical item. The new mouthing+manual sign construction would correspond to a nonce borrowing, as it would pattern linguistically like sign language items but not necessarily reoccur in a large corpus. This does not mean the nonce wouldn't reoccur within the immediate discourse situation, for example a particular conversation about a particular topic. But it would not necessarily reoccur in other conversations with other persons at other times. Those nonce borrowings that do not reoccur in different discourses would not become established and thus would not be considered loanwords in the language.

The use of mouthings as a productive device to create new, semantically related signs is not unlike the use of the finger alphabet for 'initialised signs' in American Sign Language (ASL). For example, the ASL signs for 'group', 'family' and 'association' differ only in their handshapes, which are the finger alphabet handshapes for 'g', 'f' and 'a' respectively. There seems to be little doubt among linguists or ASL users, that newly coined 'initialised signs' in ASL, if used regularly within the community, can over time become established and even 'dictionary-attested' signs. There is no reason why the analogue mouthing+manual sign constructions in DSGS could not over time also be considered to be fully integrated into the community's language. The fact that many Swiss deaf signers often report that they couldn't imagine their sign language without mouthings may reflect the individual signer's sense of a high degree of integration of mouthings both as established borrowings and as a highly productive device for coining new lexical items.

Proposed Criteria for Determining the Status of Lexically-Used Mouthings. The several criteria discussed above for determining the status of mouthings used for lexical purposes are summarised in Table 3.

Categories of Mouthings used for lexical purposes		
'code-switch'	'nonce borrowing'	'established borrowing' / 'loanword'
- a one-time occurrence across the corpus	- a one-time occurrence, or occurrence confined to a specific time and conversation	- frequent and regular occurrences accompanying a specific manual sign in a large corpus of several different signers
- can be produced with no accompanying manual sign	- is not produced without a manual sign	- is not produced without a manual sign
- the exact mouthing cannot be predicted	- the exact mouthing cannot be predicted	- the exact mouthing form, or small set of forms, can be predicted
- the semantic patterning of the mouthing will be that of the spoken language, sometimes a highly inflected spoken language form	- the mouthing will usually not be a highly inflected spoken language form	- the mouthing will usually not be a highly inflected spoken language form
- might accompany inflected forms of the manual sign (as a kind of simultaneous production of inflected forms from both language)	- when accompanying an inflected manual form, is usually 'stretched', repeated or replaced by a 'mouth gesture'	- when accompanying an inflected manual form, is usually 'stretched', repeated or replaced by a 'mouth gesture'
- can displace an existing sign	- does not displace an existing sign, but is rather used to create a new temporary sign for concepts for which there is no existing single lexical item in the sign language	- is the existing sign in the sign language
- if produced with a manual sign, its production is not reported by signers to be 'obligatory'	- its production is not reported by signers to be 'obligatory', but may be necessary to be able to understand the intended meaning	- its production is reported by signers to be obligatory with specific manual signs in specific contexts (for example, when the uninflected form of the sign is required)
- is used more when the signer is at the bilingual mode of the language mode continuum and sign language is the base language	- is used more when the signer is at an intermediary or bilingual mode and sign language is the base language	- is used in all modes on the continuum when sign language is the base language

Table 3: Categories of lexical mouthings in sign languages: code-switches, nonce borrowings and established borrowings/loanwords

CONCLUDING REMARKS

The data presented here indicate that mouthings in DSGS can function at several different levels of the linguistic structure: For establishing reference in discourse, for the prosodic marking of different kinds of units and for denoting (as part of a lexical item or in a grammatical construction with a noun or verb).

In order to begin to untangle the problem of determining the status of mouthings in lexical items as code-switches or borrowed forms, an examination was made of how some findings and methodologies stemming from research on spoken language bilingualism can be applied to sign language. It has been argued here that the use of spoken language forms should be seen as a productive device for coining new signs in the DSGS community, and that some of these mixed forms go on to become established borrowings in the community. Firmly established borrowings should be considered part of the sign language lexicon.

This does not mean that the use of mouthings might not become less important to future generations of DSGS signers. A move away from using mouthings would depend on many factors. One of these would be a clearly higher status of sign language within the both the signing and the non-signing communities. Given this circumstance, one potential scenario would be that the younger generation of deaf signers would want clearly to signal the separation of sign language from the spoken language and decide that this would mean avoiding mouthings as much as possible. This kind of young deaf person is represented by the contributor of the following posting to a German deaf website in December 1997:

If we sign with mouthings, the hearing people think - look there, sign language doesn't exist without mouthing, it is dependent on the oral language. We want to show with sign language without mouthing that it's a full-fledged language, equal to the spoken language and not dependent on it.

(Ebbinghaus 1998, p. 86. Translation from the German original by Boyes Braem).

In order to avoid using mouthings, the signer could utilise other techniques for coining new lexical items, including the use of the productive lexicon and visually motivated signs, as well as an increased production of initialised signs (which for the non-signer are less obviously related to the spoken language). There could also be a greater tendency to borrow signs from other sign languages, particularly for the technical terms and specialised vocabularies that become increasingly necessary as deaf persons gain more access to higher forms of education. Whether signs borrowed from another sign language would be accompanied by a German mouthing (which is obviously not present in the form of the sign in the donor language) would be an interesting research question.

Another potential scenario takes into account the upcoming generation of deaf signers in German Switzerland, who at a very young age have been given cochlear implants and have been integrated into hearing classrooms. At the present time, these 'implanted' deaf children have no sign language at all anywhere in their environment. In the next few years, a large proportion of this generation of deaf persons will be 'late learners', for whom German would be the first language. For these later learners, code-switching to German will be a ready option, as will be accessing their spoken language for the derivation of new lexical items.

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